Attachment E – Notice of Intent

RECEIVED
NOV 08 2013
DIVISION OF WATER QUALITY

WATER QUALITY ORDER NO. 2013-0002-DWQ
GENERAL PERMIT NO. CAG990005

STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR RESIDUAL AQUATIC PESTICIDE DISCHARGES TO WATERS OF THE UNITED STATES FROM ALGAE AND AQUATIC WEED CONTROL APPLICATIONS

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item A. New Applicator B. Change of Information: WDID# 8 332700001 C. ☐ Change of ownership or responsibility: WDID#

II. DISCHARGER INFORMATION

A. Name Riverside County Flood Control and Water Conservation District			
B. Mailing Address 1995 Market Street			
C. City Riverside	D. County Riverside	E. State CA	F. Zip 92501
G. Contact Person David Garcia	H. E-mail address dhgarcia@rcflood.org	I. Title Engineering Project Manager	J. Phone 951.955.1330

III. BILLING ADDRESS (Enter Information ***only*** if different from Section II above)

A. Name			
B. Mailing Address			
C. City	D. County	E. State	F. Zip
G. E-mail address	H. Title	I. Phone	

IV. RECEIVING WATER INFORMATION

A. Algaecide and aquatic herbicides are used to treat (check all that apply):

1. ☒ Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger.
   Name of the conveyance system: Riverside County Flood Control and Water Conservation District flood control facilities.
2. ☐ Canals, ditches, or other constructed conveyance facilities owned and controlled by an entity other than the Discharger.
   Owner's name: _____
   Name of the conveyance system: _____
3. Directly to river, lake, creek, stream, bay, ocean, etc.
   Name of water body: _____

B. Regional Water Quality Control Board(s) where treatment areas are located (REGION 1, 2, 3, 4, 5, 6, 7, 8, or 9): Region 7, 8, 9
(List all regions where algaecide and aquatic herbicide application is proposed.)

V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION

A. Target Organisms: ____

Includes but not limited to cattails, willows, tree tobacco, castor bean, or tamarisk.

B. Algaecide and Aquatic Herbicide Used: List Name and Active ingredients

RoundupPro Custom (Glyphosate, N-(phosphonomethyl) glycine)

C. Period of Application: Start Date January End Date December
Applications will occur annually (January - December).

D. Types of Adjuvants Used:
Agri-Dex (Heavy range paraffinic oil, Polyol fatty acid esters, and Polyethoxylated derivatives thereof)

VI. AQUATIC PESTICIDE APPLICATION PLAN

Has an Aquatic Pesticide Application Plan been prepared and is the applicator familiar with its contents?
☒ Yes ☐ No

If not, when will it be prepared? _____

VII. NOTIFICATION

Have potentially affected public and governmental agencies been notified? ☒ Yes ☐ No

VIII. FEE

Have you included payment of the filing fee (for first-time enrollees only) with this submittal?
☐ YES ☐ NO ☒ NA

IX. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. Additionally, I certify that the provisions of the General Permit, including developing and implementing a monitoring program, will be complied with."

A. Printed Name: Zully Smith

B. Signature: M. [signature] FOR- **Date:** 11/7/13

C. Title: Chief of Operations and Maintenance Division

XI. FOR STATE WATER BOARD STAFF USE ONLY

WDID:	**Date NOI Received:**	**Date NOI Processed:**
Case Handler's Initial:	**Fee Amount Received:** $	**Check #:**
☐ **Lyris List Notification of Posting of APAP**	**Date** _____	**Confirmation Sent** _____

Aquatic Pesticide Application Plan

Prepared to comply with:
Water Quality Order No. 2013-0002-DWQ
General Permit No. CAG 990005

October 30, 2013

Prepared for:

State Water Resources Control Board
Colorado River Basin Regional Water Quality Control Board - Region 7
Santa Ana Regional Water Quality Control Board - Region 8
San Diego Regional Water Quality Control Board - Region 9

Prepared by:

Riverside County Flood Control
and Water Conservation District
1995 Market Street
Riverside, CA 92501

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P8/156764

1. Aquatic Herbicide Requirements

1.1 Introduction

On March 5, 2013, the State Water Resources Control Board (State Water Board) adopted a Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Residual Aquatic Pesticide Discharges to Waters of the United States (WUS) from Algae and Aquatic Weed Control Applications (General Permit), Water Quality Order No. 2013-0002-DWQ (NPDES No. CAG990005). The General Permit requires dischargers to develop and submit to the State Water Board an Aquatic Pesticide Application Plan (APAP).

As part of Riverside County Flood Control and Water Conservation District's (District) routine maintenance activities, aquatic weed control herbicides (also referred to as aquatic pesticides) are used in constructed flood control facilities as a means of vegetation control. The District's routine maintenance activities ensure that its facilities continue to provide the design level of flood protection to which they were constructed, minimize or prevent loss of life and property, and to comply with local ordinances and regulations pertaining to the National Flood Insurance Program and other federally-mandated programs. Therefore, to comply with the General Permit, the District has developed this APAP.

The APAP includes a description of the aquatic herbicide products the District will use, alternative methods to aquatic herbicide use where feasible, BMPs implemented to reduce potential impacts from aquatic herbicide use, and a monitoring plan to identify and respond to any potential adverse impacts that may arise from the applications. Specifically, the APAP includes the following elements, consistent with the requirements of the General Permit[1]:

- Description of the water system to which algaecides and aquatic herbicides are being applied;
- Description of the treatment area in the water system;
- Description of what weed(s) and algae are being controlled and why;
- Algaecide and aquatic herbicide products or types of algaecides and aquatic herbicides expected to be used and, if known, their degradation byproducts, the method in which they are applied, and the adjuvants and surfactants used;
- Discussion of the factors influencing the decision to select algaecide and aquatic herbicide applications for algae and weed control;
- Description of monitoring program;
- Description of procedures used to prevent sample contamination from persons, equipment, and vehicles associated with algaecide and aquatic herbicide application;
- Description of BMPs to be implemented; and
- Examination of possible alternatives.

Where the APAP addresses a specific General Permit requirement, the section headings include a reference to the specific provision of the General Permit in brackets {}. For example, {VIII.C.1} refers to Provision VIII.C.1 of the General Permit.

[1] General Permit, Provision VIII.C

1.2 Modifications to the APAP

The District will review the APAP annually to ensure that it is consistent with its current aquatic pesticide application methods. If major changes to the APAP are required, then the District will submit the amended APAP to the State Water Board for review and approval. Major changes may include using a different product than specified within the APAP, changing an application method that may result in different amounts of algaecides or aquatic herbicide being applied, or adding or deleting BMPs (General Permit, Provision VIII.D).

1.3 Permit Requirements

The District's aquatic herbicide use is subject to the requirements of the General Permit, the District's NPDES Municipal Separate Storm Sewer System (MS4) Permits, and the Use Permit from the Riverside County Agricultural Commission (CAC) as described in the following sections. Application of aquatic pesticides consistent with these requirements will ensure that potential impacts are either minimized or eliminated.

1.3.1 General Permit

As stated in Provision IX.A.5 of the General Permit, herbicide use must be consistent with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), herbicide label instructions, and Use Permits issued by the CAC. The General Permit only allows the use of aquatic herbicides to water bodies within WUS. Aquatic herbicides have registration labels that explicitly allow direct application to water bodies. In addition, herbicide use is subject to the General Permit effluent limits and receiving water limitations summarized below. A copy of the General Permit is included in Appendix J.

1.3.2 Effluent Limits and Receiving Water Limitations

Since the District uses only glyphosate-based aquatic herbicides within WUS, the 700 µg/L glyphosate receiving water limit is applicable for facilities that impact MUN designated surface waters. A list of facilities that drain directly to or are within a MUN-designated surface water are listed in Table 2. Not all the facilities listed in Table 2 are treated with aquatic herbicides. In addition, if a nonylphenol-based surfactant is used, then the 6.6 µg/L nonylphenol receiving water limit is applicable.

Table 1. Receiving Water Limitations (Chemical)

	Beneficial Use			
Constituent /Parameter	**MUN**	**WARM or COLD**	**Other than MUN, WARM, or COLD**	**All Designations**
Glyphosate	700 µg/L			
Nonylphenol				Freshwater Chronic Criterion = 6.6 µg/L, Saltwater Chronic Criterion = 1.7 µg/L
Toxicity				Applications shall not cause or contribute to toxicity

Table 2. Surface Waters Identified with a MUN Designation within the District

Watershed Region	Surface Waters Identified with a MUN[2] Designation	Facilities which are within or directly drain to Surface Waters with a MUN Designation
Region 7 - Colorado River Basin	• Chino Canyon Creek • Little Morongo Creek • Mission Creek • Palm Canyon Creek • San Gorgonio River • Tahquitz Creek • Whitewater River	• Cabazon Channel (Project No. 5-0130) • Camino Real Storm Drain (Project No. 6-0170) • Cathedral Canyon Channel - East And West (Project No. 6-0010) • Cathedral Canyon Channel - North (Project No. 6-0012) • Chino Canyon Levee (Project No. 6-0070) • Mission Creek Channel (Project No. 6-0090) • Palm Canyon Wash - Lateral A (Project No. 6-0041) • Palm Canyon Wash (Project No. 6-0040) • Palm Springs MDP - Line 20 (Project No. 6-0320) • Palm Springs MDP - Line 27 (Sunrise Way) (Project No. 6-0180) • Palm Springs MDP - Line 34 (Project No. 6-0400) • Palm Springs MDP - Line 4 (Project No. 6-0315) • San Gorgonio River Levee (Project No. 5-0065) • Tahquitz Creek Channel and Debris Basin (Project No. 6-0060) • Whitewater River - Right Bank Levee (Project No. 6-0250)
Region 8 - Santa Ana River	• Anza Park Drain • Canyon Lake • Day Creek • Little San Gorgonio Creek • San Jacinto River Reach 1, Reach 6 and Reach 7 • San Jacinto River, North Fork • Strawberry Creek • Sunnyslope Channel	• Noble Creek Channel (Project No. 5-0020) • Little San Gorgonio Creek (Project No. 5-0010) • Mountain View Channel (Project No. 5-0140) • San Timoteo - River El Casco Drain (Project No. 5-0000) • Anza Channel (Project No. 1-0150) • Rubidoux Channel (Project No. 1-0142) • Sunnyslope Channel (Project No. 1-0100) • Day Creek Channel (Project No. 1-0250) • Day Creek - Line P (Venture Drive Storm Drain) (Project No. 1-0255) • Day Creek MDP - Line O (Project No. 1-0257) • Day Creek - Harrell Street Storm Drain (Project No. 1-0256)

[2] Existing, potential, or intermittent MUN uses within the respective watershed region Basin Plan.

Watershed Region	Surface Waters Identified with a MUN[2] Designation	Facilities which are within or directly drain to Surface Waters with a MUN Designation
		• Day Creek - Galena Street Storm Drain (Project No. 1-0253) • Day Creek MDP - Line D And Laterals (Project No. 1-0254) • Day Creek MDP - Martin Street Storm Drain (Project No. 1-0115)
Region 9 - San Diego	• Bundy Canyon • Empire Creek • French Valley • Long Canyon • Murrieta Creek • Pechanga Creek • Redhawk Channel • Santa Gertrudis Creek • Temecula Creek • Tucalota Creek • Warm Springs Creek	• Wildomar - Bundy Canyon Channel - Lateral A (Project No. 7-0078) • Wildomar MDP - Lateral C (Project No. 7-0075) • Wildomar MDP - Lateral B (Project No. 7-0074) • Wildomar MDP - Lateral A (Project No. 7-0071) • Wildomar MDP Channel (Project No. 7-0070) • Murrieta Valley - Calle Estancia Storm Drain (Project No. 7-0147) • Murrieta Creek Channel (Project No. 7-0020) • Murrieta Creek MDP - Line E (Project No. 7-0130) • Warm Springs Channel (Project No. 7-0760) • Warm Springs - Adams Avenue Storm Drain (Project No. 7-0761) • Warm Springs Valley - Sugarberry Lane Storm Drain (Project No. 7-0168) • Warm Springs Valley - Briggs Road Storm Drain (Project No. 7-0218) • Warm Springs Valley - French Valley Channel (Project No. 7-0205) • Warm Springs Valley - Euclid Loop Storm Drain (Project No. 7-0199) • Warm Springs Valley - Corte San Pablo Storm Drain (Project No. 7-0215) • Warm Springs Valley - Fields Drive Storm Drain (Project No. 7-0217) • Santa Gertrudis Creek Channel (Project No. 7-0060) • Santa Gertrudis Creek Channel - Laterals A And B (Project No. 7-0060) • Assessment District 161- Margarita Road Storm Drain (Project No. 7-0179) • Santa Gertrudis Valley - Cardiff Avenue (Project No. 7-0188)

Watershed Region	Surface Waters Identified with a MUN[2] Designation	Facilities which are within or directly drain to Surface Waters with a MUN Designation
		• Assessment District 161 - Nicholas Road Storm Drain (Project No. 7-0183) • Santa Gertrudis Valley - Finbrook Road Storm Drain (Project No. 7-0037) • Santa Gertrudis Valley - Tucolata Creek (Project No. 7-0030) • Santa Gertrudis Valley - Sierra Madre Drive SD (Project No. 7-0182) • Townview - Willows Avenue Storm Drain (Project No. 7-0177) • Santa Gertrudis Valley - Murrieta Hot Springs (Project No. 7-0031) • Santa Gertrudis Valley - New Covenant Storm Drains (Project No. 7-0039) • Santa Gertrudis Valley - Browning Street Storm Drain (Project No. 7-0036) • Murrieta Valley - Whitewood Road Storm Drain (Project No. 7-0161) • Temecula Valley - Ynez Road Storm Drain (Project No. 7-0310) • Temecula Valley - Margarita Road Storm Drains (Project No. 7-0315) • Murrieta Creek MDP - Line A (Project No. 7-0133) • Temecula Valley - Rancho California Road (Project No. 7-0311) • Temecula Valley - Margarita Road Storm Drains (Project No. 7-0315) • Long Valley Wash - Camino Marea Storm Drain (Project No. 7-0330) • AD159 - Butterfield Stage Road Storm Drain (Project No. 7-0405) • AD159 - Temecula Creek Channel (Project No. 7-0050) • Wolf Valley Creek Channel (Project No. 7-0260) • Temecula Valley - Via Del Coronado Storm Drain (Project No. 7-0307) • Temecula Creek - Line V / V V (Project No. 7-0051) • Temecula Valley - Overland Trail Storm Drain (Project No. 7-0309) • Temecula Valley - El Chimisal Avenue Storm Drain (Project No. 7-0415) • Morgan Valley Wash (Project No. 7-0059) • Temecula Valley - Wolf Valley Loop / Margarita Road Storm Drain (Project No.

Watershed Region	Surface Waters Identified with a MUN[2] Designation	Facilities which are within or directly drain to Surface Waters with a MUN Designation
		7-0408) • Temecula Valley - Butterfield Stage Road / Macho Road Storm Drain (Project No. 7-0407) • Temecula Creek Channel - Chaote Street Storm Drain (Project No. 7-0043) • Temecula Creek Channel - Nighthawk Pass Storm Drain (Project No. 7-0042) • Temecula Creek - Temecula Creek Road Storm Drain (Project No. 7-0054) • Deportola Road Storm Drain (Project No. 7-0410) • Assessment District 159 - Temecula Creek Channel (Project No. 7-0050) • Assessment District-159 Apis Road Storm Drain (Line "W" System) (Project No. 7-0048)

Additionally, the discharge of residual herbicides shall not result in the following:

- Dissolved Oxygen below the Regional Board basin plan objectives;
    - **Colorado River Basin Plan -** The dissolved oxygen concentration shall not be reduced below the following minimum levels at any time: WARM 5 mg/L, COLD 8 mg/L, WARM and COLD 8 mg/L.

    - **Santa Ana Basin Plan -** The dissolved oxygen content of surface waters shall not be depressed below 5 mg/L for waters designated WARM, or 6 mg/L for waters designated COLD, as a result of controllable water quality factors. In addition, waste discharges shall not cause the median dissolved oxygen concentration to fall below 85% of saturation or the 95th percentile concentration or fall below 75% of saturation within a 30-day period.

    - **San Diego Basin Plan -** Dissolved oxygen levels shall not be less than 5.0 mg/L in inland surface waters with designated MAR or WARM beneficial uses or less than 6.0 mg/L in waters with designated COLD beneficial uses. The annual mean dissolved oxygen concentration shall not be less than 7 mg/L more than 10% of the time.

- Floating Material present in amounts that cause nuisance or adversely affect beneficial uses;
- Suspended Materials present in concentrations that cause nuisance or adversely affect beneficial uses;
- Taste and Odors present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses or domestic or municipal water supplies;

- Toxic Pollutants present in the water column, sediments or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health;
- Color that is esthetically undesirable; and
- Degradation of Aquatic Communities and populations, including vertebrates, invertebrates, and non-target plant species.

1.3.3 District MS4 Permits

Use of aquatic herbicides is also subject to the requirements of the District's MS4 Permits. The District's MS4 Permits include:

- Order No. R8-2010-0033 issued by the Santa Ana Regional Water Quality Board (Santa Ana Region MS4 Permit);
- Order No. R9-2010-0016 issued by the San Diego Regional Water Quality Control Board (Santa Margarita Region MS4 Permit); and
- Order No. R7-2013-0011 issued by the Colorado River Basin Regional Water Quality Board (Whitewater Region MS4 Permit).

As described in the Stormwater Management Plan (SWMP)[3] for the Whitewater Region, the District's Local Implementation Plan (LIP)[4] for the Santa Ana Region and the District's Jurisdictional Runoff Management Plan (JRMP)[5] for the Santa Margarita Region, the District implements BMPs to reduce potential non-stormwater discharges that may occur from maintenance activities.

1.3.4 MOU with CDFW

The Memorandum of Understanding (MOU) with the California Department of Fish and Wildlife (CDFW) authorizes the application of aquatic herbicides for the regular maintenance of District facilities subject to specific conditions. As described within the CDFW MOU, the District will conduct maintenance work in a manner that shall meet the District's obligations to public health and safety while minimizing adverse impacts to fish and wildlife resources. In addition, herbicide use must comply with all applicable local, State, and Federal permitting or licensing requirements or regulations.

The CDFW MOU authorization includes the use of aquatic herbicides as a means of weed control within channel banks, channel bottoms, maintenance roads, and areas between the top of banks and the adjacent property to maintain channel design capacity, comply with local fire regulations, and provide a safe travel way to conduct facility inspection and maintenance activities.

