



Invasive Plant Management Plan Update Environmental Assessment

Public Comment and Response Report

August 2011

THIS PAGE LEFT INTENTIONALLY BLANK

Introduction	1
Methodology	1
How To Use This Document	1
Public Comments and Responses	2
Subject: Preferred Alternative and NEPA document/ Analysis/ Process Response	2
Subject: Proposed Action/Purpose & Need/Plan Implementation	6
Subject: Wild and Scenic Rivers	8
Subject: Rare, Threatened, & Endangered Species/ Aquatic Species	8
Subject: Wilderness	9
Subject: Public Health and Safety Concerns	12
Subject: Methods: Data Reporting	15
Subject: Methods: Using and Choosing Herbicides	17
Subject: Preferred Alternative: Concerns Regarding Herbicides in or near Water	19
Subject: Cultural Resources and Concerns of Culturally Associated American Indian Tribes and Groups	22

THIS PAGE INTENTIONALLY LEFT BLANK

Introduction

This report summarizes comments received on the *Invasive Plant Management Plan Update Environmental Assessment* (2010 IPMP Update EA). The IPMP Update EA was released for public review on December 15, 2010, and the National Park Service accepted public comments through January 30, 2011. The NPS received twenty-six letters from the public, agencies, and tribes and groups associated with Yosemite National Park, which have been reviewed and analyzed for this report. Written comments were received via the park's Public, Environment, and Public Comment (PEPC) database system, as well as by email, fax, and U.S. mail.

Methodology

Public comment letters are analyzed by NPS staff in order to identify and respond appropriately to individual comments and points of concern. This was done using standardized methods developed for the park's Comment Analysis and Response Database (CARD) and PEPC. Each comment or concern is "coded" to associate that comment with a particular resource topic or element of the plan (such as air quality or the plan's relationship to other projects). Comments that fall under similar codes are then grouped under "concern statements," which are written to capture the commenter's main points and allow the NPS to respond to a specific action. Concerns can often be phrased in the format, "*The NPS should. . .*" Concern statements are then screened to determine whether or not further clarification is needed in the document or whether they call for a modification of the proposed action. Major concerns, such as those regarding public health and safety or suggesting new alternatives, are identified and brought to park management for careful consideration. The planning team considers each concern and prepares responses, such as those that describe the rationale for decisions, or provide answers to technical questions, or describes how their comment has been addressed in the revision of alternatives or with corrections noted in the errata.

At the request of members of the public, original comment letters are made available for review on the Yosemite National Park's planning website:
http://www.nps.gov/yose/parkmgmt/invasive_docs.htm

How To Use This Document

This document is divided into sections based upon the topics identified in the *2010 IPMP Update EA*. Each section includes one or more statements of public concern which express the actions that the public feels the National Park Service should undertake. Each public concern is followed by supporting quotes from public comments referenced to original letters. Each supporting quote is followed by the number assigned to the original comment letter and a number for each comment within the letter; whether the comment was made by an individual or an organization; and a description of the organization type. For example, "Individual- Comment #7-3" references the third coded comment in the seventh letter received, and is from an individual. Each public concern statement and supporting quote is then followed by the National Park Service Response.

Public Comments and Responses

Subject: Preferred Alternative and NEPA document/ Analysis/ Process

Public Concern #28200: The NPS should *not* adopt *Alternative 3: “Adaptive Management.”* The NPS should not add new/unknown unspecified chemicals without NEPA analysis and public review.

“Our organizations strongly believe that "adaptive management" or the creation of "criteria" or "protocols" does not absolve the Park from its responsibility to inform the public and decision-makers of the potential environmental consequences of an action. In this case the Park would ask the public to accept blindly a process that allows Park staff to add one new herbicide after another if they enthusiastically believe it to be an excellent new tool and then simply do a literature search and communicate with experts.”

(Organization, Comment #14-179100)

“This new programmatic authority is certainly precedent-setting in that no such programmatic authority has previously been allowed (to approve yet-unknown chemicals for wildland application without further public scrutiny or without re-opening NEPA analysis).”

(Organization, Comment #14-194912)

Response: In response to public comments and concerns, the park has dismissed Alternative 3 and instead revised and selected Alternative 2.

Alternative 3 included the option to add new EPA-approved and field-tested herbicides, applying concepts of adaptive management. Potential effects of new herbicide can be predicted based upon analysis of effects from past use in other areas; and from analyses of the effects from the use of herbicides with similar properties. However, for herbicides we have yet to identify, it is indeed challenging to properly present, disclose, and analyze the potential effects according to NEPA. The Selected Alternative 2 has been revised, with a protocol for the addition of new (or replacement of approved) herbicides through a NEPA process, which includes preparation of a Supplemental EA; with public scoping, specifying the purpose and need, proposed herbicide, analysis of impacts, and a 30-day public review (see FONSI and Tool Selection Protocol).

Public Concern #28199: The EA is insufficient; NPS should prepare an EIS.

“...because the current proposed action Alternative 3 would clearly be precedent-setting in scope and significance, our organizations believe that the Park is legally required to prepare an EIS as spelled out in NEPA 40 CFR 1508.27(6). (Organization, Comment #14-179103). “We support the adoption of Alternative 1 and the retention of the current policies. If the Park decides that Alternative 3 is desirable, then we strongly assert that the Park must prepare an EIS.” (Organization, Comment #14-179109)

NEPA and park decisions “need[s] to be based on known available information, field monitoring, and valid data.”(Organization, Comment #24-179273)

“As written, this document is invalid as a vehicle of NEPA. It does not evaluate full potential of impacts, does not include a full range of alternatives, and is biased towards a preferred alternative that is both misleading and oversimplified.”
(Organization, Comment #24-179268)

“Your rosy portrayal of the use of highly toxic substances is an insult to knowledgeable Americans whose lands you manage. Waiving off concerns with the flick of a wrist and painting such an unrealistic picture of potential impacts is a violation of NEPA and clearly an arbitrary and capricious action.
(Organization, Comment #24-179273)

“In general, the EA process is used inappropriately. Projects which clearly will have significant impacts have been approved on an EA with the issuance of a Finding of No Significant Impact (FONSI). The EA process seems to be favored over the more detailed EIS process because there are fewer hoops to jump through. But the intent of NEPA and the CEQ regulations gets circumvented in the process. If the EA process shows the likelihood of significant impacts, then an EIS is required. A lengthy FONSI cannot compensate for the lack of detailed analysis of alternatives, and intensive public involvement, which are provided by the DEIS and FEIS processes.”
(Organization, Comment #19-178845)

Response: When the issues and scope were initially outlined, the NPS determined that an EA would be the appropriate level of analysis. EAs are used to develop and describe alternatives, analyze and disclose predicted environmental impacts using best available data, and reach conclusions regarding significance of those impacts. The alternatives include mitigations to avoid or minimize adverse impacts to park resources and the human environment. An EA is appropriate when 1) additional analysis and public input is needed to know whether the potential for significant impact exists, and 2) preliminary analysis indicates there is no scientific basis to believe significant impacts would occur, but some level of controversy over the use of one or more environmental resources exists (DO-12 5.2).

