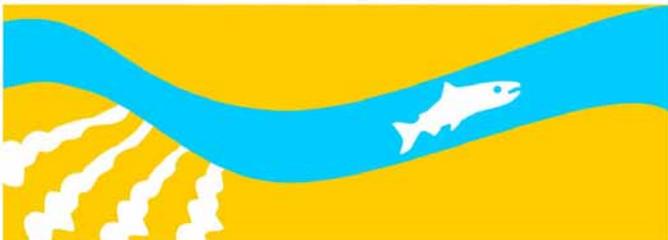


## Appendix F

# Invasive Species Monitoring and Management Plan for Water Year 2010 Interim Flows

Water Year 2010 Interim Flows Project  
Final  
Environmental Assessment/Initial Study

**SAN JOAQUIN RIVER**  
RESTORATION PROGRAM





# Table of Contents

<b>1.0 Invasive Species Monitoring and Management Plan .....</b>	<b>1-1</b>
<b>2.0 References.....</b>	<b>2-1</b>

## List of Abbreviations and Acronyms

EA/IS	Environmental Assessment/Initial Study
SJRRP	San Joaquin River Restoration Program
SJVAPCD	San Joaquin Valley Air Pollution Control District
USEPA	U.S. Environmental Protection Agency
WY	Water Year

# 1.0 Invasive Species Monitoring and Management Plan

Within accessibility constraints associated with privately owned lands, comprehensive surveys for invasive nonnative plants will be conducted before and following the Water Year (WY) 2010 Interim Flow period during 2009, and 2010 or 2011. At sites where removal treatments are implemented (if any), additional monitoring will be conducted for 2 years following removal. Survey results and removal will be documented in an Annual Invasive Species Monitoring and Management Report prepared no later than December 31 of each monitoring year.

These surveys will be conducted along the route of the WY 2010 Interim Flows down the mainstem San Joaquin River, between Friant Dam and the Merced River, the bypass system, and to the extent accessible, Mendota Pool. Surveys of all publicly accessible lands, Federal or State properties, and properties accessible by collaborating local agencies will be conducted. Instead of additional 2010 surveys, existing survey data may be used for areas previously surveyed during 2008 or 2009.

Surveys will record the distribution of the five invasive species that have been identified as the primary invasive species with potential to compromise the successful implementation of the San Joaquin River Restoration Program (SJRRP), or otherwise substantially impact the environment, and that could increase their distribution substantially because of SJRRP operations: giant reed (*Arundo donax*), sponge plant (*Limnium spongia*), Chinese tallow (*Sapium sebiferum*), red sesbania (*Sesbania punicea*), and salt cedar (*Tamarix* species). Section 3, "Affected Environment," of the Environmental Assessment/Initial Study (EA/IS) describes the extent of known infestations of these species. The presence of other invasive species, including perennial pepperweed (*Lepidium latifolium*), will also be noted to inform potential future management by landowners or the SJRRP.

Any new infestations of these five species downstream from the extent of the previously known infestations will be controlled and managed. Preexisting infestations documented by initial surveys also may be controlled and managed if such control would substantially reduce the potential for new infestations to result from WY 2010 Interim Flows.

Removal will be species-specific and will also depend on the size of the plants and of the infestation, and may include mechanical removal, which may cause localized disturbance of the upper 4 to 8 inches of soil, and limited chemical treatment by hand application. Only herbicide formulations approved for aquatic applications will be used in the vicinity of water (as specified by applicable laws and regulations, and by guidance in U.S. Environmental Protection Agency (USEPA) 2001a, b, c). Potential treatments could include the following:

- Red sesbania infestations could be removed by hand-pulling or other mechanical means and/or by hand-spraying of herbicide. Herbicides effective for control of red sesbania include triclopyr (Gresham 2008), and glyphosate may also be effective.
- Infestations of giant reed could be controlled by cutting and removing stems, in combination with hand-treating the plants, or cut or frilled stems, with herbicide. Herbicides effective for control of giant reed include glyphosate and imazapyr (Dudley 2000, Neill 2006).
- Infestations of salt cedar could be hand-treated with herbicide. Herbicides effective for control of salt cedar include imazapyr, glyphosate, and triclopyr (Carpenter 1998).
- Treatment of Chinese tallow would depend on plant size. Poles and mature plants could be cut and removed, and stumps could be hand-treated with herbicide. Seedlings and saplings could be hand-treated directly with herbicide. Herbicides effective for control of Chinese tallow include glyphosate and triclopyr (Bogler 2000, Langeland 2002).
- Infestations of sponge plant could be controlled by mechanical means and/or by application of herbicide formulations approved for aquatic applications. Herbicides that may be effective for control of sponge plant include 2, 4 D, diquat, and triclopyr (L. Anderson, pers. comm., 2009).