[3] The SWMP can be found on the District's website at:
http://rcflood.org/downloads/NPDES/Documents/WW_SWMP_WQMP/WWR_SWMP_June_2009.pdf
[4]The District LIP was completed by May 24, 2013. The SAR LIP template can be found on the District's website at:
http://www.rcflood.org/NPDES/SantaAnaWS.aspx
[5]The District JRMP was completed on June 30, 2012 and can be found on the District's website at:
http://rcflood.org/downloads/NPDES/Documents/SM_JRMP/District_JRMP_with_Appendices.pdf.

1.3.5 Riverside CAC Use Permit

The application of aquatic herbicides is subject to the conditions of the Use Permit (Operator Identification Number: 33-15-3315100[6]) issued by the CAC. The current Riverside CAC Use Permit is included in Appendix I.

Regarding the conditions listed in the Use Permit, **the District's aquatic herbicide and surfactant is identified by the "CAUTION" signal word and does not contain ingredients that are considered restricted materials**[7]; therefore, the more stringent conditions listed in the Use Permit are not applicable to the District.

The Use Permit requires the District to comply with conditions in the *Employer's Responsibilities & Herbicide Use Requirements* such as:

- Employee Handlers
  - Employees must be trained by a Qualified Trainer[8] prior to handling and trained annually thereafter. Mechanics must also be trained when handling contaminated equipment. Document training with written program records.
- Applicator Responsibilities
  - Give notice prior to application to appropriate parties.
  - Keep pest control equipment in good repair and accurately calibrated.
  - Use back-flow prevention devices.
  - Use accurate weighting and measuring devices.
  - Label service containers with the name of herbicide, signal word, and name and address of responsible party.
  - Maintain uniform mixtures.
  - Thoroughly clean all equipment when necessary to prevent contamination.
  - Perform all pest control under suitable climatic conditions.
- Use Herbicide According to the label
  - Read the label.
  - Follow label's timing, method and rate of application.
  - Use protective clothing and safety equipment.
- Transportation, Storage, and Disposal
  - Properly secure herbicides during transportation.
  - Lock storage area.

[6] The current Riverside CAC Use Permit expires on 12/31/2015.

[7] RoundUp Custom is not listed with a special status (Under Re-Evaluation, Restricted Material, Federally Restricted, California Restricted or Conditional Registration) on the DPR Product Name Database at http://www.cdpr.ca.gov/docs/label/prodnam.htm.

[8] A Qualified Trainer includes: A California certified commercial applicator; A California certified private applicator; A person holding a valid County Biologist License in Pesticide Regulation or Investigation and Environmental Monitoring issued by the Department of Food and Agriculture; • A farm advisor employed by the University of California Extension Office; • A person who has completed an "instructor trainer" program presented by one of the following: o The University of California, Integrated _Pest Management Program after January 1, 1993; or Other instructor training program approved by the Director; • A California licensed Agricultural Pest Control Advisor; or A California Registered Professional Forester. (California Code of Regulations, Title 3, Division 6, Chapter 3, Subchapter 3, Article 2, Section 6724)

  - Follow proper spill cleanup procedures.
  - Follow proper disposal procedures.
- Herbicide Use Reports and Records
  - Submit properly completed use reports by the 10th of the month following use.
  - Keep records for at least two years.
- Local Concerns
  - Be careful around schools, residential and recreational areas, roads, water, livestock, wildlife, etc.
  - Prevent drift onto adjacent crops or animals.

In addition, District staff must also implement applicable measures listed in the Department of Pesticide Regulation (DPR) Pesticide Safety Information Sheets (PSI) listed in Table 3 and included in Appendix B.

Table 3. List of Applicable DPR Safety Fact Sheets

PSI #	PSI Fact Sheet Title
N-1	Working with Pesticides in Non-Agricultural Settings
N-2	Storing, Mowing and Disposing of Pesticides in Non-Agricultural Settings
N-3	Closed Systems, Enclosed Cabs, Water-Soluble Packaging in Non-Agricultural Settings
N-4	First Aid
N-5	Protecting Yourself from Breathing Pesticides in Non-Agricultural Settings
N-7	Washing Pesticide Work Clothing
N-8	Safety Rules for Pesticide Handlers in Non-Agricultural Settings
N-10	Safety Rules for Minimal Exposure Pesticides in Non-Agricultural Settings

1.4 Responsible District Sections

The following District Sections are responsible for the implementation of this APAP:

Watershed Protection Division – NPDES Section

Name:	David Garcia
Title:	Senior Civil Engineer
Agency:	Riverside County Flood Control and Water Conservation District
Address:	1995 Market Street, Riverside, CA 92501
Phone Number:	951.955.1330

Operations and Maintenance Division – Maintenance Section

Name:	Mark Biloki
Title:	Flood Control Maintenance Superintendent
Agency:	Riverside County Flood Control and Water Conservation District
Address:	1995 Market Street, Riverside, CA 92501
Phone Number:	951.955.1310

The NPDES Section is responsible for:

- Completing the required representative site monitoring consistent with Attachment C of the General Permit as described in Section 4 of this APAP;
- Conducting the 24- and five-day reporting with the assistance of the Maintenance Section, as described in Attachment C of the General Permit (See Section 4.10.1);
- Coordinating with the Maintenance Section to implement corrective actions if exceedances to receiving water or effluent limits occur;
- Preparing and submitting to the State Water Board and the appropriate Regional Water Quality Control Boards an annual report consistent with Attachment C of the General Permit (See Section 4.10.2); and
- Reviewing and updating the APAP annually to reflect the District's current aquatic herbicide application practices.

The Maintenance Section is responsible for ensuring that:

- Maintenance staff are trained regularly on applicable laws and procedures for applying aquatic herbicides;
- Maintenance staff applies aquatic herbicides in accordance with applicable laws and with the manufacturer's instructions;
- Maintenance staff implements BMPs, as appropriate, to minimize or prevent discharges of aquatic herbicide byproducts;
- A *Weed Control Pesticide Application Log* form is completed for each aquatic herbicide application;
- The NPDES Section is notified of any potential noncompliance relating to aquatic herbicide application; and
- The NPDES Section is notified when aquatic herbicide applications are scheduled on representative monitoring sites.

1.5 Inspection and Entry

The District shall allow the Regional Water Quality Control Boards, State Water Board, USEPA, or their authorized representatives, including an authorized contractor acting as their representatives, upon presentation of credentials and other documents as may be required by law to (General Permit - Attachment B, Provision I.F):

- Enter upon the District's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this General Permit;
- Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this General Permit;
- Have access to and copy, at reasonable times, any records that must be kept under the conditions of this General Permit; and

- Sample or monitor, at reasonable times, for the purposes of ensuring permit compliance or as otherwise authorized by the Clean Water Act or the Porter-Cologne Water Quality Control Act, any substances or parameters at any location.

1.6 Anticipated Non-Compliance

The District shall give advanced notice to the appropriate Regional Water Quality Control Board or State Water Board of any planned changes in the Aquatic Pesticide application activities that may result in non-compliance with the General Permit requirements (General Permit - Attachment B, Provision V.F).

1.7 Termination of Permit Coverage

The District may initiate termination under the General Permit by submitting a complete and accurate Notice of Termination (NOT) form provided in Attachment F of the General Permit. A NOT must be submitted when one of the following conditions occur:

- A new operator has taken over responsibility of the District's algae or aquatic weed control activities covered under an existing Notice of Applicability (NOA);
- The District has ceased all discharges from the application of algaecides and aquatic herbicides for which it obtained General Permit coverage and does not expect to discharge during the remainder of this General Permit term; or
- The District has obtained coverage under an individual permit or an alternative general permit for all discharges required to be covered by an NPDES permit.

The District's authorization to discharge terminates on the day the coverage termination letter is issued by the State Water Board. Prior to the termination effective date, the District is subject to the terms and conditions of the General Permit and is responsible for submitting the annual fee and all reports associated with the General Permit (General Permit, Provision II.E).

2. Aquatic Herbicide Usage

2.1 Water System Description {VIII.C.1}

The application of aquatic herbicides occurs within the facilities and rights of way within the District's jurisdiction. The District's jurisdiction is comprised of 2,700 square miles within three distinct watersheds, governed by separate Regional Water Quality Control Boards: Colorado River Basin – Region 7, Santa Ana – Region 8, and San Diego – Region 9. The District extends from the northwest portion of Riverside County east to Desert Hot Springs and Palm Springs and south to San Diego County through the Temecula area, and has jurisdiction over the western 40% of Riverside County.

2.1.1 Santa Ana Region (SAR)

The Santa Ana River Watershed within the District's jurisdiction is located in the northwestern corner of Riverside County and is referred to as the Santa Ana Region. The SAR is bounded on the south by the SMR, on the east by the Salton Sea Watershed, on the southwest by Orange County and on the northwest by San Bernardino County. The SAR, including the San Jacinto River subwatershed, encompasses 1,603 square miles (22% of the 7,300 square miles within Riverside County) and includes 12 of the 24 municipalities within Riverside County. About 1,141,100 persons (64% of the Riverside County population) live within the SAR - approximately 802,500 persons residing within the 15 municipalities and an additional 338,600 persons residing in the unincorporated area. The areas of the most significant recent growth in population in the SAR include the cities of Corona, Hemet, Riverside, and portions of unincorporated Riverside County.

The application sites within the SAR are shown on the SAR Treatment Area Map in Figure 1.

2.1.2 Santa Margarita Region (SMR)

The Santa Margarita River Watershed within the District's jurisdiction is located in the south to southwest portion of the District and is referred to as the Santa Margarita Region. The Lower Santa Margarita Watershed, located in the northern portion of San Diego County, including Camp Pendleton, is governed by a separate MS4 Permit and is not within the District's jurisdiction. The SMR is the portion of the watershed upstream of the confluence of Murrieta and Temecula Creeks and is located in the south to southwest portions of the District. The SMR encompasses 576 square miles and includes five municipalities within Riverside County. Land uses are predominately non-urban, comprising over 80% of the SMR. As of January 1, 2008, the population of Riverside County was about 2.1 million. About 13% of the population, or 273,000 people, reside in the SMR. Roughly 19% of that population lives in unincorporated areas, with the rest residing in the cities of Menifee, Murrieta, Temecula, and Wildomar.

The application sites within the SMR are shown on the SMR Treatment Area Map in Figure 2.

2.1.3 Whitewater Region (WWR)

The Whitewater River Watershed within Riverside County is located in the eastern portion of the District and is referred to as the Whitewater Region. The WWR is bound by the San Gorgonio Pass and extends southeast through the urbanized areas of Coachella Valley to the Salton Sea. However, the District's

jurisdiction only extends through the cities of Cathedral City, Palm Springs, and Desert Hot Springs, excluding the area downstream of the confluence of the San Gorgonio River and north of the Whitewater River levees and south of the Interstate 10 freeway. These areas are under the jurisdiction of the Coachella Valley Water District (CVWD).

The Coachella Valley is bounded by the San Jacinto Mountains in the southwest and the San Gorgonio Mountains, Indio Hills, and Mecca Hills in the northeast. The Coachella Valley generally drains from northwest to southeast and is part of the Salton Sea Basin, which is a large low-lying area within the Colorado Desert. The majority of the valley drains to the Whitewater River and its tributaries, which discharge into the northern portion of the Salton Sea. The WWR encompasses 350 square miles and includes 13 municipalities within Riverside County. Land uses, which are predominately non-urban, comprise over 60% of the watershed and do not fall under the jurisdiction of the District per the 2013 WWR MS4 Permit[9]. Urban land uses, such as residential, commercial, and industrial, encompass 3.5% of the WWR. As of 2005, the population of the urbanized areas of the WWR was approximately 400,000, with roughly 50,000 of that population residing in unincorporated areas of Riverside County.

The application sites within the WWR are shown on the Application Site Map in Figure 3.

[9] Provision A.30 of the 2013 WWR MS4 Permit

Figure 1. Treatment Area Map - Aquatic Herbicide Application Sites within the Santa Ana River Watershed

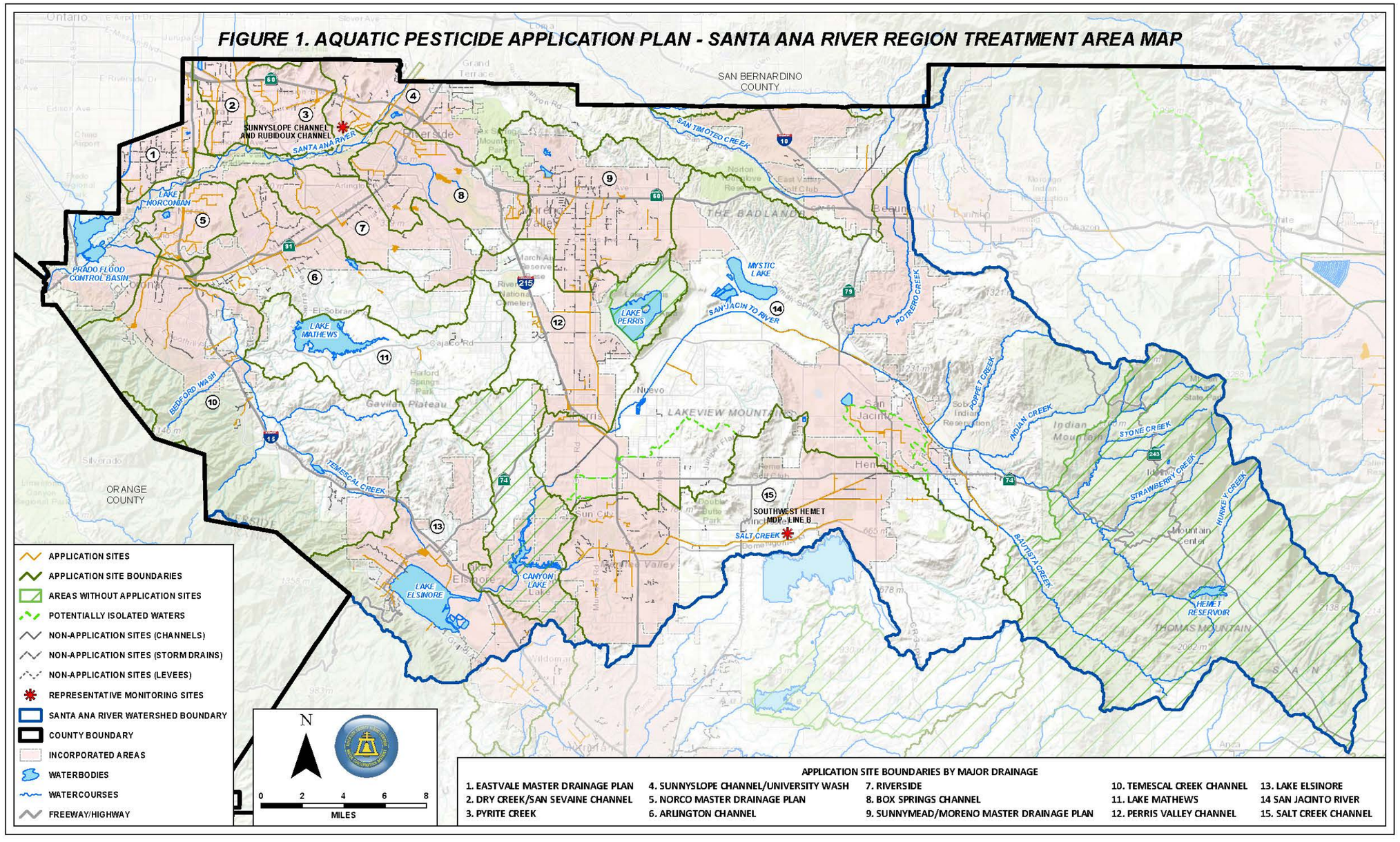


Figure 2. Treatment Area Map - Aquatic Herbicide Application Sites within the Santa Margarita Watershed