In preparation of this EA, the NPS thoroughly reviewed the scientific and professional literature related to invasive species and herbicides, and used the best available data. The NPS consulted with experts (not employed by herbicide companies), including university invasive plant researchers, professional toxicologists, and resource managers from the NPS, US Forest Service, Bureau of Land Management, The Nature Conservancy, and Audubon Society. NPS collected geospatial invasive species data, monitored control actions for effectiveness, and performed treatment studies which helped to support and inform the writing of the *2010 IPMP Update EA*.

As required under NEPA, the NPS considered a range of alternatives in the EA, including no action. Alternatives were carefully developed and refined to adequately protect park resources from invasive species, while also protecting and avoiding impacts to human health, sensitive species, and other non-target resources (see best management practices and Mitigation Measures Table in FONSI). After revising Alternative 2 based on public comment, and reviewing the analysis of impacts in the *2010 IPMP Update EA*, the NPS has concluded that the selected action will not have a significant impact upon the human environment (see FONSI and Errata Sheets). Therefore, preparation of an EIS is not warranted.

Public Concern #28768: The NPS should conduct a public review process (NEPA) for consideration of any new /additional herbicides.

“If the Park staff desires to expand herbicide use to chemicals beyond the six spelled out in Alternative 2 (the two current herbicides and the four new additional herbicides), then any additional desired chemicals should trigger a re-opening of the NEPA process. The public must always have an opportunity to comment on a proposed action... It is legally inadequate for the Park to request or to grant approval for Alternative 3 with programmatic approval for any future herbicides that Park staff judges to be valuable as a tool.”

(Organization, Comment #14-179101)

“And there is no evidence that the Park at this time needs the authority to add unknown chemicals as desired in the future without re-opening NEPA analysis and public comment opportunities.”

(Organization, Comment #15-181385)

“We urge that a process for public involvement on a continuing basis, after the plan is adopted, be made part of the new IPMP.”

(Organization, Comment #19-194926)

Response: In response to concerns expressed by the public, the park has amended the Selected Alternative (2) with the following protocol: for addition of new (or replacement of approved) herbicides, a NEPA process would be initiated to prepare a supplemental EA, with public scoping, specification of purpose and need, proposed herbicide, an analysis of impacts, and a 30-day public review period. For emergencies, (e.g., discovery of a volatile new infestation for which approved herbicides are ineffective), the Superintendent can approve a CE for a limited effort to treat known populations with EPA- approved herbicides. Simultaneously, NPS would initiate a Supplemental EA, as above.

The NPS is also working to improve data and information sharing. Annual work plans are posted that describe which species will be treated, where and when they will be treated, and which methods will be used. The work plans also detail the results of monitoring, and the previous year’s control efforts. The public is welcome to provide comments and suggestions to help continually improve the program. Please see:

<http://www.nps.gov/yose/naturescience/invasive-plants.htm>.

Public Concern # 28435: The park should consider additional alternatives, including no action and no herbicides.

“The Park Service is charged with doing the least change to the park and I hope you will work to find other alternatives.”

(Organization, Comment #5-178803)

“You have failed to include two important alternatives, a non herbicide alternative that enlists the necessary support to effectively combat the problem of invasive and a true no action alternative.”

(Organization, Comment #24-179271)

“You do not have a true "No Action Alternative." Your action alternative is really an action alternative that continues current strategies and methodologies. A true no action alternative leaves things as they are. Please include this as a baseline alternative.”
(Organization, Comment #24-179272)

“...Yet no such reasonable alternative is considered... a no-herbicide, non-chemical treatment alternative is not available for consideration.”
(Organization, Comment #15-181345)

Response: The NPS is charged with protecting and maintaining the natural and cultural resources of Yosemite National Park (16 USC 1a-1), and park policies direct the NPS to use the well established principles of Integrated Pest Management (IPM) to guide invasive plant management planning. As required under NEPA, the NPS developed and considered a range of alternatives, including a no action (maintain current program) and two action alternatives, for controlling invasive species. All alternatives, including ‘no action,’ apply principles of IPM, which include prevention, early detection and eradication, inventory, monitoring, control, research, outreach and education. A no herbicides alternative was fully considered and analyzed in the 2008 IPMP EA, and again considered but rejected in the 2010 IPMP Update EA, for not meeting the purpose and need. Manual and cultural control methods are used in each of the three alternatives.

NPS does not take the decision to use herbicides lightly. The harmful effects of historic pesticide use have led people to be wary of the effects of chemicals in our environment. However, some invasive plants, particularly rhizomatous perennials, cannot be effectively controlled using physical or cultural control methods. Each of the actions considered – whether to manage a particular invasive species or not, or whether to use physical, cultural or herbicide control – involves its own risk to park resources, workers and the public. Best management practices and mitigation measures are in place to safeguard public, worker, and environmental health, and to reduce risks and undesirable impacts.

The NPS carefully evaluated the herbicides proposed for use; reviewing scientific and professional literature and consulting with toxicologists, resource management, and invasive species control experts. Several alternatives, including not using herbicides, were carefully considered but dismissed for not meeting the program’s purpose and need; not being more effective or less environmentally damaging than existing control options; or not adequately achieving NPS directives to protect the park’s natural and cultural resources for future generations.

Public Concern #28769: The NPS *should* adopt Alternative 3.

“Adaptive management promotes flexible decision making to allow program adjustments in the face of uncertainties and ecosystem variability. It would enable the park to respond rapidly to new challenges and to apply new tools and methods. Through the use of adaptive management, the immediate addition of four additional herbicides to control a wide range of invasive species, and addressing limitations with the current plan, Alternative 3 allows for invasive plant species control while avoiding or minimizing resource degradation, health and safety risks, and other undesirable or unintended consequences.”
(Organization, Comment #13-178824)

Response: NPS agrees that the adaptive management process described in Alternative 3 would provide the most flexibility for combating invasive species. However, in response to

public concerns about the uncertainties related to unspecified new herbicides the NPS has decided to dismiss Alternative 3. The public was especially concerned about herbicide application in water, and skeptical about the park's ability to accurately predict or prevent unintended consequences of new herbicides. The NPS has decided to amend and adopt Alternative 2 (see the FONSI and Errata Sheets). With its more conservative approach, Alternative 2 may more closely achieve the requirement to "attain the widest range of beneficial use of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences."

Public Concern #28437: The NPS should modify Alternative 2 to simply include a pre-emergent.

"If Park decision-makers decide that a pre-emergent is truly needed, then modify Alternative 2 to simply allow the Park to add such a pre-emergent herbicide to the two herbicides now approved, rather than adding three other additional new herbicides. Reject the proposal in Alternative 2 and Alternative 3 to immediately add four new herbicides to the two current herbicides now available for treatments."

(Organization, Comment #14-179104)

Response: Alternative 2 does include the addition of a pre-emergent herbicide. However, the addition of a pre-emergent herbicide was not the only need identified following the implementation of the 2008 Plan. At least ten new invasive plant species have entered the park in each of the last three years. Some invasive plants, especially rhizomatous perennials, cannot be effectively controlled without the use of herbicides. Others, such as members of the mustard family, cannot be easily controlled using the herbicides approved under that plan. Park managers chose four additional herbicides, including the pre-emergent *rimisulfuron*, that fulfill control needs not addressed by the currently used herbicides, and that best address the diverse challenges the park expects to face in the near future.