No more than five separate vegetation removal crews would operate on any given day for a period of no more than 3 months. Crews may be outfitted with hand tools and chainsaws. No more than one haul truck would be employed by each individual crew. Vegetation removal activities would cause only localized disturbance of the upper 4 to 8 inches of soil, and no earthmoving equipment would be used.

The Proposed Action (including implementation of environmental commitments), would not exceed USEPA's general conformity *de minimis* thresholds or hinder the attainment of air quality objectives in the local air basin. Before and during ground-disturbing removal activities, the need to implement applicable fugitive dust control measures would be determined. The applicable measures are those required under San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII: Fugitive PM<sub>10</sub> Prohibitions.

All treated sites will be visited 1 year after initial treatment, and treated again, if necessary. If treated again, the site will be revisited one additional time the following year and treated a third time, if necessary. Repeated treatments, if necessary, would include mechanical removal or application of herbicides with a different mechanism of action or target site from previous applications, to decrease the potential for development of herbicide resistance (Prather, DiTomaso, and Holt 2000) and to increase effectiveness of management efforts.

Any herbicide applications will comply with all requirements specified on the product label, and use will also be limited, as recommended in the applicable USEPA interim measures bulletin for protection of endangered species (USEPA 2000a, b, c).

## 2.0 References

- Anderson, L. (U.S. Department of Agriculture). 2009. Personal communication. Telephone conversation with John Hunter, EDAW. April 29, 2009.
- Bogler, D. J. 2000. Element Stewardship Abstract for *Sapium sebiferum* Chinese Tallow-Tree, Florida Aspen, Popcorn Tree. The Nature Conservancy, Arlington, Virginia.
- Carpenter, A. T. 1998. *Element Stewardship Abstract for Tamarix spp.* The Nature Conservancy, Arlington, Virginia.
- Dudley, T. 2000. *Arundo donax* L. Pages 53–58 in C. C. Bossard, J. M. Randall, and M. C. Hoshovsky (eds.), *Invasive Plants of California's Wildlands*. University of California Press, Berkeley, California.
- Gresham, R. 2008. Dry Creek Red *Sesbania* Management Program 2008. Available at <<http://www.safca.org/protection/specialprojects.html>>. Accessed July 30, 2009.
- Langeland, K. A. 2002. Natural Area Weeds: Chinese Tallow (*Sapium sebiferum* L.). SS-AGR-45. University of Florida Institute of Food and Agricultural Sciences Extension, Gainesville, Florida. Available at <<http://edis.ifas.ufl.edu/pdffiles/AG/AG14800.pdf>>. Accessed July 30, 2009.
- Neill, B. 2006. Low-Volume Foliar Treatment of *Arundo* with Imazapyr. *Cal-IPC News* 14(1):6–7.
- Prather, T. S., J. M. DiTomaso, and J. S. Holt. 2000. *Herbicide Resistance: Definition and Management Strategies*. Publication 8012. Division of Agriculture and Natural Sciences, University of California, Oakland, California.
- USEPA. *See* U.S. Environmental Protection Agency. U.S. Environmental Protection Agency (USEPA). 2000a. *Protecting Endangered Species: Interim Measures for Fresno County*. Pesticides and Toxic Substances H-7605C. Available at <http://www.cdpr.ca.gov/docs/endspec/colist.htm>. Accessed April 29, 2009.
- . 2000b. *Protecting Endangered Species: Interim Measures for Madera County*. Pesticides and Toxic Substances H-7605C. Available at <http://www.cdpr.ca.gov/docs/endspec/colist.htm>. Accessed April 29, 2009.
- . 2000c. *Protecting Endangered Species: Interim Measures for Merced County*. Pesticides and Toxic Substances H-7605C. Available at <http://www.cdpr.ca.gov/docs/endspec/colist.htm>. Accessed April 29, 2009.

*This page left blank intentionally.*