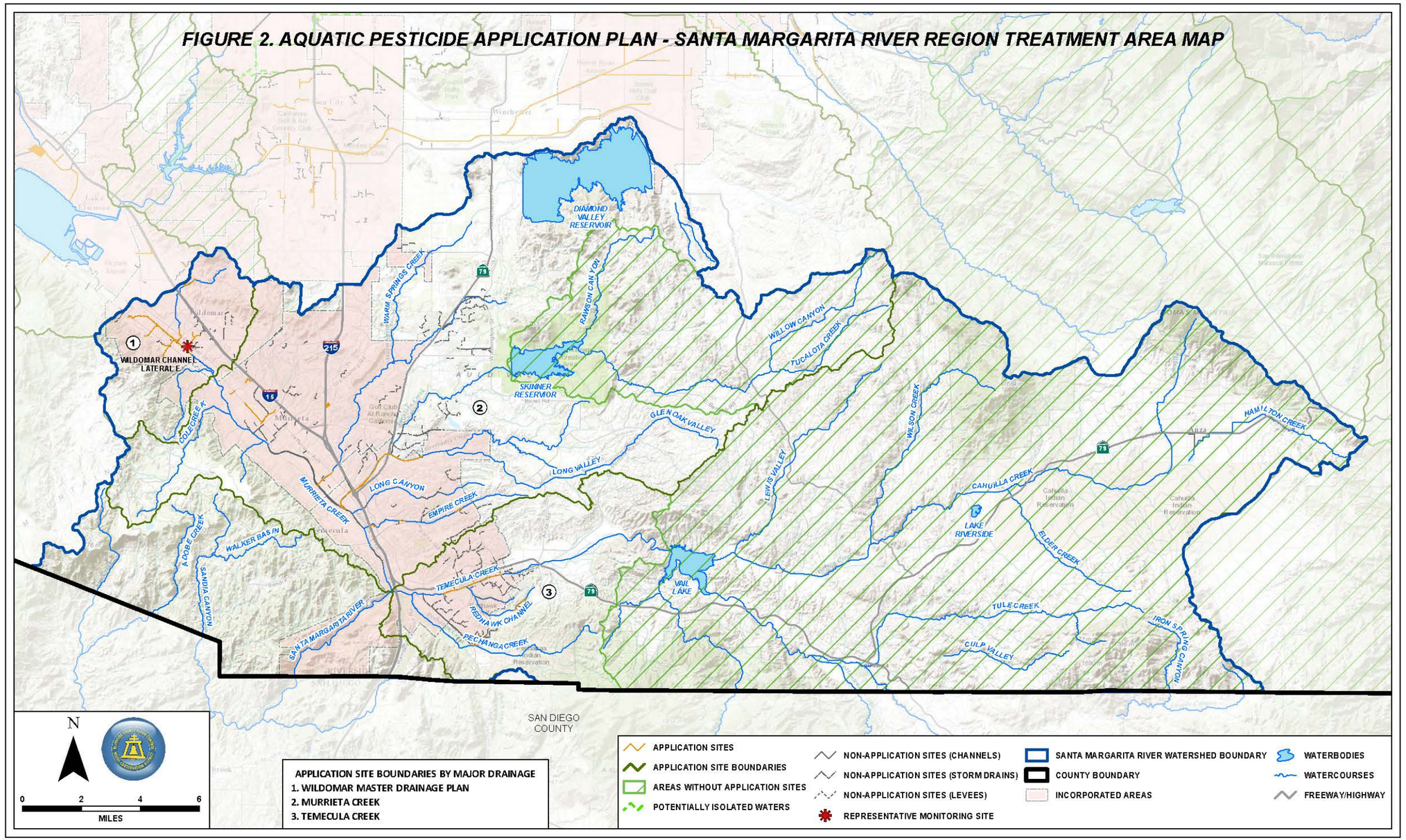
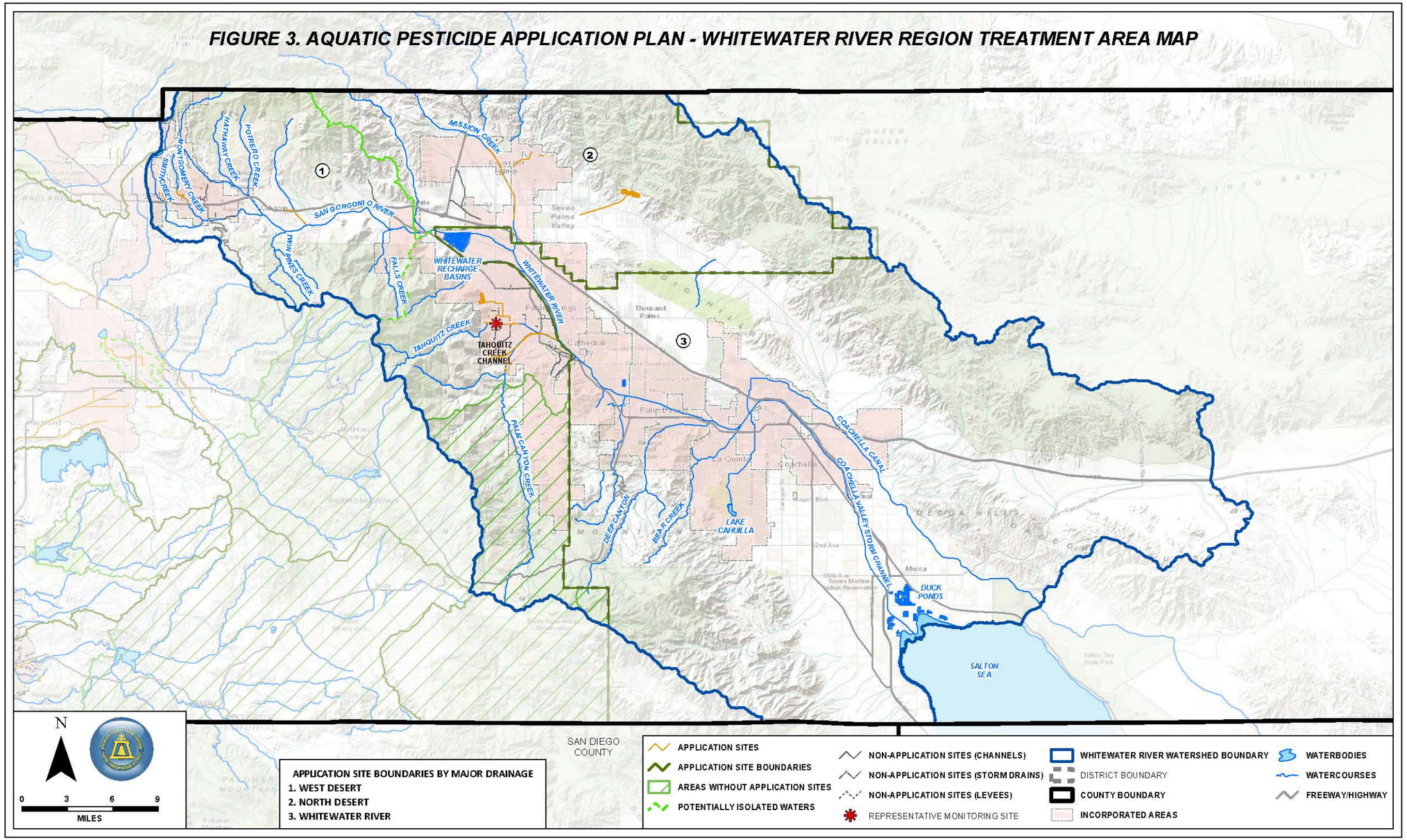


Figure 3. Treatment Area Map - Aquatic Herbicide Application Sites within the Colorado River Basin Watershed



2.1.4 Facility Types

The District utilizes aquatic herbicides during the routine maintenance of its facilities. While the District also maintains underground facilities, such as reinforced concrete pipes (RCP) and reinforced concrete boxes (RCB), the District does not treat these underground facilities with aquatic pesticides, and they are, therefore, not part of the application area. However, the underground facility outfall may be treated and is part of the application site. In addition, as shown on the Treatment Area Maps on Figures 1 through 3, there are channels and basins that do not receive treatment with aquatic herbicides and are not considered application sites (dark grey solid lines).

The District's facilities treated with aquatic herbicides consist of unlined channels, partially lined channels, lined channels, and low-flow channels within basins. These systems are mostly ephemeral or intermittent in which flow is primarily in response to rainfall events. The different facility types are described below:

- Unlined channels are facilities that convey stormwater flows within constructed earthen banks or within earthen levees. The application area includes the earthen channel bottoms near or between levees or the earthen channel invert between channel sideslopes. Unlined channels are differentiated from lined channels in that they have earthen or un-grouted riprap channel sideslopes, or earthen or un-grouted riprap levee slopes.

- Partially lined channels are facilities that convey stormwater flows within constructed lined banks or lined levees with earthen inverts.

- Lined channels are facilities that convey stormwater flows within lined banks and a lined invert. The lining may consist of either grouted riprap, concrete, or similar materials.

- Basins are facilities that have been designed and constructed to impound stormwater flows or debris temporarily. Basins are typically located along natural watercourses and have flow or debris delivered to them via the watercourse. Basins may also be located apart from a natural watercourse and have flow or debris delivered to them via a channel or storm drain system. Basins are typically earthen and include dams and the reservoir area upstream of dams. The application area within basins includes the low flow channel bottoms and sideslopes.

- Storm drain outfalls include areas where a storm drain system drains into a surface water.

In total, the District operates and maintains approximately 1,400 acres of basins and 304 miles of channels.

2.2 Treatment Area {VIII.C.2}

The treatment area is the area treated by aquatic herbicides to control weeds. The treatment area consists of the facility's inverts and sideslopes within the District's jurisdiction treated with aquatic herbicides. While sideslopes are typically not considered WUS, the application of aquatic herbicides to sideslopes

may impact WUS due to overspray, drift, etc. A typical cross section of the treatment area is shown below in Figure 4. The treatment areas are shown in orange in the Treatment Area Map in Figures 1 through 3.

2.2.1 Application Areas

The application area consists of the open channels and low-flow channels within basins within a flood control system of a particular drainage area (application site boundary) treated with aquatic herbicides. Application areas are where the District directly applies aquatic herbicides and typically include sideslopes and inverts (See Figure 4). Since the area that aquatic herbicides are directly applied is the same as the area that is treated, the treatment area and application area are equivalent.

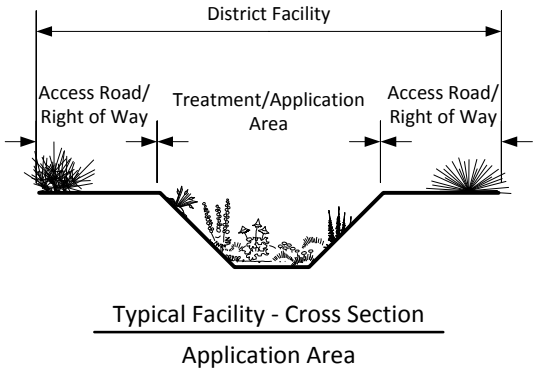


Figure 4. Typical Cross Section of Treatment and Application Area

The locations of the application sites and the application site boundaries are shown in the Treatment Area Map in Figures 1 through 3 for the SAR, SMR, and WWR, respectively. The list of the 20 application sites by major drainage and the associated facilities are listed in Table 4 below. Typically, only a small portion of a facility is treated with aquatic herbicides during each treatment event.

Table 4. Application Sites

Application Areas (By major drainage system)[10]	Facilities[11] within the Application Site	RWQCB Region
Eastvale MDP	• Chandler Street Channel • Day Creek MDP - Line J • Eastvale MDP - Fieldstream Court Storm Drain • Eastvale MDP - Hall Avenue Storm Drain • Eastvale MDP - Line E • Eastvale MDP - Line E-2	SAR

[10] Smaller drainage systems with lower relative number of District facilities or facilities treated with aquatic pesticides are joined with adjacent systems.
[11] Typically, only a small portion of the facility listed is treated with aquatic pesticides. The specific locations that are treated vary each year and depend on field conditions.

Application Areas (By major drainage system)[10]	**Facilities**[11] **within the Application Site**	**RWQCB Region**
Day Creek/San Sevaine Channel	• Day Creek Channel • Day Creek MDP - Lateral B • Day Creek MDP - Line D And Laterals • San Sevaine Channel • San Sevaine Channel - Fontana Lateral	SAR
Pyrite Channel	• Bly Channel - Hastings Street Storm Drain • Bly Channel - Lateral A • Bly Channel And Freeway Collector • Jurupa Channel • Jurupa Channel And Storm Drains • Pyrite Street Channel	SAR
Sunnyslope Channel/University Wash	• Calimesa Channel • Columbia Basin • Highgrove Channel • Marlborough Basin • Mountain View Channel • Rubidoux Channel • Rubidoux Crestmore Channel • Rubidoux Retention Basin • Santa Ana River Levee And Groins • Sunnyslope Channel • University Wash - Spruce Street Storm Drain • University Wash Channel	SAR
Norco MDP	• North Norco Channel - Line NB • Norco MDP - Line NA • Norco MDP - Line NA-S • North Norco Channel • North Norco Channel - Line NB • South Norco Channel • South Norco Channel - Line SA • South Norco Channel - Line SB	SAR
Arlington Channel	• Arizona Channel - Line C • Arlington Channel • Home Gardens - Lincoln Street Channel • La Sierra Channel • La Sierra Channel - Hole Avenue Lateral • La Sierra Channel - Jones Lateral • La Sierra Channel - La Sierra Ave Storm Drain	SAR

Application Areas (By major drainage system)[10]	**Facilities[11] within the Application Site**	**RWQCB Region**
Box Springs	• Box Springs Storm Drain • Box Springs Dam • Sycamore Dam • Edgemont Channel • Magnolia Center Storm Drain • West End Moreno MDP - Line AA, BB, DD • West End Moreno MDP - Towngate Basin	SAR
Anza Channel	• Anza Channel • Monroe MDP - Monroe Storm Drain • Monroe MDP - Retention Basin • Woodcrest Dam	SAR
Sunymead/Moreno Master Drainage Plan	• Kitching Street Channel • Moreno MDP - Line F • Moreno MDP - Line F-2 • Perris Valley Channel – Lateral A • Pigeon Pass Dam • Quincy Street Channel • Sunnymead Channel • Sunnymead MDP - Line A-1 • Sunnymead MDP - Line A-3 • Sunnymead MDP - Line F • Sunnymead MDP - Line F-12 • Sunnymead MDP - Line Q • Sunnymead MDP - Line S And R	SAR
Temescal Creek Channel	• Brown Canyon Channel • El Cerrito - Kayne Street Storm Drain • El Cerrito Channel • Main Street Channel • Montecito Ranch Levee • Oak Street Channel • Temescal Creek - Renaissance Storm Drain • Temescal Creek Channel	SAR
Lake Mathews	• Gavilan Hills - Smith Road Channel And Basin	SAR
Perris Valley Channel	• Metz Road Storm Drain • Perris Valley Channel • Perris Valley Channel - Lateral B • Perris Valley MDP - Line J • Perris Valley MDP - Line J-1 • Perris Valley MDP - Line K • Perris Valley MDP - Lines E-10 And F	SAR

Application Areas (By major drainage system)[10]	**Facilities[11] within the Application Site**	**RWQCB Region**
Lake Elsinore	• Four Corners Storm Drain • Lake Elsinore Outlet Channel • Lakeland Village Channel • Leach Canyon Channel • Ortega Channel • Sedco MDP - Line D And D-1 • South Riverside Channel • Third Street Channel	SAR
San Jacinto River	• Bautista Creek Channel • Little Lake MDP - Line A-3 • Meridian Street Channel • Nuevo Channel • San Jacinto River	SAR
Salt Creek Channel	• Bradley Road Channel • Corson Avenue Storm Drain • Hemet MDP - Line A-3 • Hemet Storm Channel • Paloma Wash Channel • Salt Creek - EMWD Channel • Salt Creek - Goldmine Circle Channel • Salt Creek Channel • Stetson Avenue Channel • Sun City Channel - Lateral A-A • Sun City Channels • Whittier Avenue Channel	SAR
Wildomar Channel	• Wildomar - Bundy Canyon Channel - Lateral A • Wildomar MDP - Lateral A • Wildomar MDP - Lateral B • Wildomar MDP - Lateral C • Wildomar MDP - Lateral E • Wildomar MDP Channel	SMR
Murrieta Creek	• Long Valley Wash Channel • Murrieta Creek MDP - Line A • Murrieta Creek MDP - Line F • Murrieta Creek MDP - Line F-3 • Murrieta Creek MDP - Line G • Murrieta Valley - I-215 Retention Basin • Santa Gertrudis Creek Channel • Warm Springs Channel	SMR
Temecula Creek	• Assessment District 159 - Temecula Creek Channel • Morgan Valley Wash • Pechanga Creek Levee	SMR

Application Areas (By major drainage system)[10]	**Facilities[11] within the Application Site**	**RWQCB Region**
Desert - West	• Cabazon Channel • Montgomery Creek Channel • West Pershing Channel	WWR
Desert - North	• Desert Hot Springs MDP - Line E • Mission Creek Channel • Wide Canyon Channel • Wide Canyon Dam	WWR
Whitewater River	• Baristo Wash Channel • Cathedral Canyon Channel - North • Palm Canyon Wash • Palm Canyon Wash - Lateral A • Tahquitz Creek Channel And Debris Basin • Tahchevah Creek - Detention Dam	WWR

2.2.2 Potentially Isolated (Hydrologic) Areas

As shown on the Treatment Area Maps in Figures 1 through 3 and listed below in Table 5, there are drainage areas within the District that may be hydrologically isolated and not considered WUS. These areas have special conditions such as a jurisdictional delineation study approved by the Army Corps of Engineers, or flow spreading conditions that prevent all but the most extreme storms flows from reaching downstream surface waters. For example, as described within the Whitewater Region MS4 Permit, the soils in the WWR consist primarily of sands that promote rapid infiltration of runoff. During most years, perennial mountain streams tributary to the Whitewater River infiltrate or evaporate prior to reaching urbanized areas. In addition, the Army Corps of Engineers determined the Homeland-Romoland MDP is hydrologically isolated. Due to these special conditions discussed in Section 4.6, the District did not select representative monitoring sites from these areas.

Table 5. Potentially Isolated Areas

Area	Watershed
Homeland-Romoland MDP	SAR
San Jacinto MDP - Line E	SAR
West Pershing Channel	WWR
Montgomery Creek Channel	WWR
Cabazon Channel	WWR
Mission Creek Channel	WWR
Desert Hot Springs MDP - Line E	WWR
Wide Canyon Channel	WWR

2.3 Description of Weeds {VIII.C.3}

The District controls several native and non-native riparian and wetland vegetation, which may include cattails, bulrush, willows, mulefat, arundo, tree tobacco, castor bean, or tamarisk, within its facilities in order to maintain the facility's design capacity and minimize flood risk.

2.4 Aquatic Herbicide Products {VIII.C.4}

The District utilizes the aquatic herbicide Roundup Custom™ to address aquatic weed species during the operation and maintenance of their flood control facilities. In addition, the District employs the surfactant Agri-Dex as a means to enhance the effectiveness of Roundup Custom™ applications. Table 6 lists the aquatic herbicides and surfactant products used by the District. Table 7 lists the adjuvants, other than surfactants, used by the District.

Table 6. Aquatic Herbicide and Surfactants

Product Name	Product Type	Active Ingredient	EPA or CA Registration #
Roundup Custom™	Aquatic Herbicide	Glyphosate, N-(phosphonomethyl) glycine	524-343
Agri-Dex	Surfactant	Heavy range paraffinic oil, Polyol fatty acid esters, and Polyethoxylated derivated thereof	5905-50094-AA

Table 7. Adjuvants

Product Name	Product Type	Active Ingredient	EPA or CA Registration
Foam Buster	Adjuvant (Defoamer)	Dimethylpolysiloxane	5905-50072-AA
Quest	Adjuvant (Water conditioner)	Hydroxyl carboxylic, phosphoric acids, and ammonium salts; Polyacrylic acid.	5905-50076-AA

In addition to the products listed above, the District may utilize Bullseye Spray Pattern Indicator, a non-hazardous blue colorant, to ensure controlled and effective application of aquatic herbicides on a channel or basin sideslope or in inverts adjacent to water. Product label instructions and Material Safety Data Sheet (MSDS) information are included in Appendix D. Based on the regular inspections of weed growth and density within flood control facilities, District staff selects an appropriate application rate and frequency to ensure that vegetation is at a level that maintains the facility design capacity while consistent with the manufacturer's instructions.

A Technical Memorandum prepared by Larry Walker and Associates, included in Appendix B, provides the following information regarding the District's use of aquatic herbicides and surfactants.

2.5 Rationale for Using Aquatic Herbicides {VIII.C.5}

The District uses a combination of mechanical and aquatic herbicide methods to control weeds. Factors that influence the District's decision to use aquatic herbicides include weather conditions, vegetation growth, availability of staff, and priorities of other maintenance activities. In addition, limited access for equipment and wet (muddy) conditions may also limit use of mechanical weed control methods. Based on these constraints and the alternative analysis conducted in Section 2.11 , the use of aquatic herbicides has been determined to be the most effective and feasible method for most application areas.