Subject: Proposed Action/Purpose & Need/Plan Implementation

Public Concern #28431: The NPS should provide data demonstrating the need for this plan update; NPS should allow the 2008 IPMP time to demonstrate its effectiveness.

"Park decisions tied to NEPA need to be based on known available information, field monitoring, and valid data. There is no evidence that herbicides should be allowed to be applied to the edge of water because even Park staff acknowledges that for the vast majority of blackberry bushes, chemicals can be applied during the driest time of year when water is not directly adjacent."

(Organization, Comment #15-181382)

The EA does not provide any evidence that the additional chemicals to be approved by Alternative 2 are essential or necessary."

(Organization, Comment #14-179090)

As based on NEPA, . . . there is no evidence or reason provided in the EA why four additional chemicals are necessary to manage invasive plants within Wilderness areas in the Park."

(Organization, Comment #14-179099)

Response: Within one year of implementing the 2008 IPMP EA, it became clear to program managers that restrictions in that plan made it difficult to respond effectively to new

problems, and also prevented us from using the best tools available to protect park resources. For example, the two herbicides allowed for use under the *2008 IPMP EA* are not effective in all current or reasonably expected future situations. We have not had success using glyphosate to control velvet grass and we would like to conduct a field trial to test the pre-emergent herbicide *rimsulfuron* to see if it is more effective. The 2010 IPMP Update EA was created to address issues such as this and to better protect natural and cultural resources from non-native invasive species. The management actions and tools described in the plan are based upon scientific research, field experience, consultations with independent toxicologists, invasive species and other subject-matter experts, as cited in the EA.

A rigorous survey, mapping, and monitoring protocol was initiated with the funding received for the implementation of the *2008 IPMP Plan*, giving resource managers a more detailed understanding of the magnitude of the threat posed by invasive species to park resources. Ten or more new invasive plant species have been found in the park each year (including an invasive plant new to California), and more than 6,000 individual invasive plant infestations were documented since 2008, largely medium-high and high priority species. Also, 13 acres of Himalayan blackberry and 11 acres of velvet grass were mapped within 10 feet of water. Waterways are vectors for spreading invasive species, and these survey results led resource managers to conclude that there is a real need to be able to treat these riparian infestations to prevent them from spreading.

The four herbicides analyzed in the *2010 IPMP Update EA* were selected in order to address the widest possible range of potential needs. Triclopyr is especially effective for woody broadleaved species, such as tree of heaven and other escaped ornamental perennial species in El Portal. Chlorsulfuron works especially well to control invasive mustards and toadflaxes, both of which occur near Yosemite. Imazapyr, like glyphosate, can be used in riparian situations, since it is aquatic-approved. However, imazapyr is more selective than glyphosate. Rimsulfuron is a pre-emergent that is more effective than existing herbicides for controlling annual grasses.

In response to public comments and concerns, the NPS is improving data and information sharing regarding the program. The program web page has been expanded. An annual work plan is posted online, along with maps of proposed treatment areas. The plan describes which invasive species will be treated, and treatment locations and methods. It details the results of monitoring, and of the previous year's control efforts. Additional monitoring is being done to ensure no unintended adverse effects, and to allow for corrective actions to be implemented, if necessary. The public is welcome to provide comments and suggestions on our webpage and through PEPC, to help continually improve our program. Please see: <http://www.nps.gov/yose/naturescience/invasive-plants.htm> and http://parkplanning.nps.gov/YOSE_2010_IPMP

Subject: Wild and Scenic Rivers

Public Concern #28507: The NPS should follow the regulations of the Wild and Scenic Rivers Act in developing the IPMP.

“The use of herbicides along the Merced River is especially troubling in view of the river's Wild and Scenic status. Unlike an irrigation canal which can be "sterilized" in order to control plants which may be restricting the flow of water, the Merced River is part of a relatively natural

ecosystem. Management should strive to restore it to an even more natural state, and allowing herbicides to impact the river would not be acceptable.”
(Organization, Comment #19-194923)

Response: Protecting resources such as water quality and the ORVs of the Wild and Scenic River are a top priority of NPS and Yosemite’s Invasive Plant Management Program. Best management practices and mitigations are included in the selected alternative to protect these special resources.

The NPS reviews the necessity of conducting a Section 7 determination for any proposed water resource projects that may affect the beds and banks of Wild and Scenic Rivers pursuant to the Wild and Scenic Rivers Act. This determination ensures that actions do not affect free flow, and do not directly and adversely impact the Outstandingly Remarkable Values (ORVs) for which the rivers were designated. A water resources project is any dam, water conduit, powerhouse, transmission line, or other works project under the Federal Power Act, or other developments, that would affect the free-flowing character of a wild and scenic river. It also includes activities that require a Section 404 permit from the U.S. Army Corps of Engineers (IWSRCC 1999). Because managing invasive species, including the use of herbicides, does not qualify as a water resource project, a formal Section 7 determination is not applicable. The NPS anticipates that there will be no effects to the beds and banks of the Wild and Scenic Rivers, or to their free flow; nor will it directly or adversely affect the ORV for which the rivers were designated.

Invasive species can degrade and even completely displace native riparian plant communities and their dependent wildlife. Such degradation and displacement has been well documented in other riverine habitats throughout the United States. Guided by the principles of IPM, invasive plant management in Yosemite includes a variety of control options including prevention, restoration and manual, cultural, and herbicide control. Herbicides are in some cases the only effective tool for removing aggressive invasive species like Himalayan blackberry from such areas.

Subject: Rare, Threatened, & Endangered Species/ Aquatic Species

Public Concern #28516: The NPS must not use methods that harm protected or sensitive species, especially amphibians.

“It is critical that rare and threatened species of wildlife are protected from toxins and I am particularly concerned about the amphibians like the tree frogs and Sierra Nevada Yellow Legs. Amphibians and changes in their populations have been critical indicators of toxins in the environment. I would not like to see any frog populations wiped out before it was discovered that the 4 herbicide options in Alternative Plan 2 had wiped any amphibian species in a few years. I would support the option which most greatly restricts the use of herbicides near the habitats of the threatened frog and other amphibians for at least 5 years.”
(Organization, Comment #1-178796)

“Restrictions on formulations containing surfactants that present an increased threat to aquatic life should be in force”

(Organization, Comment #20-181314)

Response: The protection of rare, threatened, and endangered species is fundamentally important to the NPS and the Invasive Plant Management Program. NPS consults with the US Fish and Wildlife Service regarding federally listed species to ensure that projects will not adversely affect listed or proposed species, or critical habitat (See Chapter V, 2010 IPMP Update EA and Consultation and Coordination, US Fish and Wildlife Service, FONSI). Mitigation measures have been developed and reviewed by park and USFWS wildlife biologists, and are included in all action alternatives to avoid impacts and protect sensitive species (See Mitigation Measures Table, and Tool Selection Protocol, FONSI). During work planning, program managers work closely with park wildlife biologists to schedule activities and identify appropriate methods to avoid impacts to special-status species or their habitats (e.g., California red-legged frog, western pond turtle, Sierra Nevada yellow-legged frog, Yosemite toad, great gray owls, valley elderberry longhorn beetles, and other park wildlife species of concern). These precautions allow resource managers to implement treatments needed to restore native habitat, while avoiding adverse impacts to sensitive wildlife.