2.6 Operations of Gates or Control Structures {VIII.C.6}

The District operates gates at seven flood control dams. However, the District operates these for flood control purposes and not for the prevention of aquatic herbicides to surface waters. Therefore, the District does not operate gates or control structures as described in Provision VIII.C.6 of the General Permit.

2.7 Short Term Exemption {VIII.C.7}

The District has not been granted a short-term or seasonal exception under Section 5.3 of the State Water Board *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*.

2.8 Description of Monitoring Program {VIII.C.8}

The monitoring program is discussed in Section 4.0 of this APAP.

2.9 Description of Procedures to Prevent Sample Contamination {VIII.C.9}

The Quality Control measures and clean sampling procedures to prevent sample contamination from persons, equipment, and vehicles associated with algaecide and aquatic herbicide application is described in the Monitoring and Reporting Program (MRP) in Section 4.0 of this APAP.

2.10 Description of BMPs to be Implemented {VIII.C.10}

The description of BMPs to be implemented is discussed in Section 3.0 of this APAP.

2.11 Alternative Control Methods {VIII.C.11}

2.11.1 No Action Alternative {VIII.C.11.a.i}

The "No Action" alternative consists of avoiding the use of any control methods to manage growth of weeds within the District's facilities. Under this alternative, since no action is taken to control weeds, vegetation is expected to increase during each growing season.

The increase of vegetation growth will likely obstruct storm flows, reduce the capacity of facilities to convey design storm flows, and increase the risk of flooding to adjacent properties. Therefore, the "No Action" alternative is not a feasible option.

2.11.2 Prevention Alternative {VIII.C.11.a.ii}

The "Prevention Alternative" consists of taking actions to prevent the establishment and growth of weeds. The District does utilize early detection by patrolling facilities regularly to identify potential or existing maintenance issues, such as vegetation growth, to identify where applications are needed.

2.11.3 Mechanical or Physical Method Alternative {VIII.C.11.a.iii}

The Mechanical or Physical Method alternative consists of the use of physical removal of plants using hand tools, or mechanical removal using powered equipment, such as mowers. The District may implement mechanical methods, such as mowing, where feasible and appropriate, as an alternative to aquatic herbicide use. However, staff availability, limited access for equipment, and wet conditions limits the use of mechanical weed control methods.

2.11.4 Cultural Method Alternative {VIII.C.11.a.iv}

Cultural controls are changes in practices that may reduce the establishment of weeds. In some cases, weeds may occur within the facilities as a result of low flow from irrigation runoff from adjacent residential areas. The District currently participates in a public education program, which is a component of the District's MS4 Permits, to distribute educational materials such as "10 Ways to Save Water Outdoors" and "Landscaping and Gardening" to promote water conservation practices. The reduction of irrigation runoff may help prevent occurrence of weeds in some of the facilities.

2.11.5 Biological Control Agents Use Alternative {VIII.C.11.a.v}

Potential biological controls for weed control may be found on the UC IPM Online website at: http://www.ipm.ucdavis.edu/NATURAL/index.html#WEEDS. Only a few biological control options were listed and did not cover the range of vegetation that the District controls within its facilities. Therefore, the use of biological control agents is not considered a feasible option at this time.

2.11.6 Algaecides and Aquatic Herbicides Alternative {VIII.C.11.a.vi}

The algaecides and aquatic herbicides alternative consists of the use of RoundUp Custom™, a glyphosate-based herbicide that is approved for aquatic use, in order to control weeds. Maintenance staff inspects facilities on a regular basis to monitor field conditions including vegetation growth, which may adversely affect design hydraulic capacity. Based on the observed field conditions, maintenance staff selects an appropriate application rate to ensure vegetation is at a level that maintains the design capacity of a particular facility.

2.11.7 Using the Minimum Amount of Aquatic Herbicides {VIII.C.11.a}

Since no alternatives were identified to avoid the use of aquatic herbicides, the District will use the minimum amount of aquatic herbicide that is necessary to have an effective control program and is consistent with the algaecide and aquatic herbicide product label requirements.

2.11.8 Using the Least Intrusive Method of Aquatic Herbicide Application {VIII.C.11.b}

In addition to using the minimum amount of aquatic herbicides as described in Section 2.11.6, the District uses specialized spray trucks from existing access roads, which are located adjacent to the District facilities, to safely transport and properly apply aquatic herbicides in the least intrusive method feasible.

2.11.9 Applying a Decision Matrix Concept to the Choice of the Most Appropriate Formulation {VIII.C.11.c}

As discussed in Section 2.11.2 , the District regularly patrols its facilities to identify existing or potential maintenance issues, such as vegetation growth. Based on these observations, maintenance staff determines the appropriate vegetation control method. If aquatic herbicides are used, maintenance staff selects the appropriate rate based on the observed vegetation growth of application and is consistent with the manufacture's label.

3. Best Management Practices (BMPs) {VIII.C.10}

3.1 Introduction

BMPs are practices, procedures, polices, prohibitions, schedules of activities, structures, or devices that are implemented in order to prevent or minimize the discharge of pollutants (residual aquatic herbicide) that may occur from the use of aquatic herbicides. The District implements the BMPs described below.

3.2 Spill Prevention, Control, and Cleanup {VIII.C.10.a}

The District implements a *Spill Prevention, Control and Countermeasures Plan*, which requires maintenance staff to take measures to prevent spills from occurring and to take appropriate actions when spills do occur.

3.2.1 Spill Prevention, Control, and Cleanup:

The District implements spill prevention, control and cleanup as described on CASQA BMP Factsheet SC-11 and as summarized below:

- The District implements a Spill Prevention Control and Response Plan and Hazardous Materials Business Emergency Plan (HMBEP);
- Maintenance staff are trained in proper handling, use, and storage of hazardous materials as part of the Hazard Communication Program;
- Maintenance staff are trained to cleanup small spills with absorbent or sweep up dry spills rather than use water and to report large spills or hazardous waste to County HAZMAT;
- Spill kits are located in buildings and areas where materials are stored, transferred, and used; surveyor, fence, and spray trucks, as well as heavy equipment and support trucks are outfitted with spill kits;
- Materials are stored indoors or in a covered area outdoors;
- Storage facilities are inspected weekly;
- All liquid storage facilities have secondary containment;
- All containers are properly labeled for easy identification;
- Hazardous waste storage containers are inspected weekly; however, above ground storage tanks are inspected daily;
- Only the minimum amount of material needed for the daily activities is transported and materials are transferred between containers at the corporate yard where leaks and spills are easier to control;
- The District has a contract with a Hazardous Waste Contractor, which is identified in the HMBEP, to clean up large spills or spills involving hazardous materials; and
- As outlined in the District's Safety and Operations Manual (SOM), all spills are reported on the Environmental Spill Form in the SOM-12 procedure, Accident Investigation and Corrective Action, and analyzed for root cause. The information is used to improve spill prevention and cleanup processes.

3.2.2 Vehicle and Equipment Preventive Maintenance

The District's implementation of preventive maintenance BMPs includes regular inspections and maintenance of herbicide application equipment intended to minimize spills by performing maintenance activities before problems arise. Since equipment failures or equipment that functions poorly may result in potential pollutant discharge to the facilities, the District performs preventive maintenance on its vehicles and equipment.

3.3 Appropriate Rate of Aquatic Herbicide Application {VIII.C.10.b}

Prior to application, maintenance supervisors review planned aquatic herbicide use to ensure that the appropriate amount of herbicide is used for the treatment area, and that the herbicide amount is consistent with the manufacture's label.

3.3.1 Scheduling

Due to the contact time required for the aquatic herbicide to be effective at treating the targeted weeds, aquatic herbicides will be minimized or avoided if the chance of rain is predicted to be greater than 50% within 24 hours prior to the application event. Avoiding or minimizing application prior to rain events will allow time for the aquatic herbicide to treat the weeds before being washed off, reduce the chance of residual aquatic herbicide from being discharged into the receiving water, and reduce the need for repeated applications.

3.3.2 Regular Monitoring of Weed Growth

Facilities are monitored on a regular basis to observe weed growth. As recommended by the manufacturer's label, annual weeds are easiest to control when actively growing, and the control of most perennial weeds is best made at late growth stages. The District follows these recommendations to ensure that the minimum amount of aquatic herbicide is used to control the target weeds.

3.3.3 Minimize Drift

To prevent impacts to non-target plants, maintenance staff will take measures to minimize the drift of herbicide. Measures may include:

- Considering weather conditions such as wind, temperature, and humidity, and the potential of temperature inversions. For example, avoiding application under windy or gusty conditions;
- Maintaining an adequate buffer from non-target areas;
- Using appropriate formulation of aquatic herbicide;
- Conducting regular maintenance of spray equipment to ensure that it is functioning correctly; and
- Using appropriate droplet size.

3.3.4 Apply Moving Upstream

As recommended in Section 8.1 of the Roundup Custom Manufacturer's label, when flowing water is present, applicators will apply product while traveling upstream to prevent the concentration of herbicide in water.

3.3.5 Spot Spray Weeds

Where applicable, applicators may spot spray weeds to minimize aquatic herbicide usage, prevent overspray, and avoid impacts to adjacent non-target vegetation.

3.4 Education on Avoidance of Potential Adverse Effects {VIII.C.10.c}

Maintenance staff attends training on a regular basis so that they are familiar with the current requirements of the District's MS4 Permits, laws pertaining to herbicide application, and correct use and mixing of chemicals. For example, recent trainings included:

- Helena Chemical Company Pesticide Safety Training. Topics included: Pesticide Safety Training, Product Information and Updates, Safe Mixing and Handling Instructions when using Adjuvants, Review Safety Training and Labels, as required by Section 6724 of California Code of Regulations, Title 3, Division 6;
- Wilbur-Ellis Vegetation Management Seminar. Topics included: Technical product reviews, Best Management Practices, Managing Herbicide Resistance, Use of Drift Retardants; and
- MS4 Municipal Training. Topics included: Municipal Permits and requirements for municipal facilities and operators, BMPs applicable to municipal facilities and operations, and the municipal facility pollution prevention plan.

3.5 Planning and Coordination with Nearby Farmers and Agencies {VIII.C.10.d}

Prior to the application of aquatic herbicide, the District notifies all potentially affected agencies, including Water Districts, Cities, Regulatory Agencies, and Resource Conservation Districts. If following notification, agencies have concerns regarding the potential impacts resulting from District aquatic herbicide use, the District will coordinate with these agencies to ensure that potential impacts are minimized.

3.6 Prevention of Fish Kills {VIII.C.10.e}

Due to the primarily ephemeral or intermittent nature of the Districts flood control systems, fish do not normally populate District facilities. However, there may be exceptions, such as in Lake Elsinore, in which Eastern Municipal Water District (EMWD) provides water to the lake using the District's Lake Elsinore Outlet Channel. In these cases, maintenance staff follows the manufacturer's instructions regarding usage near aquatic sites to prevent the potential of fish kills. For example, Section 8.1 of the Roundup Custom instructions recommends treatment in strips to avoid oxygen depletion due to decaying vegetation, which may result in a fish kill.

4. Monitoring and Reporting Program {VIII.C.8}

4.1 Introduction

The Monitoring and Reporting Program (MRP) addresses the following goals (General Permit - Factsheet, Page D-30):

- Identify and characterize algaecide or aquatic herbicide application projects conducted by the Discharger;
- Determine compliance with receiving water limitations and other requirements specified in the General Permit;
- Measure and improve the effectiveness of the APAP;
- Support the development, implementation, and effectiveness of BMPs;
- Assess the chemical, physical, and biological impacts on receiving waters resulting from algaecide or aquatic herbicide applications;
- Assess the overall health and evaluate long-term trends in receiving water quality;
- Demonstrate that the water quality of the receiving waters following completion of resource or weed management projects are equivalent to pre-application conditions; and
- Ensure that projects that are monitored are representative of all algaecide or aquatic herbicide and application methods used by the Discharger.

Based upon the District's use of aquatic pesticides, Table 8 summarizes the applicable General Permit monitoring requirements.

Table 8. Summary of Applicable Monitoring Requirements

Sample Type	Constituent/Parameter	Sample Method	Laboratory Method	Frequency	Sample Collection Timing
Visual	1. Monitoring area description 2. Appearance of waterway 3. Weather conditions	Visual Observation	Not applicable	All applications at all sites	Background, Event, and Post-event monitoring
Physical	1. Temperature (^{o}F) [1] 2. pH [2] 3. Turbidity (NTU) [2] 4. Electrical Conductivity @ 25°C [2]	Grab[3]	USEPA Guidelines	One application event from each environmental setting per year	Background, Event, and Post-event monitoring
Chemical	1. Active Ingredient (Glyphosate, ug/L) 2. Nonylphenol [4] (ug/L) 3. Dissolved Oxygen (mg/L)	Grab[3]	USEPA Guidelines	One application event from each environmental setting per year	Background, Event, and Post-event monitoring

[1] Measured in the field

[2] Measured in the field or laboratory

[3] Samples shall be collected at three feet below the surface of the waterbody or at mid water column depth if the depth is less than three feet
[4] Only when nonylphenol-based surfactant is used

In addition, the MRP answers the two key questions presented within the General Permit:

Question No. 1: Does the residual algaecides and aquatic herbicides discharge cause an exceedance of receiving water limitations?

Question No. 2: Does the discharge of residual algaecides and aquatic herbicides, including active ingredients, inert ingredients, and degradation byproducts, in any combination cause or contribute to an exceedance of the "no toxics in toxic amount" narrative toxicity objective?

In order to address the two key questions, the District considered its aquatic herbicide use in the context of a logical framework as described in the following sections. A Technical Memorandum prepared by Larry Walker Associates provides the evaluation of potential impacts resulting from aquatic herbicide use, including environmental fates and transports. Information from the Technical Memorandum was included in the following sections, and a copy is included in Appendix B.

4.1.1 Basic Geographic and Hydrographic Features of the Area, Particularly Application Points and Pathway(s) of Residue Flows {Attachment C, III.A.1}

As described in Section 2.1, the District's facilities and rights of way are located within three watershed regions and the application area typically includes the sideslopes and inverts of channels and low-flow channels within basins and storm drain outfalls. While many facilities are typically dry when application occurs, there may be situations due to events such as residential irrigation runoff, water district discharges or high groundwater, which have the potential to transport residues along the general drainage paths as described below.

In the WWR, the District's application areas are grouped into Desert - West, Desert - North, and Whitewater River (See Figure 3):

- The Desert - West application area, which is located in the western portion of the WWR, generally drains from west to east and to the San Gorgonio River. Discharges into the San Gorgonio River mainly infiltrate. Rarely and only during significant runoff events, stormwater runoff may flow as far as the CVWD infiltration basins near the city of Palm Springs. Therefore, residues from aquatic herbicide applications are not expected to be transported from the application area.

- The Desert - North application area, which is located in the middle and northern portion of the WWR, generally drains from north to south and drains to several washes tributary to the Little and Big Morongo Washes. Discharges into these washes mainly infiltrate. Rarely and only during significant storm events, stormwater runoff may flow into the Whitewater River. Therefore, residues from aquatic herbicide applications are not expected to be transported from the application area.

- The Whitewater application area, which is located south of the Desert - North application area and east of the Desert - West application area, generally drains from northwest to southeast and to the Whitewater River and its tributaries (Tahchevah Creek, Tahquitz Creek, and Palm Canyon Wash). Due to arid conditions in this region, residues from aquatic herbicide applications are not expected to be transported from the application area.

In the SAR, the District's application areas are grouped into Eastvale MDP, Day Creek Channel/San Sevaine Channel, Pyrite Channel, Sunnslope Channel/University Wash, Norco MDP, Arlington Channel, Box Springs, Anza Channel, Sunnymead/Moreno MDPs, Temescal Creek Channel, Lake Mathews, Perris Valley Channel, Lake Elsinore, San Jacinto River, and Salt Creek Channel application areas.

- The Eastvale MDP application area, which is located near the northwestern edge of Riverside County and within the city of Eastvale, generally drains from north to south. Facilities located on the eastern and southern portion of the application area drain to the Santa Ana River while facilities on the western portion of the application area drain to Cucamonga Creek.

- The Day Creek Channel/San Sevaine Channel application area, which is located to the east of the Eastvale MDP application area near the northwestern edge of Riverside County and within the city of Jurupa Valley, generally drains from north to south. Facilities within this application area primarily drain to either the Day Creek Channel or San Sevaine Channel system, which drain to Santa Ana River, Reach 3.

- The Pyrite Channel application area, which is located to the east of the Day Creek Channel/San Sevaine Channel application area and within the city of Jurupa Valley, generally drains from north to south. Facilities within this application area primarily drain to Pyrite Channel, which then drains to the Santa Ana River, Reach 3.

- The Sunnyslope Channel/University Wash application area, which is located to the east of the Pyrite Channel application area and within the city of Jurupa Valley, generally drains from north to south for the area north of the Santa Ana River and east to west for the area east of the Santa Ana River. Facilities north of the Santa Ana River primarily drain to the Sunnyslope Channel system, which then drains to the Santa Ana River. The Sunnyslope Channel receives a constant low flow due to high groundwater during the dry season. Facilities located south of the Santa Ana River primarily drain into the University Wash system which drains to Lake Evans. Lake Evans drains to the Santa Ana River, Reach 3.

- The Norco MDP application area, which is located to the south of the Eastvale MDP application area and within the city of Norco, generally drains from northeast to southwest. Discharges drain to either the North Norco Channel or South Norco Channel systems. South Norco Channel drains to Temescal Creek while North Norco Channel drains directly into Prado Basin.

- The Arlington Channel application area, which is located to the east of the Norco MDP between the cities of Corona and Riverside, generally drains from northeast to southeast. Arlington Channel drains into Temescal Creek near the Interstate 15 and State Highway 91 interchange.

- The Anza Channel application area, which is located to the east of the Arlington Channel application area and within the city of Riverside, generally drains from southeast to northwest. Drainage within this application area is primarily collected by the Anza Channel, which discharges into the Santa Ana River downstream of Van Buren Boulevard.

- The Box Springs application area, which is located northeast of the Anza Channel application area and within the city of Riverside, generally drains from southeast to northwest. The Magnolia Storm Drain and Box Springs Storm Drain systems primarily collect drainage in this area, which drains into the Santa Ana River, Reach 3 downstream of Mission Inn Avenue.