Measures to protect amphibians and other sensitive species include using only aquatic herbicide formulations in wetlands, riparian areas and near water, implementing treatments at the lowest possible water levels, and not applying herbicides directly in or over water. Also, scheduling applications to avoid critical periods of wildlife activity and using low-volume and target-directed application methods will avoid unintended harm.

Amphibian-specific herbicide risk studies indicate that when used properly, the herbicides currently used and proposed for use in the park pose no significant toxicological risk to amphibians, see Chapter III and Appendices G 2010 IPMP Update EA. This is because these herbicides have low toxicity to vertebrates, which do not share the same physiological mechanisms that make them effective at controlling invasive plants. Aminopyralid, for example, binds to plant auxin receptor sites, thus preventing that plant hormone from triggering the growth of plant cells. The hormone auxin does not trigger growth responses in vertebrates.

Subject: Wilderness

Public Concern #28217: The NPS should not use herbicides to control invasives in Wilderness. Methods should be consistent with Wilderness regulations.

“I am also opposed to herbicide spraying in Yosemite Wilderness.”

(Individual, Comment #9-178812)

“The Wilderness Act of 1964 emphasizes in the definition of Wilderness that it is an area untrammelled by man. Conditions where Congress wanted to allow trammeling, such as with “fire, insects, and disease” (Sec. 4(d) (1)) are specified. If herbicides are used in designated Wilderness it would set a new precedent for trammeling not specifically provided for in the Wilderness Act. Therefore it is incumbent on the agency proposing the use of herbicides in

Wilderness to recognize it must assure the public the problem is severe and there are no alternatives.”

(Organization, Comment #20-181323 and #16-179119)

“All actions will require strict Wilderness "minimum tool" protocols throughout the entire eradication efforts and no actions involving aircraft or mechanized equipment for ground access may be considered”

(Organization, Comment #20-181327)

“Within Wilderness where invasive noxious plants are found all reasonable mechanical means must be employed first as the preferred alternative to control these invaders. If significant attempts employing mechanical control measures fail or have been proven to be ineffective following extensive failed efforts to eliminate the extensive subterranean tissues of many invaders outside wilderness, alternative chemical control methods could be considered to control this dire and expanding threat to Yosemite's Wilderness native plant communities.”

(Organization, Comment #16-179120)

“Our organizations oppose any herbicide use in Wilderness areas of Yosemite National Park or any other wilderness area on public lands. But IF the Park absolutely insists that herbicides be available for such use within Wilderness, two herbicides can already be used in Wilderness.

(Organization, Comment #14-179099)

“Reject the proposal in Alternative 2 and 3 to expand the number of herbicides to be allowed for use in Wilderness areas.” “Both Alternative 2 and Alternative 3 would allow at least six different herbicides to be applied in officially designated Wilderness areas. CSERC adamantly believes that chemical treatments in Wilderness violate the intent of the Wilderness Act and are not justified.”

(Organization, Comment #14-179093 and 179107)

“I am opposed to Yosemite using other than the previously approved herbicides...Removing exotic plants with herbicides, especially in wilderness areas or near water, is a treatment that can be worse than no treatment.”

(Individual, Comment #9-178811)

Response: The Wilderness Act of 1964 established regulations to protect Wilderness, and provides guidance for preserving wilderness character. Wilderness stewardship in Yosemite is further guided by NPS Management Policies (Chapter 6, NPS 2006), Director’s Order 41 (currently in review), and Reference Manual 41. Management actions proposed in Wilderness must be appropriate for preserving one or more of the qualities of wilderness character including *untrammelled, undeveloped, natural, outstanding opportunities for solitude, or primitive and unconfined recreation*, or other components that reflect the character of the park’s wilderness.

Invasive species, because they degrade and/or displace native plant communities in wilderness, pose park-wide and long-term threats to both the natural quality of wilderness character, and the ability of park visitors to experience a primitive landscape. Ninety-five percent of Yosemite National Park is designated Wilderness, and the management of invasive species is necessary to protect wilderness character of this valued resource. The

spread of noxious weeds in Wilderness is partly caused or enhanced by human actions (seed introduction, spread along trails and in campsites, etc.). To allow these species to continue to spread would be a direct sign of unintentional human influence. A *Minimum Requirements Analysis* (MRA) was conducted for an IPM-based program for managing invasive species in Wilderness that includes physical, cultural and herbicide control methods (see FONSI). MRAs are posted with the annual work plan on the program's webpage and on PEPC, <http://www.nps.gov/yose/naturescience/invasive-plants.htm>.

In conducting the MRA, it was determined that physical, cultural and herbicide control methods for invasive species could each result in local, short-term, and negligible to minor negative impacts to the various aspects Wilderness character. However, protecting native plant communities from invasive species would provide long-term and parkwide benefits to Wilderness character. Section 4(c) of the Wilderness Act states that "if a compromise of wilderness resource or character is unavoidable, only those actions that preserve wilderness character and/or have local, short-term adverse impacts will be acceptable." Each of these methods could be considered the *minimum tool*, depending upon which method is most appropriate for controlling a particular species. Herbicides, while a powerful tool, are not prohibited under Section 4 (c) of the Wilderness Act, which regulates those actions "necessary to meet minimum requirements for the administration of the area for the purpose of this Act." Herbicides are appropriate for control of species such as rhizomatous perennials, which cannot be effectively controlled using only cultural and physical methods.

Public Concern #28497: The NPS should allow for a period of public review prior to applying herbicides in Wilderness.

*"...[I]f Park staff determines that herbicide use is necessary in Wilderness, that the Park provide that information to the public and allow a public review period to provide input. [Our organization] supports this proposal."
(Organization, Comment #15-181380)*

*"... IF the Park expands the list of approved herbicides to include a third chemical, to mitigate for the potential increase in new environmental risks (including non-target plants being affected by a pre-emergent application), it is only reasonable for the Park to approve a public review period for any application of herbicide in a designated Wilderness area."
(Organization, Comment #15-181381)*

“In each case where herbicide use is proposed in Wilderness a special public review period should be required to present a dire need, and to propose an appropriate herbicidal alternative to the attempted and failed mechanical control efforts. In that review including consultations with non vested technical experts in herbicide use, the efficacy and safety of the proposed herbicidal agent would be discussed, including details of product distribution and proposed hand application techniques. All actions will require strict Wilderness "minimum tool" protocols throughout the entire eradication efforts and no actions involving aircraft or mechanized equipment for ground access may be considered. Following review there must be general public and technical expert agreement that a judicious hand application spot treatment is appropriate and essential and is the only reasonable and practicable alternative to protecting Yosemite's Wilderness plant communities from these noxious invasive plants.”
(Organization, Comment #16-179121)

Response: The NPS acknowledges the desire for more specific information on herbicides and methods in Wilderness and throughout the park, and the ability to review and comment. The public will have a formal opportunity to review and comment if the park proposes to add any herbicides for use anywhere in the park beyond those approved in the Selected Alternative 2. NPS is also adding steps to improve information sharing, see Tool Selection Protocol in the FONSI and visit the park's Invasive Plant Management website: (<http://www.nps.gov/yose/naturescience/invasive-plants.htm>) The annual work plan, which is prepared each winter and posted on the park's Invasive Plant Management website, provides information on planned treatments for various invasive plants, with selected methods, including specifying which herbicides, if applicable, and approximate schedule.

We hesitate to add another formal public review specifically for each time an approved herbicide is planned for use in Wilderness, however. Wilderness comprises 95% of the natural areas managed within Yosemite National Park. Such intensive review would further complicate what is already a very thorough annual work planning effort, and it would also divert very scarce resources away from actual invasive plant control efforts. A programmatic MRA has been prepared to cover most types of anticipated invasive plant treatments to be conducted in Wilderness, which is included in the FONSI. Any additional MRAs would be prepared as needed, during annual work planning, and posted for public viewing along with the work plan. Public comments on MRAs and work plans continue to be welcomed, and are reviewed and considered by the program manager and resource specialists when developing each year's work plan.

Subject: Public Health and Safety Concerns

Public Concern #28413: NPS should not use herbicides because of safety issues.

“I am concerned about the untested nature of new herbicides, and urge you to consider keeping the '08 plan in effect. It can take a long period of time for adverse reactions to become known and I do not think Yosemite National Park is the best place to experiment with unproven, untested herbicides.”

(Individual, Comment #3-178799)

“There is no reason to think that herbicides would be exempt from this law of unintended consequences. But this does not seem to temper NPS enthusiasm for using herbicides which lack extensive track records.”

(Organization, Comment #19-194925)

“Concern over the damage which invasive species can do to native ecosystems seems greater than concern for the risks which might be incurred in an attempt to control the invasive species....The NPS needs to recognize that there is collateral damage from the use of herbicides.”

(Organization, Comment #19-194925 and #178841)

“I am totally opposed to Alternative 2 or 3 - you people are not thinking clearly. There are no SAFE chemicals. Why not use humans to rid the park of these invasive plants, use something other than chemicals for sure. People need to work, put them to work.”

(Individual, Comment #21-178829)

“New chemical agents under consideration for use in the invasive plant management program must be thoroughly reviewed by non vested technical experts for efficacy, impacts to non target plant and animal species, mobility, human toxicity, and other adverse environmental factors. If a new agent meets these criteria and there is no reasonable concern or information that it would be harmful to humans or the environment it should be included as an additional tool to control these damaging invaders.”

(Organization, Comment #16-179117)

“I do understand that invasive species of plants has become a problem, in many areas of our country, but wholesale use of a variety of chemicals is not the answer. Much more research and testing should be conducted to ensure no lasting harmful effects to the rest of the ecosystem.”

(Organization, Comment #17-178827)

“I would urge you not to expand the use of herbicides within Yosemite or any other National Park. Independent studies have proven they stay in the environment much longer than claimed by the manufacturer.”

(Individual, Comment #8-178808)

Response: The NPS acknowledges these concerns and takes human health and safety of visitors, residents, and staff very seriously. In preparation of this plan, park resource specialists conducted a thorough review of scientific and professional literature on invasive plant management, and also the potential human and ecological effects for each of the herbicides and surfactants currently used or proposed for use. Findings are summarized in Appendix G of the 2010 Update. The herbicides chosen for use in the park have been reviewed and approved by the US and California EPA and are among the safest available. The relatively low toxicity of these herbicides was weighed against the very real threat posed by invasive species to park natural and cultural resources. The review included the very comprehensive U.S. Forest Service U.S. Forest Service Human and Ecological Risk Assessments, and similar assessments. The risk assessment process uses “worst case scenarios” that typically involve very conservative assessments where non-target organism exposure is estimated at the highest levels over large areas. In these assessments, the herbicides currently used or approved for use in the park were found to have a very low risk of non-target effects. Herbicide modes of action generally involve the interruption or

alteration of specific plant cellular, enzymatic, and other physiological functions. Since mammal, amphibian, bird, and invertebrate species do not possess these physiological functions, the risk posed to them by the herbicide is generally very low.

Also, because only targeted applications of herbicides will be made directly to invasive plant populations, and not landscape-scale applications as in forestry and agriculture, both human and wildlife exposure levels can reasonably be expected to be far lower than those used in the USFS and other risk assessment processes.

Crews are trained and carefully follow best management labeling and practices as described in Appendix I of the 2010 IPMP Update EA. Crews also monitor to ensure no unintended adverse effects occur, and to be able to implement corrective action if necessary. We have updated the Tool Selection Protocol and Mitigation Measures (See FONSI), to clarify steps taken under all alternatives to ensure public health and safety.

Public Concern #28416: NPS should only use herbicides that have been thoroughly tested for safety.

“New chemical agents under consideration for use in the invasive plant management program must be thoroughly reviewed by non vested technical experts for efficacy, impacts to non target plant and animal species, mobility, human toxicity, and other adverse environmental factors. If a new agent meets these criteria and there is no reasonable concern or information that it would be harmful to humans or the environment it should be included as an additional tool to control these damaging invaders.”

(Organization, Comment #16-179117)

“I do understand that invasive species of plants has become a problem, in many areas of our country, but wholesale use of a variety of chemicals is not the answer. Much more research and testing should be conducted to ensure no lasting harmful effects to the rest of the ecosystem.”

(Organization, Comment #17-178827)

Response: The NPS analyzed possible herbicide human health and ecosystem effects in the 2010 IPMP Update EA of four proposed and two currently-used herbicides. The scientific and professional literature were reviewed. Toxicologists, chemists, plant physiologists, resource managers, and university researchers were consulted. The NPS also reviewed in-depth human and ecological risk assessments conducted by the U.S. Forest Service and other agencies on currently used and proposed herbicides—see Chapter III and Appendix G of the 2010 IPMP Update EA. The NPS determined that these herbicides are safe for use in the park when used according to product label requirements.

Members of the public expressed concerns about specific chemicals, such as chlorsulfuron, which can be mobile and can persist in high pH environments. However, according to the Soil Survey of Yosemite National Park, California (US Department of Agriculture 2007), only one of the over 50 soil series listed for the park, the Tuolumne series (pH 7.4) is even slightly alkaline. The rest are neutral to strongly acid. The chlorsulfuron label states that chlorsulfuron should not be used in water. In Yosemite, chlorsulfuron will not be used in wetlands or within 10 feet of water.

Conclusions in the technical literature vary regarding the environmental fate of triclopyr. Triclopyr generally breaks down quickly in water and is only somewhat prone to lateral movement in soil (Ganapathy 1997, Stephenson et al. 1990). Reported half lives generally range from 12 days to several months (Ganapathy 1997, Washington Department of Ecology 2004). Half lives in anaerobic soils can be far longer; up to 314 days in rice paddy soils (Washington Department of Ecology 2004). Such anaerobic soils are not common in Yosemite.