- The Sunnymead/Moreno MDP application area, which is located east of the Box Springs application area and within the city of Moreno Valley, generally drains in the southerly direction and into the Kitching Street Channel. The Kitching Street Channel drains into the Perris Valley Channel.

- The Temescal Creek application area, which is located to the west of the Norco MDP, Arlington Channel and Lake Mathews application areas, generally drains from southeast to northeast within Temescal Creek.

- The Lake Mathews application area is located to the east of the Temescal Creek application area. This application area does not connect to the Santa Ana River.

- The Perris Valley Channel application area is located south of the Sunnymead/Moreno MDP. This application area drains in the southerly direction and into the Perris Valley Channel, which drains into the San Jacinto River.

- The Lake Elsinore application area, which is located southeast of the Temescal Creek application area, generally drains into Lake Elsinore. Only during a large storm event will flows drain into Temescal Creek Channel via the Lake Elsinore Outlet Channel. Lake Elsinore Outlet Channel, Reach 1, which consists of the portion from Lake Elsinore to Wasson Canyon Dam, typically has a consistent flow from Elsinore Valley Municipal Water District to maintain water levels in the lake.

- The San Jacinto River application area, which is located east of the Perris Valley application area, generally drains from east to west and into the San Jacinto River. The San Jacinto River drains into Canyon Lake, which drains to Lake Elsinore.

- The Salt Creek application area, which is located south of the San Jacinto application area, generally drains from east to west and into Salt Creek. Salt Creek Channel drains into Canyon Lake, which drains to Lake Elsinore.

In the SMR, the District's facilities are grouped into the Wildomar Channel, Murrieta Creek and Temecula Creek application areas.

- The Wildomar Channel application area, which is located in the northwestern portion of the SMR, generally drains from north to south and into Wildomar Channel. Wildomar Channel drains into Murrieta Creek.

- The Murrieta Creek application area, which is located southeast of the Wildomar Channel application area, generally drains from northwest to southeast. Murrieta Creek drains to the Santa Margarita River.

- The Temecula Creek application area, which is located southeast of the Murrieta Creek application area, generally drains from northeast to southwest. Temecula Creek drains to the Santa Margarita River.

4.1.2 Aquatic Herbicides Application Practices and How They Are Distributed in Space and Time {Attachment C, III.A.2}

The District applies aquatic herbicides via handheld nozzle and hose attached to a truck mounted spray system (spray truck) and with personal sprayers from the adjacent access roads. In addition, applications occur year round with the majority occurring during the summer months.

4.1.3 Relevant Knowledge about Transport, Fates, and Effects of Aquatic Herbicides, Include Best- and Worst-case Scenarios {Attachment C, III.A.3}

Roundup Custom™

Glyphosate adsorbs strongly to soil particles, is highly water soluble, and generally not degraded through chemical or photochemical processes in soil or water. Although glyphosate is highly water soluble, it has a low capacity to infiltrate groundwater due to a high soil adsorptive potential. In addition, due to the low vapor pressure of glyphosate, volatilization from soils is unlikely, and due to the low octanol/water coefficient of glyphosate, fish tissue accumulation is unlikely. The main mechanisms for glyphosate loss in aquatic and terrestrial systems are microbe degradation and settling.[12] Microbes degrade glyphosate to AMPA, which further degrades to carbon dioxide, ammonium, formaldehyde, phosphate, amino acids, carbohydrates, and natural acids.

Possible effects from glyphosate include aquatic organism toxicity and mammalian toxicity. Potential impacts may result from inappropriate use or failure to implement BMPs. For example, under a worst-case scenario, if an inappropriate application of Roundup Custom™ occurs adjacent to water, oxygen depletion can occur, due to excess decomposition of dead plants. This oxygen loss can cause fish suffocation.[13] In addition, since glyphosate is a nonselective herbicide, inappropriate application, such as not maintaining an adequate buffer or application during inappropriate weather conditions, may result in overspray and impacts to non-target species. However, the District implements BMPs, as described in

[12] Schuette, Jeff. 1998. Environmental Fate of Glyphosate. Environmental Monitoring & Pest Management Department of Pesticide Regulation. Sacramento, CA. November 1998.
[13] Monsanto Company. 2013. Roundup Custom™ Specimen Label 21153L1-37.

this APAP, to ensure the proper application of Roundup Custom™. Therefore, under the best-case scenario, Roundup Custom™ residue is expected to biodegrade and minimal impact is expected to occur.

4.1.4 Description of Designated Beneficial Uses in Each Water Body {Attachment C, III.A.4}

The application sites include the following beneficial uses, with the specific waterbody-beneficial use designations identified in Table 9 (WWR), Table 10 (SAR), and Table 11 (SMR).

MUN – Municipal and Domestic Supply waters are used for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.

AGR – Agricultural Supply waters are used for farming, horticulture or ranching. These uses may include, but not limited to, irrigation, stock.

GWR – Groundwater Recharge waters are used for natural or artificial recharge of groundwater for purposes that may include, but are not limited to, future extraction, maintaining water quality or halting saltwater intrusion into freshwater aquifers.

REC1 – Water Contact Recreation waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing and use of natural hot springs.

REC2 – Non-Contact Water Recreation waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing and aesthetic enjoyment in conjunction with the above activities.

WARM – Warm Freshwater Habitat waters support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish and wildlife, including invertebrates.

WILD – Wildlife Habitat waters support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.

RARE – Rare, Threatened or Endangered Species waters support the habitats necessary for the survival and successful maintenance of plant or animal species designated under state or federal law as rare, threatened or endangered.

PROC – Industrial Process Supply includes uses of water for industrial activities that depend primarily on water quality.

LWARM – Limited Warm Freshwater Habitat support warm water ecosystems which are severely limited in diversity and abundance as the result of concrete-lined watercourses and low, shallow dry weather flows which result in extreme temperature, pH and/or dissolved oxygen conditions.

Table 9. WWR Beneficial Uses

Receiving Water	Beneficial Uses[14]	Application Areas
San Gorgonio River	MUN^P, AGR, GWR, REC1, REC2, COLD, WILD	Desert - West
Washes	$FRSH^I$, GWR^I, $REC2^I$, $WILD^I$	Desert - West, Desert - North
Mission Creek	MUN^P, AGR, GWR, REC1, REC2, WARM, WILD	Desert - North
Palm Canyon Creek	MUN^P, AGR, GWR, REC1, REC2, WARM, WILD	Whitewater River
Tahquitz Creek	MUN^P, AGR, GWR, REC1, REC2, WARM, WILD	Whitewater River

Table 10. SAR Beneficial Uses

Receiving Water	Beneficial Uses[15]	Application Areas
Anza Park Drain	MUN, REC1, REC2, WARM, WILD, SPWN	Riverside
Cucamonga Creek, Reach 1	GWR, REC1, REC2, LWARM, WILD	Eastvale MDP
Potrero Creek	MUN^I, AGR^I, GWR^I, $REC1^I$, $REC2^I$, $WARM^I$, $WILD^I$	San Jacinto River
Salt Creek	GWR^I, $REC1^I$, $REC2^I$, $WARM^I$, $WILD^I$	Salt Creek
San Jacinto River, Reach 3	AGR^I, GWR^I,$REC1^I$, $REC2^I$, $WARM^I$, $WILD^I$	San Jacinto River
San Jacinto River, Reach 5	AGR^I, GWR^I,$REC1^I$, $REC2^I$, $WARM^I$, $WILD^I$	San Jacinto River
San Timoteo Creek, Reach 3	GWR, REC1, REC2, WARM	Sunnyslope Channel/University Wash
Santa Ana River, Reach 3	AGR, GWR, REC1, REC2, WARM, WILD, RARE	Eastvale MDP, Day Creek/San Sevaine Channel, Sunnyslope Channel/University Wash; Box Springs Channel; Riverside; Pyrite Creek
Santa Ana River, Reach 4	GWR, REC1, REC2, WARM, WILD	Sunnyslope Channel/University Wash
Sunnyslope Channel	MUN, REC1, REC2, WARM, WILD, SPWN	Sunnyslope Channel/University Wash
Temescal Creek, Reach 1a	REC1, REC2, WARM, WILD	Temescal Creek, Arlington Channel

[14] "P" superscript indicates potential use.
[15] "I" superscript indicates intermittent.

Receiving Water	Beneficial Uses[15]	Application Areas
Temescal Creek, Reach 1b	REC1, REC2, WARM, WILD	Temescal Creek
Temescal Creek, Reach 2	AGR[I], IND[I], GWR[I], REC1[I], REC2[I], LWARM, WILD	Temescal Creek
Temescal Creek, Reach 5	AGR, GWR, REC1, REC2, WARM, WILD, RARE	Lake Elsinore
Temescal Creek, Reach 6	GWR[I], REC1[I], REC2[I], WARM[I], WILD[I]	Lake Elsinore
Tequesquite Arroyo (Sycamore Creek)	GWR, REC1, REC2, WARM, WILD, RARE	Box Springs Channel

Table 11. SMR Beneficial Uses

Receiving Water	Beneficial Uses	Application Areas
Murrieta Creek	MUN, AGR, IND, PROC, REC1[I], REC2, WARM, WILD	Wildomar MDP, Murrieta Creek
Warm Springs Creek	MUN, AGR, IND, PROC, REC1[I], REC2, WARM, WILD	Murrieta Creek
Temecula Creek	MUN, AGR, IND, PROC, REC1[I], REC2, WARM, WILD	Temecula Creek
Pechanga Creek	MUN, AGR, IND, PROC, REC1[I], REC2, WARM, WILD	Temecula Creek

4.1.5 Relevant Knowledge About the Action of Cumulative and Indirect Effects {Attachment C, III.A.5}

Roundup Custom™

Possible direct water quality effects from glyphosate include toxicity to aquatic organisms (vertebrates and invertebrates), toxicity to non-target plant species, toxicity to aquatic and riparian mammals and avian species, and human toxicity. Glyphosate has relatively low oral and dermal acute toxicity to humans, but can cause congestion of lungs and increased breathing rate from acute exposure. Chronic exposure effects include kidney damage and reproductive effects;[16] however, glyphosate is not carcinogenic to humans. Glyphosate is no more than slightly toxic to birds and is practically non-toxic to fish and aquatic invertebrates.[17] In addition, inappropriate glyphosate application can result in indirect effects such as low dissolved oxygen levels due to decomposition of dead plants, which may lead to aquatic organism kills.[18]

4.1.6 Mechanisms Through Which Aquatic Herbicide Applications Could Lead to Designated Use Impacts, Given the Basic Features of the Area {Attachment C, III.A.6}

The mechanisms by which Roundup Custom™ could lead to designated use impacts include herbicide spray drift, pooling of herbicides, and transport of herbicides downstream from target application area(s). Characteristics that may influence how Roundup Custom™ affect water quality include application location(s), water flow at application location(s), herbicide concentration in spray solution, amount of spray solution applied, time of year, and meteorological conditions (dry or wet weather). District locations of herbicide application usually include dry flood control channels or flood control channels with minimal flow, which is mostly due to irrigation runoff as well as other non-stormwater runoff.

The District utilizes application BMPs to minimize the impact of herbicides on water quality. BMPs include minimizing drift through the consideration of weather conditions such as wind, temperature, and humidity; applying herbicides during dry weather; maintaining an adequate buffer from non-target areas; using the appropriate formulation of the herbicides; ensuring proper spray equipment functioning; applying while moving upstream to concentration; and spot spraying.

4.1.7 Known and Potential Impacts of Aquatic Herbicide Applications on Water Quality, Ranked in Terms of Relative Risk, Based on Factors Such As Magnitude, Frequency and Duration {Attachment C, III.A.7}

Roundup Custom has the potential to contaminate surface waters and impact beneficial uses as glyphosate is highly soluble, there is low degradation from chemical or photochemical process in water, and there is often low microbial degradation in water.

Known and potential impacts ranked in order of likelihood, from most to least likely, include:

- Toxicity to aquatic organisms;
- Toxicity to non-target plant species;
  Low dissolved oxygen concentrations; and
- Human effects.

4.1.8 Sufficient Number of Sampling Areas to Assess the Entire Discharger's Area of Influence {Attachment C, III.A.8}

For glyphosate application, the General Permit requires that samples are collected from one application event from each environmental setting per year. However, since the District is located within three different watershed regions with different characteristics, the District identified two sites in the SAR, and one site in each WWR and SMR that are representative of aquatic herbicide usage in the region.

4.1.9 A Description of Sampling Methods and a Sampling Schedule {Attachment C, III.A.9}

The description of sampling methods, including sampling kit, safety procedures, sample collection procedures, sample identification, handling and preservation, documentation, analytical laboratory, and

sample analysis is included in Section 4.7 Section 4.8 describes Quality Assurance and Quality Control procedures.

4.2 Visual Monitoring {Attachment C, III.B}

Maintenance staff will collect a visual monitoring assessment during every application event. Maintenance staff will record the following visual monitoring parameters on the *Weed Control Pesticide Application Log*:

- Time visual monitoring assessment was conducted;
- Wind;
- Precipitation;
- Whether flow is observed and estimated depth;
- Color (if flow observed);
- Sheen (if flow observed);
- Water Temp (if flow observed); and
- Estimated Water Depth (if flow observed).

Once maintenance staff have completed the *Weed Control Pesticide Application Log* and certifies that the aquatic herbicide application was conducted in accordance with the applicable laws, manufacturer's label instructions, and training received, as described within this APAP, a copy will be forwarded at the end of each month to the District's NPDES Section for reporting.

During representative site monitoring, a field sampler will conduct a visual monitoring assessment and record the observations on the *Field Data Sheet.* These notes will be summarized in the monitoring report. The field sampler will note and describe the presence or absence of the following:

- Floating or suspended matter;
- Discoloration;
- Bottom deposits;
- Aquatic life;
- Visible films, sheens, or coatings;
- Fungi, slimes, or objectionable growths; and
- Potential nuisance conditions.

4.3 Physical Monitoring {Attachment C, III.B}

During representative site monitoring, a field sampler will conduct a physical monitoring assessment and record the observations on the *Field Data Sheet*. The field sampler will measure the following physical monitoring parameters using a field meter and record the results on the *Field Data Sheet:*

- Temperature (°F);
- pH;
- Turbidity (NTU); and
- Conductivity (µS/cm or µmhos/cm).

4.4 Chemical Monitoring {Attachment C, III.B}

During representative site monitoring, a field sampler will conduct a chemical monitoring assessment and record the observations on the *Field Data Sheet*. The field sampler will measure the following chemical monitoring parameters using a field meter and record the results on the *Field Data Sheet*:

- Dissolved Oxygen (mg/L)

The field sampler will collect a grab sample and transport to a lab for further analysis. Laboratory analysis will determine concentrations of the following chemical monitoring parameters:

- Active Ingredient (Glyphosate); and
- Nonylphenol (Surfactant), if used.

4.5 Weather and Rain Event Tracking

To help prevent repeat application of aquatic herbicides and to reduce the potential discharge of aquatic herbicide residues to WUS, the District will consult the National Oceanographic and Atmospheric Administration (NOAA) forecasts prior to application. These forecasts can be obtained at www.weather.gov. The application of aquatic herbicides will be avoided or minimized when the forecast identifies a 50% or greater chance of rain within 24-hours prior to the application event. Maintenance Staff will note the weather forecast information on the *Weed Control Pesticide Application Log* (Attachment E to this APAP).

4.6 Representative Site Monitoring

4.6.1 Representative Site Locations

The General Permit requires water quality sampling from one application event from each environmental setting (flowing water and non-flowing water) per year for glyphosate and nonylphenol applications. Since the District is located within three watershed regions, the District selected two monitoring sites per watershed region. As required by the General Permit, these sampling sites must be representative sites. The District designated four representative sites based on vegetative conditions, accessibility and the expected annual application frequency of aquatic herbicides.

Based on an analysis of past maintenance activities, the District identified representative monitoring sites by considering factors such as estimated frequency and quantity of aquatic herbicide application. Since the specific application area may vary significantly each year depending on current field conditions, the GPS coordinates listed for each representative site are approximate. The *Field Data Sheet* will contain the final GPS coordinates during representative site monitoring.

Table 12. WWR (Region 7) Monitoring Sites

Application Site	Monitoring Site	GPS Coordinates[19]
Whitewater River	Tahquitz Creek Channel	33°48'40"N 116°33'08"W

[19] Approximate location is provided. Final location will be recorded on the *Field Data Sheet*.

Table 13. SAR (Region 8) Monitoring Sites

Application Site	Monitoring Site	GPS Coordinates
Sunnyslope Channel/University Wash	Sunnyslope Channel	34°00'54"N 117°22'18"W
Salt Creek Channel	Southwest Hemet MDP - Line B	33°42'26"N 117° 02'43"W

Table 14. SMR (Region 9) Monitoring Sites

Application Site	Monitoring Site	GPS Coordinates
Wildomar MDP Channel	Wildomar Channel - Lateral E	33°50'21"N 117°15'45"W

4.6.2 Tahquitz Creek Channel and Debris Basin

The Tahquitz Creek Channel (Project No. 6-0-00060; Drawing No. 6-240) monitoring site is located in the WWR, within the Whitewater River application site and in the city of Palm Springs (Figure 5). Tahquitz Creek Channel is located downstream of the Tahquitz Creek Debris Basin and extends east to the Mesquite Country Club adjacent to Sunrise Way, and consists of an unlined channel with rock sideslopes. Tahquitz Creek Channel drains east to Palm Canyon Wash, which then drains into the Whitewater River near Calle Arriba.