While there may be some potential non-target effects from the use of these herbicides, the herbicides chosen for use in the park are the safest available, and the NPS has determined that potential risks will be negligible to minor, short term, and localized. While there may be some potential non-target effects from the use of these herbicides, the herbicides chosen for use in the park are the safest available, and the NPS has determined that potential risks will be negligible to minor, short term, and localized. Based upon this review and compared to the potential permanent and major negative ecosystem effects resulting from the continued spread of invasive species, these effects are relatively minor.

Additional References:

United States Department of Agriculture, Natural Resources Conservation Service. 2007. *Soil survey of Yosemite National Park, California*. Retrieved from: http://soildatamart.nrcs.usda.gov/Manuscripts/CA790/0/Yosemite_CA.pdf

Washington Department of Ecology. 2004. *Environmental Impact Statement (EIS) for Permitted Use of Triclopyr*. Olympia, WA. Retrieved from: <http://www.ecy.wa.gov/pubs/0410018.pdf>

Public Concern #30684: NPS should not use R-11.

“The analysis incorporated into the risk assessment for acute and chronic non-endocrine toxicity is unrealistic, do not reflect current scientific understanding of expected effects, and misrepresent potential risk from R-11.”
(Organization, 24-179274)

Response: Yosemite National Park does not use R-11. Instead, we use *Agridex*, a biodegradable, very low-toxicity, non-ionic surfactant. Its toxicity was analyzed in Appendix G of the 2010 Update.

Subject: Methods: Data Reporting

Public Concern #28429: The NPS should provide data demonstrating that the current program is inadequate, justifying the need to add more herbicides, and the need to use them in Wilderness.

“There is no resource or administrative justification for expanding the list of approved herbicides for use in the Park by four new herbicides (rimsulfuron, chlorsulfuron, triclopyr, and imazapyr).”
(Organization, Comment #14-179090)

“Park management, especially when it comes to applying chemicals into the Park environment, should be based on field data and existing evidence.”

(Organization, Comment #15-181386)

“If you have the science to indicate that this proposal could be done without serious risk and clearly would be more efficacious than the current, more moderate plan that would be one thing. However, if you do not have this information clearly in hand, I suggest the new plan be applied to a test are and then be thoroughly evaluated before extending it to larger areas.”

(Individual, Comment #22-178830)

“The 2008 plan (Alternative 1) allows the use of two chemical herbicides. Since these have not been used (or shown to be useful) in the Wilderness, there is no evidence that additional chemicals are needed in these areas (Alternative 2 and 3).”

(Organization, Comment #23-179035)

Response: In response to public comments and concerns, the NPS is improving data and information sharing regarding the program. The program web page has been expanded. The annual work plan, which is available online along with maps of proposed treatment areas, describes which invasive species will be treated, and treatment locations and methods. It also details the results of monitoring, results of the previous year’s control efforts, and observations. Please see: <http://www.nps.gov/yose/naturescience/invasive-plants.htm> and http://parkplanning.nps.gov/YOSE_2010_IPMP

With major new funding which NPS received to implement the 2008 IPMP, managers were able to conduct a more rigorous survey, mapping, and monitoring program. This gave resource managers a more detailed understanding of the magnitude of the threat posed by invasive species to park resource. More than 6,000 separate infestations were documented in the first two field seasons, largely of medium-high and high priority invasive species. Ten new exotic plants were recorded from within the park each year, for three years, including an invasive plant new to California from Yosemite Valley in 2010. Some 13 acres of Himalayan blackberry and over 11 acres of velvet grass were mapped within the bed and banks of a wild and scenic river or within 10 feet of standing and moving water. The success of various treatment methods was also assessed and documented, which increased resource managers’ understanding of some aspects of the threat posed by invasive species. Results will be presented each year in the annual work plans, which are available on line along with the treatment maps.

Management experience in Yosemite National Park has shown that Himalayan blackberry and velvet grass are not effectively controlled using physical or cultural methods at the scale of the infestations in Yosemite. Also, the two herbicides allowed for use under the 2008 IPMP EA are not effective in all current or reasonably expected future situations. Resource managers recognized the need for the ability to treat invasive species near water. Also, the four herbicides analyzed in the 2010 IPMP Update EA were selected in order to cover the widest possible range of potential needs. Rimsulfuron is a pre-emergent that is effective for the control of grasses such as cheatgrass. Yosemite wants to conduct a field trial to test this herbicide on velvet grass since our glyphosate trials have not worked. Triclopyr is especially

effective for woody broadleaved species, and could be more effective in the control of escaped ornamental perennial species in El Portal. Chlorsulfuron works especially well to control mustards and toadflaxes, both of which occur near to the Yosemite boundary. Imazapyr can be used in aquatic situations but is more selective than glyphosate.

Subject: Methods: Using and Choosing Herbicides

Public Concern #28204: The NPS should use control methods other than herbicides.

Public Concern #28205: The NPS should emphasize manual or mechanical methods for controlling invasives.

Public Concern # 28391: The NPS should follow the “Minimum Tool” concept in selecting methods for controlling invasive species.

“With literally hundreds of volunteers and large numbers of Park employees available to apply hand pulling, digging, and other non-chemical treatments in the strip adjacent to water, there is no valid reason to throw out the 10' buffer strip that is currently intended as a no-chemical-treatment zone. Alternative treatments to invasive plants in those localized, very site-specific locations can be identified and implemented - eliminating the risk of applying chemicals so close to water.”

(Organization, Comment #14-179097)

“I do understand that mechanical means to remove invasive species has not been very successful in some cases and other measures need to be considered. However, I would like a plan that would have more emphasis on other aspects of an Integrated Pest Management Plan such as prevention of introduction, early detection and mechanical means with, a more moderate approach to implementation of more intensive herbicide use.”

(Individual, Comment #18-178833)

“...Yosemite National Park staff and key officials at the Park have accepted and promoted the role of the Park serving as an iconic emblem of a natural ecosystem free from chemical contamination. Accordingly, chemical treatments should only be a tool of last resort, rather than simply one of many tools in the tool bag available for staff to apply.”

(Organization, Comment #14-179089)

“The introduction of weeds and other alien species to that environment is a problem that must be mitigated, but the Park Service should take a page from Wilderness management here, and follow the principle of “Minimum Tool.”

(Individual, Comment #11-178817)

Response: Yosemite’s Invasive Plant Management Program does use a variety of methods and tools to control invasive species. Invasive plant management planning is based upon the established principles of Integrated Pest Management (IPM), which include prevention, early detection and eradication, inventory, monitoring, control (cultural, manual, mechanical, limited biological and herbicide), research, outreach and education. Prevention and early detection and eradication are the most effective methods for protecting park resources from

invasive species. Inspection programs are implemented to ensure that materials and heavy equipment that enter the park are weed free. Early detection is essential because eradication is often only possible while invasive plant infestations are still small. Also, with early detection, less herbicide is needed for effective control, rather than if these infestations are allowed to grow and spread.