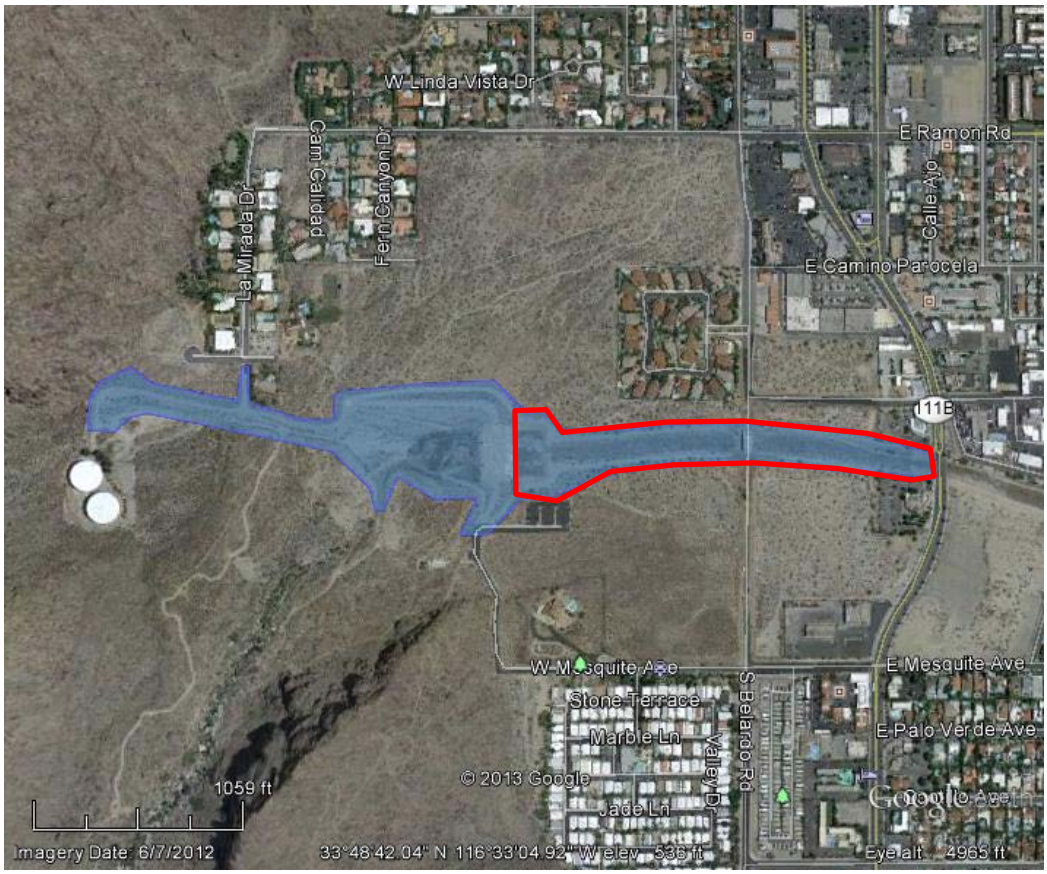


Figure 5. Tahquitz Creek Channel and Debris Basin Monitoring Site. Shown in red.

4.6.3 Southwest Hemet MDP – Line B

The Southwest Hemet MDP - Line B (Project No. 4-0-00243, Drawing No. 4-732) monitoring site is located in the SAR, within the San Jacinto River Basin subwatershed, within the Salt Creek Channel application site, and within the unincorporated community of Winchester (Figure 6). The Southwest Hemet MDP - Line B channel drains into the Salt Creek Channel.

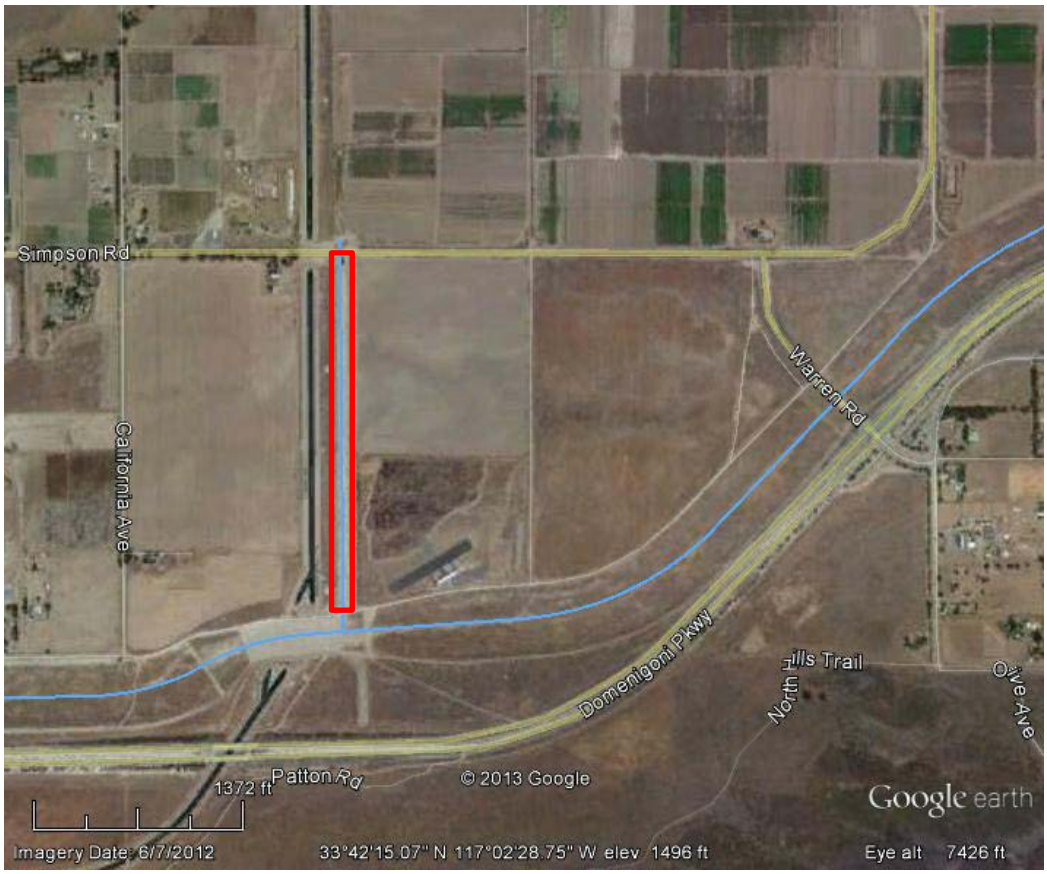


Figure 6. Southwest Hemet MDP - Line B Channel Monitoring Site. Shown in red.

4.6.4 Rubidoux and Sunnyslope Channels

The Rubidoux Channel and Sunnyslope Channel (Project No. 1-0-00142 and Project No. 1-0-00100, Drawing No. 1-226, respectively) monitoring site is located in the SAR, within the Sunnyslope Channel application site and within the city of Jurupa Valley (Figure). Rubidoux Channel starts at the confluence of Sunnyslope Channel and Rubidoux Channel, and extends north to Sexton Lane. While this channel is concrete-lined, sediment accumulates on the channel invert and allows vegetation to establish and grow. The District minimizes sediment removal activities in order to prevent impacts to the downstream habitat restoration site. The District uses aquatic herbicides to prevent further vegetation from growing, which can trap additional sediment and obstruct storm flows. Flows that enter this channel will travel southwest to Sunnyslope Channel and then outlet into the Santa Ana River near Riverview Drive.

Figure 7. Rubidoux Channel and Sunnyslope Channel Monitoring Site. Shown in red.

4.6.5 Wildomar Channel - Lateral E

The Wildomar Channel - Lateral E (Project No. 7-0-00075; Drawing No. 7-094) monitoring site is located in the SMR, within the Wildomar Channel application site and within the city of Wildomar (Figure 8). Wildomar Channel - Lateral E (Lateral E) begins at the confluence of Lateral E and Wildomar Channel, and extends northeast to Palomar Street. This channel is a rock-lined channel. Due to the flat slope of both Lateral E and Wildomar Channel in this area, sediment frequently accumulates and causes water to pond (non-flowing during dry periods). Flows that enter Lateral E drains southwest to Wildomar Channel, then southeast in Wildomar Channel to Murrieta Creek.

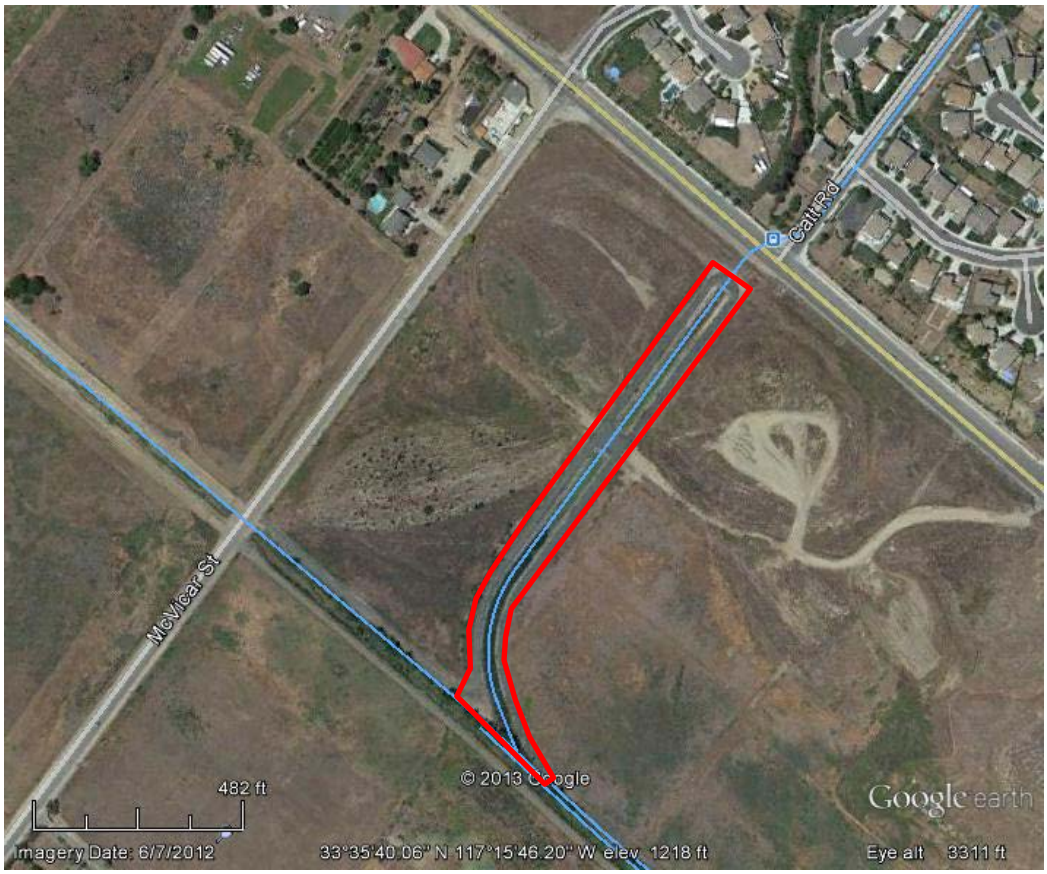


Figure 8. Wildomar Channel – Lateral E Monitoring Site. Shown in red.

4.6.6 Typical Monitoring Frequency and Schedule

The District will collect visual, physical and chemical representative monitoring samples once each year for each representative site during an application event. The District will collect samples for **each aquatic herbicide (glyphosate) and nonlyphenol (if used)** applied. When scheduling aquatic herbicide applications, the Maintenance Section will notify the NPDES Section when an application on a representative site is scheduled. After notification, the NPDES Section will coordinate with the Maintenance Section to schedule a field sampler (either District staff or consultant) to conduct the Background, Event, and Post-Event Monitoring. Figure 9 provides the typical monitoring schedule flowchart.

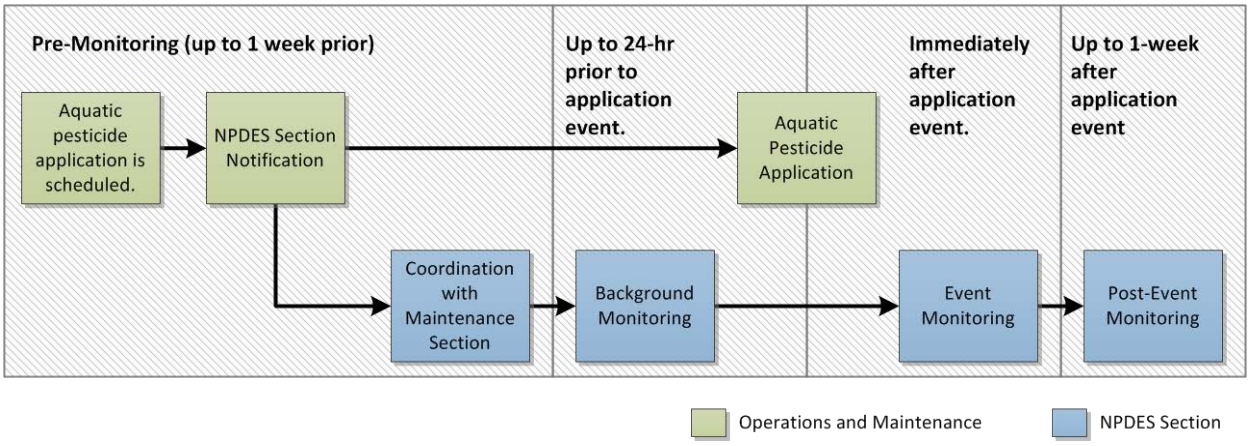


Figure 9. Typical Monitoring Schedule

4.6.7 Background Monitoring {Attachment C, II.B.1}

Up to 24 hours prior to an application event at a representative monitoring site, one water sample per aquatic herbicide will be collected within the application area. Samples may also be collected just upstream of the application area.

4.6.8 Event Monitoring {Attachment C, II.B.2}

Immediately after the application event, the District will collect one water sample per aquatic herbicide or nonylphenol based surfactant immediately downstream of the application area in flowing waters or adjacent to application area in non-flowing waters within the treatment area. If flow is present, the District will collect the sample after sufficient time for aquatic herbicide to pass through the application site.

4.6.9 Post-Event Monitoring {Attachment C, II.B.3}

Within one week after the application event, the District will collect an additional water sample per aquatic herbicide or nonylphenol based surfactant if used within the treatment area. These samples will be taken three feet below the surface of the waterbody or at mid water column depth where the depth is less than three feet. Given the arid and ephemeral nature of the District's watersheds in the application area, it is anticipated that most samples will be collected at the mid water column depth. Further, grab samples may not be possible where insufficient flow is present.

4.7 Water Quality Sampling

Water quality sampling and analysis procedures described within this APAP include a description of proper sampling techniques and quality assurance and quality control measures.

4.7.1 Sampling Kit

Field samplers will have the following monitoring supplies during representative site monitoring for each site:

Equipment

- Three (3) sampling bottle sets (1 for background, 1 for event, and 1 for post-event)
- Three (3) sample labels (may be pre-printed)
- Pens
- Zip lock bags
- Blue ice packs or ice for cooler
- One cooler
- Keys for District facilities' gates
- Cell phone with contact phone numbers
- Water Quality Meter (temperature, pH, dissolved oxygen, conductivity, and turbidity)

Documents

- APAP
- District facility maps
- Field Data Sheets
- Chain of Custody forms

Field samplers will maintain, service, and calibrate all water quality meters at appropriate intervals specified by the manufacturer. The *Field Data Sheet* will contain the calibration date prior to measurement.

4.7.2 Health and Safety Procedures

Field samplers should be familiar with the following general health and safety procedures prior to sample collection. Safety of the sampling team is paramount. The field vehicle should start out with a full tank of gas and be in good repair. Field samplers will take extra care when driving at night or in the rain. If the sampling location is unsafe, field samplers will make note of the unsafe situation and will either not collect a sample or come back after the hazardous situation has ceased.

4.7.3 Grab Sample Collection {VIII.C.9}

Field samplers will collect grab samples at locations described for representative site monitoring, in Section 4.6 and will collect, maintain and ship grab samples in accordance with the following protocols to maintain sample integrity and prevent cross-contamination:

- Collect samples (for laboratory analysis) only in analytical laboratory-provided sample containers;
- Wear clean, powder-free nitrile gloves when collecting samples;
- Change gloves whenever something not known to be clean has been touched;
- Change gloves between sites;
- Do not smoke during sampling events;
- Never sample near a running vehicle;
- Do not park vehicles in the immediate sample collection area (even non-running vehicles);
- Do not eat or drink during sample collection; and
- Do not breathe, sneeze, or cough in the direction of an open sample container.

Note, that depending upon the specific analytical test, some containers may contain preservatives. Field samplers should **never** dip these containers into the stream, but fill them indirectly from the collection container.

Grab samples will not be collected if flow and/or depth are found to be insufficient. Depth at sample point must be sufficient to collect sample via submerging the collection container/scoop without disturbing substrate along the bottom of stream or channel bed.

4.7.4 Sample Identification Format

Sample IDs will follow the same format to reduce field and laboratory errors and improve data management. The sample IDs will have the same general format that includes the sampling date, event type, project drawing number of the facility where sample is collected, and a two-digit sample code. The sample ID will be in the following format: {Sample Date}-{Event Code}-{Station Code}-{Sample Code}. Figure 50 and Figure 61 provide examples of sample IDs.

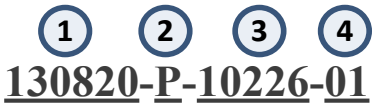


Figure 5. Example sample ID #1.

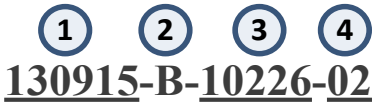


Figure 61. Example sample ID #2.

Figure 50 shows a sample ID for a post event (P) primary sample, taken at Sunnyslope Channel on August 20, 2013. Figure 61 shows a sample ID for a background event (B) field duplicate sample, taken at Sunnyslope Channel on September 15, 2013.

Table 15 provides an explanation of the fields that make up the sample ID.

Table 15. Sample Identification Format Field Description

Field	Description
1	Sample Date - Sample collection date in 'YYMMDD' format. For example, if the sample was collected on August 20, 2013, the Sample Date for that sample is '130820'.

Field	Description
2	Event Code - The event code identifies the sample type. • B - identifies a background monitoring sample. • E - identifies an event monitoring sample. • P - identifies a post-event monitoring sample.
3	Station Code - The station code is the five (5) digit drawing number (without the dash) associated with the facility where the sample was collected. The drawing number is a number assigned to the facility's construction drawings and begins with the District zone number where the facility is located. Section 4.6 provides the drawing numbers for the representative sites.
4	Sample Code - The sample code designates if the sample is a primary sample, a field duplicate sample, or a field blank sample. The codes are as follows: • 01 - Primary Sample • 02 - Field Duplicate • 03 - Field Blank

4.7.5 Sample Handling and Preservation

Temperature, dissolved oxygen, conductivity, turbidity, and pH measurements will be conducted immediately using a field meter. Field samplers must handle samples for laboratory analysis immediately following sample collection as follows:

- Cap sample containers;
- Complete sample container labels (may be pre-printed);
- Place sealed containers in a re-sealable storage bag;
- Place sample containers into an ice chilled cooler;
- Document sample information on the *Field Data Sheet*; and
- Complete the *Chain of Custody Form (COC)*.

All samples for laboratory analysis must be maintained between 0 and 6 degrees Celsius during delivery to the laboratory. Samples must be kept on ice or refrigerated from sample collection through delivery to the laboratory. Sample bottles must be well packaged to prevent breakage.

Samples for laboratory analysis will be shipped to the analytical laboratory right away. Hold times are measured from the time the sample is collected to the time the sample is analyzed.

Directions to the laboratory, COC, and lab procedures are in Appendix F.

4.7.6 Sample Documentation Procedures

All original data documented on sample bottle identification labels, *Field Data Sheet*, and *COCs* shall be recorded using waterproof ink. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be erased. All corrections shall be initialed and dated.

Duplicate samples shall be identified using the appropriate sample code and identified in the *COC*. Sample documentation procedures include the following:

- Sample Bottle Identification Labels: Sampling personnel shall attach an identification label to each sample bottle. Sample identification shall uniquely identify each sample location.
- Field Data Sheets: Sampling personnel shall complete the *Field Data Sheet* for each sampling event, as appropriate.
- Custody: Sampling personnel shall complete the *COC* for each sampling event with samples collected for laboratory analysis. The sampler will sign the *COC* upon sample(s) release to the analytical laboratory or courier.

4.7.7 Analytical Laboratory

As required by the General Permit Attachment C, Provision I, all laboratory analyses will be conducted at a laboratory certified for such analyses by the California Department of Public Health in accordance with California Water Code 13176. This section requires a laboratory that has accreditation or certification pursuant to the Health and Safety Code (General Permit Attachment C, Provision I.B) to perform the analysis.

E. S. Babcock and Sons, Inc., Environmental Laboratories (Babcock) is certified for chemical testing by the National Environmental Lab Accreditation Program (NELAP, No. 02101CA) and the California Environmental Laboratory Approval Program (CA ELAP, No. 2698). Address and contact information for E.S. Babcock and Sons is provided in Table 16.

Table 16. Laboratory Contact Information

Company Name:	E.S. Babcock & Sons, Inc.
Street Address:	6100 Quail Valley Court
City, State Zip:	Riverside, CA 92507-0704
Phone Number:	951.653.3351

4.7.8 Sample Analysis

Table 17 summarizes required information regarding analytical methods. Field samplers will use a field meter to measure temperature, turbidity, conductivity, pH and dissolved oxygen, while a laboratory will

analyze samples for glyphosate and nonylphenol using the appropriate USEPA analytical method and using USEPA-required or State Board-required reporting limits.

Table 17. Constituents and Sampling Parameters

Constituent	Analytical Method	Sample Container	Preservative	Maximum Holding Time	Reporting Limit
Temperature	Field Meter	N/A	None	Field	N/A
Turbidity					
Conductivity					
pH					
Dissolved Oxygen					
Glyphosate	USEPA Method 547	1L amber	6°C	14 days	10 µg/L
Nonylphenol	USEPA Method 420.2	1L amber	6°C, H_2SO_4	28 days	2 µg/L

4.8 Quality Assurance and Quality Control {VIII.C.9}

This section addresses the Quality Assurance and Quality Control (QA/QC) for activities associated with both field sampling and laboratory analyses. Field QA/QC samples evaluate potential contamination and sampling error introduced prior to submittal of samples to the analytical laboratory. Laboratory QA/QC activities provide information needed to assess laboratory contamination, analytical precision, and analytical accuracy.

4.8.1 Clean Sampling Techniques

Clean sampling techniques involve the use of certified clean containers for sample collection, and clean, powder free nitrile gloves during sample collection and handling. Adoption of a clean sampling approach, as described in Sections 4.7.3 , will minimize the chance of field contamination.

4.8.2 Field Data Sheet

The purpose of the *Field Data Sheet* is to record sampling information and field observations during monitoring that may explain any uncharacteristic analytical results. Sampling information to be included in the *Field Data Sheet* include the date and time of water quality sample collection, sampling personnel, sample container identification numbers, and types of samples that were collected. The *Field Data Sheet* should note the field observations, as described in Section 4.2 as well as any abnormalities at the sampling location (color, odor, etc.). The *Field Data Sheet* should also record field measurements for temperature, dissolved oxygen, conductivity, pH and turbidity.

4.8.3 Chain of Custody

The sample *COC* is an important documentation step that tracks samples from collection through analysis to ensure the validity of the sample. Sample *COC* procedures include the following:

- Proper labeling of samples;
- Use of *COC* forms for all samples; and

- Prompt sample delivery to the analytical laboratory.

Analytical laboratories usually provide blank *COC* forms for samples collected. An example *COC* is included in Appendix E.

4.8.4 Field Sampling Quality Control

Sampling QC uses the following field QC samples to evaluate sampling error, potential contamination and precision of sampling methodology. The results of the field QC data will be included with the environmental sample data in lab reports. Table 18 describes the frequency for each type of field QC samples.

Field sampling QC samples include:

- **Field Blanks -** Field blanks verify that field conditions, field sampling activities, and air deposition are non-contaminating. Field samplers fill a sample bottle with reagent-grade, analyte-free deionized water in the field during a sampling event. The analyzing laboratory analyzes the field blanks for the required full suite of constituents from grab samples for that particular sampling event and/or project.

- **Field Duplicates -** Field duplicates evaluate sampling error introduced by both field sampling and laboratory analyses. Field samplers submit the field duplicates blind to the laboratory. Procedures for collecting field duplicates should be the same as those used for collecting field samples. Field samplers will collect duplicates of manual grab samples by filling two grab sample containers at the same time, or in rapid sequence. The analyzing laboratory will analyze the field duplicates for the same suite of analyses as the primary grab samples.

- **Equipment Blanks -** Equipment blanks verify that the re-usable sampling containers and tubing are contaminant free prior to sampling. The analyzing lab will clean and blank any re-used sampling containers, tubing, and/or equipment/bottles. When the containers are not pre-certified, the analyzing laboratory will blank one container per batch ordered prior to use in sample collection. The District is not proposing to use re-usable equipment for this Project.

One field QA/QC sample will be collected at the frequency shown in Table 18.

Table 18. Field QA/QC Sampling Summary

Field QC Type	Description	Frequency
Field Blank	Used to verify field conditions	Amount equal to 5% of all program samples
Field Duplicate	Used to evaluate sampling error	Amount equal to 5% of all program samples
Equipment or Container Blanks	Used to verify that re-usable containers and equipment are not contaminated	Not Applicable[20]

[20] The District is not proposing to use re-usable equipment for this project.

4.8.5 Data Verification

After receiving the results from the analytical laboratory, District staff will verify the data to ensure that they are complete, accurate, and they meet the appropriate QA/QC requirements. The District will verify the data as soon as possible after receiving the data reports. Data verification and validation for sample collection and handling activities will consist of the following tasks:

- Verification that the sampling activities, sample locations, number of samples collected and type of analysis performed is in accordance with QAPP requirements;
- Documentation of any field changes or discrepancies;
- Verification that the field activities (including sample location, sample type, sample date and time, name of field personnel, etc.) were properly documented;
- Verification of proper completion of sample labels and COC forms, and secure storage of samples; and
- Verification that the laboratory received all samples recorded on COC forms.

Data verification and validation for the sample analysis activities will include all of the following:

- Verification that appropriate methodology has been followed;
- Verification that instrument calibrations have been adequately conducted;
- Verification that QC samples meet performance criteria;
- Verification that analytical results are complete; and
- Verification that documentation is complete.

Verification and validation of data entry includes:

- Sorting data to identify missing or mistyped (too large or too small) values;
- Double-checking all typed values; and
- Verification that correct data types correspond to database fields (i.e., text for text, integers for integers, number for numbers, dates for dates, times for times, etc.).

4.9 Corrective Actions

This section describes corrective actions that the District will implement in response to exceedances in receiving water limits and deficiencies in control measures as required by Provision IX.C.5 of the General Permit.

4.9.1 Receiving Water Limitation Exceedance

After a representative monitoring sample is collected, the NPDES Section will review the completed *Field Data Sheets* and laboratory results. If the NPDES Section identifies an exceedance in the receiving water limitations in the Event and Post-Event monitoring which may have resulted from the District's aquatic herbicide use, the NPDES Section, in coordination with the Maintenance Section, shall implement corrective actions as follows (General Permit, Provision IX.C.5):

- Initiate additional investigations for the cause of the exceedance;
- Implement appropriate BMPs to reduce the algaecide and aquatic herbicide concentration to levels below the applicable receiving water limitation or monitoring triggers in future application; and
- Evaluate the appropriateness of using alternative products or application methods.

4.9.2 Control Measure Deficiencies

If any of the following situations occurs, the NPDES Section, in coordination with the Maintenance Section, will review, and as necessary, revise the evaluation and selection of the control measures to ensure that the situation is eliminated and will not be repeated in the future (General Permit, Provision IX.C.5):

- An unauthorized release or discharge associated with the application of algaecides and aquatic herbicides (e.g., spill, leak or discharge not authorized by this or another NPDES permit) occurs;
- The District becomes aware, or the State Water Board concludes, that the control measures are not adequate/sufficient for the discharge to meet applicable water quality standards;
- Any monitoring activities indicate that the District failed to:
    - Follow the label instructions for the product used;
    - Use the minimum amount of algaecide and aquatic herbicide product per applications that are necessary for an effective control program consistent with reducing the potential for development of resistance and the algaecide and aquatic herbicide product label requirements;
    - Perform regular maintenance activities to reduce leaks, spills, or other unintended discharges of algaecides and aquatic herbicides covered under the General Permit; or
    - Maintain algaecide and aquatic herbicide application equipment in proper operating condition by adhering to any manufacturer's conditions and industry practices, and by calibrating, cleaning, and repairing such equipment on a regular basis to ensure effective algaecide and aquatic herbicide application and algae and aquatic weed control. The District must ensure that the equipment's rate of algaecide and aquatic herbicide application is calibrated to deliver the minimum quantity of algaecides and aquatic herbicide that is needed to have an effective control program and is consistent with the algaecide and aquatic herbicide product label requirements.

4.9.3 Corrective Action Implementation Deadlines

If the NPDES and Maintenance Sections determine that changes to the control measures are necessary to eliminate any situation identified above, the NPDES and Maintenance Sections will make these changes within 60 days. In addition, the District will implement corrective actions prior to any further discharge of the algaecides and aquatic herbicides and their residues will be allowed (General Permit, Provision IX.C.5.c).

4.9.4 Effect of the Corrective Action

The occurrence of a situation identified in Section 4.9.2 may constitute a violation of the General Permit. Implementing corrective actions as described above does not absolve the District of liability for any original violation. However, failure to comply with any the required Corrective Actions constitutes an additional permit violation. The State and Regional Boards will consider the appropriateness and promptness of corrective action in determining enforcement responses to permit violations.

4.10 Reporting

The NPDES Section is responsible for preparing and submitting the following reporting requirements.

4.10.1 Twenty-Four Hour and Five-Day Reporting

The District shall report any noncompliance that may endanger health or the environment. The District shall provide any information **orally within twenty-four (24) hours** from the time the District becomes aware of the circumstances. The District will also provide a written submission **within five (5) days** of the time the District becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times and, if the noncompliance has not been corrected, the anticipated time it is expected to continue, and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance (General Permit, Attachment D, Provision B.4).

4.10.2 Annual Reporting

Reporting period is from **January 1st to December 31st**, and the report is due on **March 1st**. The annual report shall contain the following, as described in Attachment C of the General Permit:

1. An Executive Summary discussing General Permit compliance or violation and the effectiveness of the APAP to reduce or prevent the discharge of pollutants associated with aquatic herbicide applications;
2. A summary of monitoring data, including the identification of water quality improvements or degradation, and recommendations for improvements to the APAP (including proposed BMPs) based on the monitoring results. The District will compare all receiving water monitoring data to applicable water quality standards;
3. Identification of BMPs and a discussion of BMP modifications addressing violations of this General Permit;
4. A map showing the location of each application and treatment area;
5. Types and amounts of aquatic herbicides used at each application event during each application;
6. Information on surface area and/or volume of treatment area and any other information used to calculate dosage and quantity of each herbicide used;
7. List of open gates in the treatment area that may discharge to surface waters; time of gate closure and reopening, including any calculations used to determine closure and reopening times, if applicable;
8. Sampling results for all required monitoring under Section B of the MRP and any additional sampling conducted in compliance with Section 4.3 of the MRP. Sampling results shall:
    a. Indicate the name of the sampling agency or organization;
    b. Provide detailed sampling information (including latitude and longitude);
    c. Provide detailed map or description of each sampling site (i.e., cross roads, etc.);
    d. Indicate the collection date;
    e. Indicate the method detection limits for each constituent analysis;
    f. Provide the name or description of waterbody sampled;
    g. Include a comparison table with applicable water quality standards, and description of analytical QA/QC plan (reference the District plan); and
    h. Be tabulated so that they are readably discernible.
9. Recommendations to improve the monitoring program, BMPs, and APAP to ascertain compliance with this General Permit.

The District will submit the Annual Report to the State Water Board and three Regional Boards:

State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Colorado River Basin Regional Water Quality Control Board
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260

Santa Ana Regional Water Quality Control Board
3737 Main Street, Suite 500
Riverside, CA 92501

San Diego Regional Water Quality Control Board
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

4.10.3 Electronic Reporting

The State Water Board or the appropriate Regional Water Board may notify the District to submit Self-Monitoring Reports (SMR) electronically via the State Water Board's California Integrated Water Quality System (CIWQS) at http://www.waterboards.ca.gov/ciwqs/index.html. Until this notification is given, the District will submit hardcopy SMRs as described in Annual Reporting requirements summarized in Section 4.10.2 . If any pollutant is monitored more frequently that required by the General Permit, the results of the monitoring shall be included in the calculations and reporting of the data submitted in the SMR (General Permit, Attachment C, Provision IV.D).

4.10.4 Adverse Incident to Threatened or Endangered Species or Critical Habitat

As defined in the General Permit, an adverse incident is a situation where the District observes upon inspection or becomes aware of, in which a person or non-target organism may have been exposed to an algaecide or aquatic herbicide residue; and the person or non-target organism suffered an adverse toxic effect (General Permit, Attachment A). If the District becomes aware of an adverse incident to a federally-listed or endangered species or its federally-designated critical habitat, that may have resulted from the District's algaecides and aquatic herbicide application the following notifications are required.

If the adverse incident occurred to an anadromous[21] or marine species, the District must contact the National Marine Fisheries Service (NMFS) Santa Rosa office by phone at 707.575.6050. Anadromous or marine species are not located within Riverside County.

If the adverse incident occurred to a terrestrial or freshwater species, the District must contact the U.S. Fish and Wildlife Service (FWS) at 916.414.6600.

[21] Species that live their adult lives in the ocean but move into freshwater streams to reproduce or spawn (e.g., salmon). (NMFS)

The District must notify the applicable agency by telephone and immediately when the District becomes aware of the adverse incident and must include at least the following information:

- The caller's name, telephone number, and e-mail address;
- Applicator name and mailing address;
- The name of the affected species;
- How and when the Discharger becomes aware of the adverse incident;
- Description of the location of the adverse incident;
- Description of the adverse incident, including the U.S. EPA herbicide registration number for each product applied in the area of the adverse incident; and
- Description of any steps the District took or will take to alleviate the adverse impact to the species.

4.10.5 Other Reporting

When the District becomes aware that it failed to submit any relevant facts in a permit application NOI, or submitted incorrect information in a permit application NOI, or any report to the Regional Board, State Water Board, or USEPA, the District shall submit such facts or information (General Permit, Attachment D, Provision B.6).

In addition, the District must provide, within a reasonable time, any information, which the Regional Board, State Water Board, or USEPA may request to determine compliance with the General Permit. Upon request, the District shall provide to the Regional Board, State Water Board, or USEPA copies of records required by this General Permit to be kept (General Permit, Attachment D, Provision A.6).

4.11 Records Retention

The District will retain paper or electronic records of documents regarding monitoring, including all calibration and maintenance records, reports required by the General Permit, and records of all data used to complete the application of the General Permit for a minimum of three years from the date of sampling, measurement, or report. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the appropriate Regional Water Quality Control Board Executive Officer (General Permit, Attachment C, Provision A.4).

5. References

State Water Resources Control Board (2013). Order 2013-002-DWQ, NPDES General Permit No. CAG990005: Statewide General National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications. Available online at: http://www.waterboards.ca.gov/water_issues/programs/npdes/aquatic.shtml.

District (2012). Local Implementation Plan Template - Santa Ana Region, Order No. R8-2010-0033. Available online at: http://www.rcflood.org/NPDES/SantaAnaWS.aspx.

District (2012). Jurisdictional Runoff Management Program - Santa Margarita Region, Order No. R9-2010-0016. Available online at: http://rcflood.org/NPDES/SantaMargaritaWS.aspx.

District (2006). Municipal Facility Pollution Prevention Plan - Available upon request.

P8/156764

Appendix A - Public Notice

October 31, 2013

NOTIFICATION TO POTENTIALLY AFFECTED GOVERNMENTAL AGENCIES REGARDING APPLICATION OF AQUATIC PESTICIDES BY THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT (DISTRICT)

PURPOSE

As required by Provision VIII.B of the Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for the Residual Aquatic Pesticides Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications, General Permit No. CAG990005 (General Permit), the District hereby provides notice of its intent to apply aquatic pesticide within its stormwater drainage facilities as part of its normal operations and maintenance activities. The District utilizes aquatic pesticides as a feasible method to maintain the design capacity of its drainage facilities and to minimize flood hazards.

TIME PERIOD

Applications will occur throughout the year.

LOCATION

Applications will occur within the Districts drainage facilities and rights of way.

PRODUCTS

The District intends to use the following herbicides:

Product Name	Product Type	Active Ingredient	EPA Registration #
Roundup Custom	Aquatic Pesticide	Glyphosate, N-(phosphonomethyl) glycine	524-343

RESTRICTIONS OR PERCAUTIONS

All aquatic weed control pesticides will be applied only when necessary and by trained District personnel according to product label instructions and consistent with all local, state, and federal regulations. No special precautions need to be taken by your representative agencies as the District performs these ongoing activities.

CONTACT INFORMATION

Any questions regarding this matter may be directed to Kahlil Amin at 951.955.8235 or email at kaamin@rcflood.org or David Garcia at 951.955.1330 or email at dhgarcia@rcflood.org.