Manual control continues to be an important part of the invasive plant management program at Yosemite National Park. Staff and volunteers dedicate hundreds of hours a year to manually controlling invasive species. However, given the physical difficulty of this work, it is important that their effort and energy be spent controlling species such as common mullein and bull thistle for which manual efforts are likely to succeed, rather than species such as Himalayan blackberry for which manual control methods have been shown to not work.

Each of the control methods and tools described here has costs and benefits. For example, a species might require multiple manual control efforts over many years for successful control. The repeated site visits necessary to control a species could result in trampling of non-target species. Also, invasive plant management funds vary tremendously from year to year. If a treatment is missed and a plant is allowed to disperse its seeds, all of the gains from previous years control efforts could be lost. The NPS understands the concerns that people may have about herbicides. However, the spread of non-native invasive species has resulted in the degradation and even loss of native plant species and communities. The 2010 IPMP Update EA describes a program that uses the most effective methods and tools, that are also safe for humans and the environment, to protect park natural and cultural resources from non-native invasive species.

Public Concern #28414: NPS *should* use herbicides to control invasive species.

“It is much more cost effective to be pro-active and prevent the dissemination of an invasive species than to try to control and eradicate it after the fact. Otherwise there is a very real possibility that the Park will continue to provide an avenue for the proliferation of invasive plant species, not only in the areas where they currently exist, but also into new areas of the Park and onto adjacent private lands as well as public right-of-ways outside the Park boundaries.”
(Organization, Comment #13-178822)

“The need to consider using promising new herbicidal agents to increase the effectiveness of the Park's eradication and control efforts outside designated Wilderness is supported by our Committee. There is an urgent need to employ all reasonable technologies and new promising herbicidal agents available to control or eliminate the many noxious exotic invasive weed species invading and disrupting Yosemite's natural ecosystems. New agents may have the potential to have even fewer impacts and greater efficacy than those in current use. Eliminating new products from consideration now because years of environmental review and field testing data are not available while invasive noxious exotic plants are aggressively degrading and destroying Yosemite's natural resources would not be in the best interest of protecting the Park's endangered native plant communities.”
(Organization, Comment #16-179116)

“We have not changed our basic position supporting the control of exotic invasive plants with fully vetted appropriate herbicidal agents.”
(Organization, Comment #20-181306)

Response: Non-native invasive species are a fundamental threat to the natural and cultural resources of Yosemite National Park. The NPS concurs that herbicides, along with manual, mechanical and cultural controls, are appropriate and effective tools for controlling invasive species. We agree prevention is very important, and we devote a significant amount of effort to that strategy, but it alone provides insufficient protection for park resources. Therefore, we need the capability to respond to those weeds that slip through our first line of defense.

Subject: Preferred Alternative: Concerns Regarding Herbicides in or near Water

Public Concern #28210: NPS should not use herbicides in water

“No evidence is presented that any aquatic invasive plant is currently resistant to all treatments except for aquatic applications of herbicide. No “need” for chemical treatment directly in water is ever proven. Our organizations believe that the application of chemicals into wetlands, streams, lakes, ponds, or rivers in Yosemite Park is not currently justified nor is it consistent with the mission of Yosemite National Park. We ask for clear evidence that such treatments are currently essential, rather than just a “worst case” imagining done by those who want the broadest number of chemical tools for their work.”
(Organization, Comment #14-179102)

“[Our organization] believes that the application of chemicals into wetlands, streams, lakes, ponds, or rivers in Yosemite Park is not currently justified nor is it consistent with the mission of Yosemite National Park except for unique circumstances when proven to be ecologically necessary.”
(Organization, Comment #14-179095)

“Applications in wetland areas should be done wherever possible in late season when surface water is not present. Where invasive plants occur near standing or running water, application should be done exclusively by especially trained NPS personnel using extreme caution to avoid contact with water. Restrictions on formulations containing surfactants that present an increased threat to aquatic life should be in force. In the case of an invasive aquatic plant posing a dire threat to Yosemite's aquatic environment, and all efforts to control the invasion by mechanical means have been attempted without success, a separate special public review period would be required for any aquatic herbicidal use and then only after all practical alternative control measures have been attempted and found ineffective in controlling the invasive aquatic plant.”
(Organization, Comment #16-179118)

“I find issue with other things that were mentioned that seemed to be specific to Alternative 3. One was the use of herbicides to control invasive species up to the water's edge with the possibility of actual aquatic use with no mention of how the harm to aquatic species would be minimized.”
(Individual, Comment #18-178831)

“The Park is asking for authority to applied undefined, unnamed chemicals into water once the Park staff develops criteria is not fully obvious except to those who painstakingly analyze the document”

(Organization, Comment #15-181364)

Response: The NPS acknowledges these concerns, and takes water quality protection very seriously. In response to public concerns, NPS is no longer considering the direct application of herbicides to water under this plan, which was presented as a treatment option in Alternative 3. Best management practices and mitigations are in place to ensure that water quality is protected at all times, for all treatment and control methods. Also in response to public concerns, to verify that water quality is not degraded or adversely affected by herbicide application near water, under the Selected Alternative 2, water samples will be collected and analyzed (before and after treatment of the two largest patches of riparian blackberry in Yosemite Valley).

A number of aquatic invasive species of serious concern currently occur in the Central Valley just west of the park. Should an aquatic invasive appear in the park for which an aquatic herbicide is considered necessary, the Superintendent and the public would be notified, and a NEPA process would be initiated, following protocol described in the FONSI (see Tool Selection Protocol).

Public Concern #28209: NPS should not use herbicides near water.

“I am concerned to learn of the possibility of herbicides being applied right up to the edge of waterways in Yosemite. My understanding is that no data proves that it is necessary to apply such chemicals right up to the water's edge. Such applications risk danger to amphibians and other sensitive species.”

(Individual, Comment #10-178813)

“In no case should herbicides be applied within the National Wilderness Preservation System Wilderness Areas, or up to or into the waters of the National Park. The current IPMP allows the limited application of two herbicides, to within 10 feet from water, which I think is not prudent. I would support a 200 foot buffer from all water sources and saturated soils. In Wilderness, we enforce a 100 foot from water camping restriction to protect the water and riparian area from damage and pollution.”

(Individual, Comment #11-178818)

“Our three organizations strongly oppose the elimination of the 10' no-treatment buffer along the edge of water. If a revised EA was developed with an alternative that only allowed glyphosate to be applied in that buffer zone, and never any closer than 5' from water, and only when all other treatments have been first pursued, then the resulting alternative might be a middle ground solution that minimized water quality risk while allowing some additional flexibility for treatments. To eliminate any buffer from the edge of water is unjustified.”

(Organization, Comment #14-179098)

“Park decisions tied to NEPA need to be based on known available information, field monitoring, and valid data. There is no evidence that herbicides should be allowed to be applied

to the edge of water because even Park staff acknowledges that for the vast majority of blackberry bushes, chemicals can be applied during the driest time of year when water is not directly adjacent.”

(Organization, Comment #15-181382)

“I support alternative #1, limiting herbicide use to two of the safest, least controversial brands, and keeping a 10 foot buffer zone free of chemicals along all water resources.”

(Organization, Comment #17-178826)

“The use of herbicides along the Merced River is especially troubling in view of the river's Wild and Scenic status. Unlike an irrigation canal which can be "sterilized" in order to control plants which may be restricting the flow of water, the Merced River is part of a relatively natural ecosystem. Management should strive to restore it to an even more natural state, and allowing herbicides to impact the river would not be acceptable.”

(Organization, Comment #19-178843)

Response: The NPS takes the protection of water quality very seriously and acknowledges concerns that precautions should be taken when herbicides are used near water. The NPS is also aware that risks posed by herbicide use must be weighed against the threats that non-native invasive plants pose to wetlands, lakes, and streams. When deciding the most appropriate tool to treat invasive plants, park managers consider potential impacts to riparian areas and the efficacy of physical and cultural control methods relative to the use of herbicides. Procedures for protecting water quality include proper training, awareness of sensitive resources, the use of aquatic herbicide formulations near water and in wetlands, applying herbicides during dry season where practicable, focused applications directly to target species, and using alternative methods near sensitive resources as needed such as hand-pulling, digging, cut and dab, etc.

Limiting herbicide use to outside a 10-foot buffer would not allow park managers to protect natural resources from some of the species that spread along river corridors. Riparian areas are a primary path for the spread of invasive species. As of November 2010, more than 11 acres of velvet grass and 13 acres of Himalayan blackberry were documented within the no-treatment buffer area within the park. Neither of these species can be reasonably controlled using manual or mechanical control methods, certainly not at this scale and terrain complexity. The use of control methods that are actually effective, combined with early detection and rapid response, is the best way to protect the park's resources from such species.

To address concerns raised during the public comment period regarding the use of herbicides near water, monitoring will be done following treatment of the two largest patches of blackberry in riparian areas. Park managers also conducted thorough literature reviews on this subject, and had discussions with toxicologists, land managers and university professors, as well as exchanged information with many other subject matter experts. NPS staff worked with the Staff Environmental Scientist with the California Department of Fish and Game to develop a monitoring protocol and hazard quotients for the herbicides used or proposed for use in the park. These quotients are estimated levels for site-specific herbicide exposure below which no adverse health effects are likely to occur. Should herbicides be detected in water following monitoring at levels above the hazard quotient, herbicide application would

halt and application protocols would be reassessed and changed (see Tool Selection Protocol and Mitigation Measures, FONSI).

Subject: Cultural Resources and Concerns of Culturally Associated American Indian Tribes and Groups

Tribal Concern #30725:

“We realize that in some instances herbicide use may be necessary but also want to emphasize that herbicides applied to culturally significant plants could have dire health effects on our Tribal Citizens.”

(Tribal Government, Comment #26-182291)

Tribal Concern #30731:

“I think that it is critical to isolate [cultural resource] areas from spraying.... It is realistic that not everyone, based on ethnicity and other factors are affected equally by exposure to outside elements ranging from vaccines to food additives. This needs to be taken into account when considering the use of herbicides where the park visitors and native people might be exposed. Manual labor and reintroducing resilient native species will need to be the priority in the protected corridors set aside for harvesting or foraging.”

(Organization, Comment #1-178798)

Tribal Concern #30734: The NPS should use cut and dab herbicide application rather than backpack sprayers to control invasive plants near raspberry, horsetail, and other cultural use plants.

“We are okay with what you all are doing and the applications and techniques you are using in certain places depending on . . .the type of weeds [and their invasiveness]. . . the only other thing . . .on the last stop. . . I pointed out the raspberry and horsetail and maybe a few other things that could be on the border. . . I would suggest that cut and dab technique [be used] on the border around these plants, and then spray the rest.” And please “. . .keep us up on the monitoring and let us know your schedule on any work. We can maybe have a few volunteers join you all. . .”

(Tribal Government, Comment #219652)

Response: Yosemite National Park consults with American Indian tribes and groups that have a cultural association with Yosemite to ensure that no adverse effects occur to the health of those who gather cultural use plants, or to traditional cultural properties or other ethnographic resources will result from invasive plant management activities. Mitigation measures are in place to ensure public health and safety (see complete Mitigation Measures and Tool Selection Protocol in the FONSI). During planning, the program manager will work with the park American Indian liaison to communicate with these tribes about which plants, areas, times, and methods are being proposed for treatment, so that the health of those who gather cultural use plants is not at risk.

The health concerns of tribal citizens are taken very seriously by NPS. The NPS will take these concerns into account and continue consultation and cooperation with all culturally

associated American Indian tribes and groups to help ensure that the health and safety of tribal members are not at risk, and to maintain these culturally significant resources for future generations. Where it is collaboratively determined that the use of herbicides is necessary to control species that threaten culturally significant resources and do not respond to physical control, crews will ensure that measures are taken to protect the health of those who gather cultural use plants prior to beginning and following herbicide treatments. These include posting signs that document when and where herbicides were applied and when cultural use plants may again be safely gathered; use of the safest herbicides available; use of alternative herbicide application methods (such as cut-and-dab or spot spraying only to target species); and when possible, applying herbicides at times of year when plants are not typically gathered, and staggering control efforts to ensure that resource gathering opportunities still exist each season.

Traditional use plant populations can be damaged or even permanently displaced by non-native invasive species. Examples in Yosemite can be seen in Royal Arches Meadow and at El Portal where thickets of Himalayan blackberry have in places displaced native understory vegetation. Non-herbicide control methods are used near culturally significant resources, where feasible.

Tribal Concern #28428: *“The concern that we wish to carry forward is that Yosemite National Park acknowledge the need to do actual outreach with elders from the Seven Tribes regarding selective exclusion of plants used for making baskets, medicines, and food, from Plant management practices.”*
(Tribal Government, Comment #26-182280)

Response: Acknowledged; as described above, in the 2010 IPMP Update EA, and in the FONSI, the NPS has and will continue to conduct consultation and outreach efforts –such as meetings, site visits, the publication of the annual work plan, and letters and other contacts with tribal leaders – through Yosemite National Park’s American Indian Liaison. An important objective of this consultation is to ensure no adverse effects to the health of those who gather cultural use plants, or to traditional cultural properties or other ethnographic resources will result from invasive plant management activities. Also, these efforts ensure that members of the associated tribes and groups have the opportunity to participate in the invasive plant management decision making process, and also in on-the-ground control efforts.

Non-herbicide control methods are used near cultural resources where feasible. However, some invasive species do not respond effectively to physical control methods. Examples in Yosemite can be seen in Royal Arches Meadow and at El Portal where, in places, thickets of Himalayan blackberry have displaced native understory vegetation. The NPS will continue to consult with culturally associated tribes and groups to help maintain culturally significant resources for future generations while ensuring the health and safety of tribal members.

Tribal Concern #30740: *“On page III-62 it is noted that the park archaeologist will be consulted during any activity that would result in "ground-disturbing activities." [Our Tribe]*

would also like to be notified prior to any such disturbance so we can have a Cultural Monitor from our Tribe on site, if we feel it is necessary.”
(Tribal Government, Comment #26-182277)

Response: The NPS acknowledges these concerns. The program manager will continue to work with the park’s American Indian Liaison to notify culturally associated tribes and groups about such planned activities.