Appendix B - Technical Memorandum

Technical Memorandum

LARRY WALKER ASSOCIATES

DATE: August 27, 2013

TO: David H. Garcia, P.E., Riverside County Flood Control District and Water Conservation District

CC: Khalil Amin, Riverside County Flood Control District and Water Conservation District

SUBJECT: Evaluation of the Uses, Fate and Transport, and effects of Roundup Custom™ and Target™ Pro-Spreader Activator

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DRAFT

The Statewide General National Pollution Discharge Elimination System (NPDES) Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications (Water Quality Order No. 2013-0002-DWQ, General Permit No. CAG990005), or "Aquatic Pesticide Permit," requires the development of an Aquatic Pesticides Application Plan (APAP) to guide the application of aquatic pesticides. The Riverside County Flood Control District and Water Conservation District (District) utilizes the aquatic pesticide Roundup Custom™ to address aquatic weed species during the operation and maintenance of their flood control facilities. In addition, the District employs the surfactant Target™ Pro-Spreader Activator as a means to enhance the effectiveness of Roundup Custom™ applications.

To support the APAP developed by the District, this technical memorandum provides an evaluation of the characteristics, uses, the fate and transport, as well as the potential human and environmental effects of Roundup Custom™ and Target™ Pro-Spreader Activator. The information is presented in the following five sections:

1. Algaecide and aquatic herbicide products or types of algaecides and aquatic herbicides expected to be used and if known their degradation byproducts, the method in which they are applied, and if applicable, the adjuvants and surfactants used;
2. Relevant knowledge about the transport, fates, and effects of algaecides and aquatic herbicides including best and worst case scenarios;
3. Relevant knowledge about the action of cumulative and indirect effects;
4. Mechanisms through which algaecides and aquatic herbicides applications could lead to designated use impacts, given the basic features of the area; and

5. Known and potential impacts of algaecides and aquatic herbicides applications on water quality, ranked in terms of relative risk, based on factors such as magnitude, frequency and duration.

Algaecide and Aquatic Herbicide Products or Types of Algaecides and Aquatic Herbicides Expected to be Used and if Known their Degradation Byproducts, the Method in which they are Applied, and if Applicable, the Adjuvants and Surfactants Used

The District utilizes the aquatic herbicide Roundup Custom™ to address aquatic weed species during the operation and maintenance of their flood control facilities. In addition, the District employs the surfactant Target™ Pro-Spreader Activator as a means to enhance the effectiveness of Roundup Custom™ applications.

Roundup Custom™

Roundup Custom™ is the commercial name for the herbicide glyphosate, which is a nonselective plant growth regulator used terrestrially or aquatically to control weeds. Roundup Custom™ is an odorless, viscous, amber liquid that is mixed with water and applied to target environments. The active ingredient in Roundup Custom™ is glyphosate, N-(phosphonomethyl) glycine in the form of its isopropylamine salt or "Isopropylamine salt of glyphosate". Isopropylamine salt of glyphosate is an odorless, white solid.[1] Roundup Custom™ is a complete broad-spectrum postemergence herbicide that inhibits production of an enzyme in plants and microorganisms that is essential to formation of amino acids.[2] The composition of Roundup Custom™ is shown in **Table 1**. The District applies Roundup Custom™ via a nozzle and hose attached to truck mounted spray system and with personal sprayers generally at a concentration of 1% or 2% to the side slopes and bottoms of flood control channels primarily during the summer months. The recommended volumes of Roundup Custom™ to be mixed with water for specific desired spray solution volumes are listed in **Table 2**.

In addition, Roundup Custom™ requires the use of a nonionic surfactant (Target™ Pro-Spreader Activator), which is included in the spray mixture. The main degradation byproduct of glyphosate is aminomethylphosphonic acid (AMPA). A joint United States Geological Society (USGS) and United States Department of Interior (USDI) study found that glyphosate and AMPA were detected more frequently in surface water than ground water and that AMPA was detected more frequently and at similar or higher concentrations than glyphosate.[3]

Table 1. Roundup Custom™ Composition[4]

Component	Chemical Abstracts Service (CAS) No.	Appx. % by Weight
Isopropylamine salt of glyphosate	38641-94-0	53.8
Water	7732-18-5	46.2

[1] National Pesticide Information Center. Glyphosate Technical Factsheet.

[2] Monsanto Company. 2013. Roundup Custom™ Specimen Label 21153L1-37.

[3] Scribner, E.A., Battaglin, W.A., Gilliom, R.J., and Meyer, M.T., 2007, Concentrations of glyphosate, its degradation product, aminomethylphosphonic acid, and glufosinate in ground- and surface-water, rainfall, and soil samples collected in the United States, 2001-06: U.S. Geological Survey Scientific Investigations Report 2007-5122, 111 p.

[4] Monsanto Company. 2012. Roundup Custom™ for Aquatic & Terrestrial Use Safety Data Sheet Commercial Product. Version 1.0. July 3, 2012.

Table 2. Recommended volumes of Roundup Custom™ for desired spray solution volumes[5]

Desired Volume	Volume of Roundup Custom™					
	0.5%	0.75%	1%	1.5%	4%	8%
1 gallon	2/3 ounce	1 ounce	1.3 ounce	2 ounce	5 ounce	10 ounce
25 gallons	1 pint	1.5 pint	1 quart	1.5 quart	4 quart	2 gal
100 gallons	2 quart	3 quart	1 gal	1.5 gal	4 gal	8 gal

Target™ Pro-Spreader Activator

Target™ Pro-Spreader Activator is a viscous, orange liquid that is mixed with Roundup Custom™ and applied via spray trucks or personal sprayers. The District generally uses a one percent mix of Target™ Pro-Spreader Activator during pesticide applications. Target™ Pro-Spreader Activator is a nonionic alkylphenol ethoxylate-based surfactant used to enhance the effectiveness of aquatic pesticides by providing optimum wetting and spreading of aquatic pesticides.[6] Alkylphenol ethoxylate-based surfactants usually include an alcohol as a solvent.[7] The active ingredients of Target™ Pro-Spreader Activator are listed in **Table 3**.

Alkylphenol ethoxylate is a broad class of chemicals, which includes nonylphenol polyethoxylates (NPEs), which, in turn, describes a broad number of compounds. NPEs represent approximately 80% to 85% of alkylphenol ethoxylate chemicals[8] and Target™ Pro-Spreader Activator is likely comprised of NPEs.[9] NPEs are manufactured by reacting NP with ethylene oxide and are referred to by their degree of ethoxylation (number of ethoxylates). NPEs range from having four moles of ethoxylates to 90 moles of ethoxylates, with the most commonly manufactured NPEs having nine moles of ethoxylates (NP9E).[10] The degradation byproducts of NPEs include shorter-chain NPEs and NP.

Table 3. Active Ingredients in Target™ Pro-Spreader Activator[11]

Component	Chemical Abstracts Service (CAS) No.	Appx. % by Weight
alkylphenol ethoxylate	9016-45-9	66
Isopropyl alcohol	67-63-0	19
Fatty acid	No Information	No Information

[5] Monsanto Company. 2013. Roundup Custom™ Specimen Label 21153L1-37.

[6] Target Specialty Products, Inc. Pro-Spreader Activator Label.

[7] Bakke, D. 2003. Analysis of issues surrounding the use of spray adjuvants with herbicides. Albany, CA: Pacific Southwest Research Station, USDA Forest Service.

[8] United States Environmental Protection Agency. 2010. Nonylphenol (NP) and Nonylphenol Ethoxylates (NPEs) Action Plan [RIN 2070-ZA09]. August 2010.

[9] Bakke, D. 2003. Analysis of issues surrounding the use of spray adjuvants with herbicides. Albany, CA: Pacific Southwest Research Station, USDA Forest Service.

[10] United States Environmental Protection Agency. 2012. DfE Alternatives Assessment for Nonylphenol Ethoxylates. Design for the Environment Program. May 2012.

[11] Target Specialty Products, Inc. Pro-Spreader Activator Label.

Relevant Knowledge about the Transport, Fates, and Effects of Algaecides and Aquatic Herbicides including Best and Worst Case Scenarios

Roundup Custom™

Glyphosate adsorbs strongly to soil particles, is highly water soluble, and is generally not degraded through chemical or photochemical processes in soil or water. Although glyphosate is highly water soluble, it has a low capacity to infiltrate groundwater due to a high soil adsorptive potential. In addition, due to the low vapor pressure of glyphosate, volatilization from soils is unlikely, and due to the low octanol/water coefficient of glyphosate, fish tissue accumulation is also unlikely. The main mechanisms for glyphosate loss in aquatic and terrestrial systems are microbe degradation and settling.[12] Glyphosate is degraded by microbes to AMPA, which is further degraded to carbon dioxide, ammonium, formaldehyde, phosphate, amino acids, carbohydrates, and natural acids.[13] **Figure 1** details the breakdown pathways for glyphosate. Possible effects from glyphosate include aquatic organism toxicity and mammalian toxicity. Potential impacts may result from inappropriate use or failure to implement Best Management Practices (BMPs). For example, under a worst case scenario, if an inappropriate application of Roundup Custom™ occurs adjacent to water, oxygen depletion can occur, due to excess decomposition of dead plants. This oxygen loss can cause fish suffocation.[14] In addition, since glyphosate is a nonselective herbicide, inappropriate application, such as not maintaining an adequate buffer or application during inappropriate weather conditions, may result in overspray and impacts to non-target species. However, the District implements BMPs, as described in the APAP, to ensure the proper application of Roundup Custom™. Therefore, under the best case scenario, Roundup Custom™ residue is expected to biodegrade and minimal impact is expected to occur.

DRAFT

[12] Schuette, Jeff. 1998. Environmental Fate of Glyphosate. Environmental Monitoring & Pest Management Department of Pesticide Regulation. Sacramento, CA. November 1998.

[13] Schuette, Jeff. 1998. Environmental Fate of Glyphosate. Environmental Monitoring & Pest Management Department of Pesticide Regulation. Sacramento, CA. November 1998.

[14] Monsanto Company. 2013. Roundup Custom™ Specimen Label 21153L1-37.

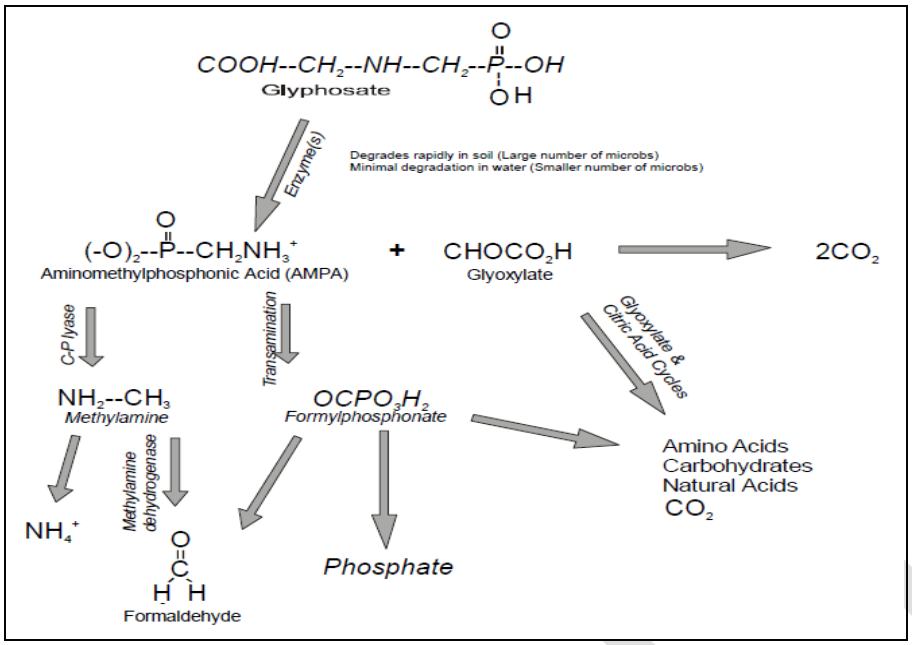


Figure 1. Glyphosate breakdown pathways (Schuette, J. 1998)

Target™ Pro-Spreader Activator

In general, NPEs are considered to be chemically stable and unreactive. NPEs water solubility increase with increasing ethoxylation (i.e., number of ethoxylates). NP5E has a reported water solubility of 9.48 mg/L while NP12E has a reported water solubility of 42.5 mg/L.[15] The most important process affecting the fate and transport of NPEs is biodegradation. NPEs are subject to a two-stage degradation process. The first stage includes biodegradation to shorter-chain NPEs and NP. The second stage involves conversion to carbon dioxide, water, and inorganic salts. However, the intermediate degradation products (shorter-chain NPEs and NP) are more resistant to biodegradation.[16] This is due to short chain NPEs and NP having high soil adsorption properties as they are hydrophobic. NPE is also subject to photolysis in aqueous environments.[17] **Figure 2** presents a typical NPEs chemical formula and biodegradation paths. Although the potential exists for surfactants to affect the environmental fate of herbicides in soil, any potential effects would be unlikely under normal conditions because of the relatively low concentration of surfactants in the soil/water matrix. Under a worst case scenario, localized effects could be seen if a spill occurred on soil, so that concentrations of surfactant approached or exceeded about 1,000 ppm.[18] However, the District implements BMPs, as described in the APAP, to ensure the proper application of Target™ Pro-Spreader Activator. Therefore, under the best case scenario, Target™ Pro-Spreader Activator residue is expected to biodegrade and minimal impact is expected to occur.

[15] United States Environmental Protection Agency. 2010. Nonylphenol (NP) and Nonylphenol Ethoxylates (NPEs) Action Plan [RIN 2070-ZA09]. August 2010.

[16] Canadian Council of Ministers of the Environment. 2002. Canadian sediment quality guidelines for the protection of aquatic life: Nonylphenol and its ethoxylates. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

[17] United States Environmental Protection Agency. 2010. Nonylphenol (NP) and Nonylphenol Ethoxylates (NPEs) Action Plan [RIN 2070-ZA09]. August 2010.

[18] Bakke, D. 2007. Analysis of Issues Surrounding the Use of Spray Adjuvants With Herbicides. Vallejo, CA: Pacific Southwest Region, USDA Forest Service.

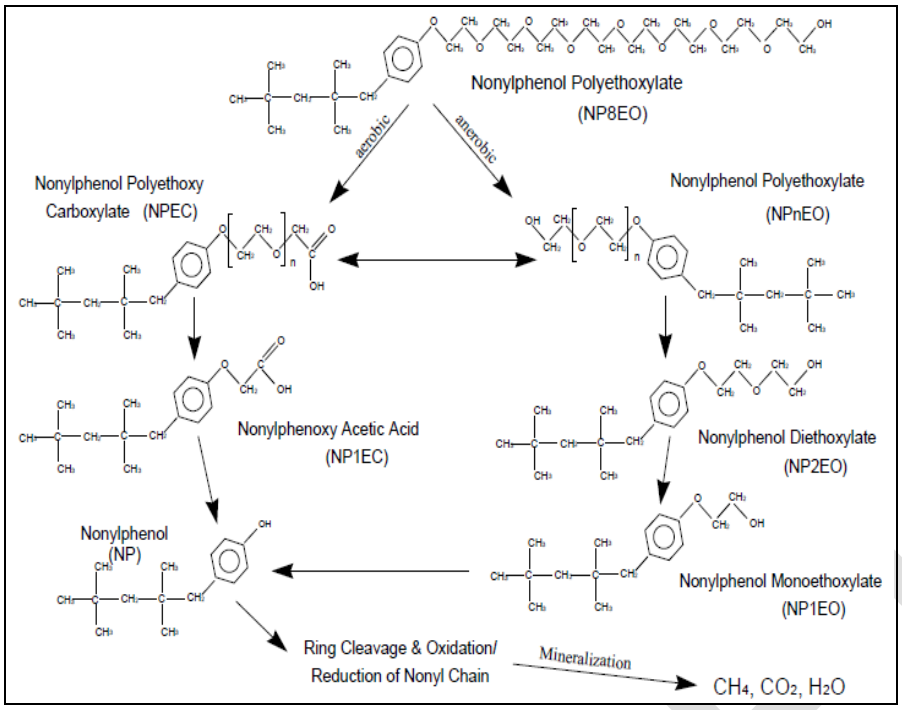


Figure 2. Biodegredation pathway for nonlyphenol ehtoxylates (Schmedding, D., Tatum, V. 1998)

Relevant Knowledge about the Action of Cumulative and Indirect Effects

Roundup Custom™

Possible direct water quality effects from glyphosate include toxicity to aquatic organisms (vertebrates and invertebrates), toxicity to non-target plant species, toxicity to aquatic and riparian mammals and avian species, and human toxicity. Glyphosate has relatively low oral and dermal acute toxicity to humans, but can cause congestion of lungs and increased breathing rate from acute exposure. Chronic exposure effects include kidney damage and reproductive effects;[19] however, glyphosate is not considered carcinogenic to humans. Glyphosate is no more than slightly toxic to birds and is practically non-toxic to fish and aquatic invertebrates.[20] In addition, inappropriate glyphosate application can result in indirect effects such as low dissolved oxygen levels due to decomposition of dead plants, which may lead to aquatic organism kills.[21]

Target™ Pro-Spreader Activator

Possible direct water quality effects from NPE and NP include toxicity to aquatic organisms (vertebrates and invertebrates), toxicity to aquatic and riparian mammals and avian species, and human toxicity. NPEs show mild bioaccumulation in aquatic organisms with bioaccumulation decreasing with increasing ethoxylation. NPEs and NP have varying effects on mammals and aquatic organisms.

Based on acute toxicity testing, NPEs are classified as slightly toxic to practically non-toxic to mammals. Based on chronic and subchronic toxicity testing, NPEs have been shown to cause

[19] United States Environmental Protection Agency. Technical Factsheet on: Glyphosate.

[20] United States Environmental Protection Agency. 1993. Glyphosate Reregistration Eligibility Decision (RED) Document. Office of Pesticide Programs Special Review and Reregistration Division. September 1993.

[21] *Ibid*.

endocrine disruption.[22] In addition, it appears that the liver and kidney organs are affected the most by NPEs exposure with a No Observed Adverse Effect Level (NOAEL) assumed to be 10 mg/kg/day.[23] NPEs do not appear to cause immunotoxic or neurotoxic impairments at doses protective of kidney or liver effects. In addition, there is no evidence of NPEs carcinogenicity.[24] However, NPEs may contain impurities derived from the manufacturing process that may exhibit carcinogenicity including ethylene oxide and 1,4-dioxane. The concentrations of these impurities are often minimal and the risks to humans are very low.[25]

Acute NPEs toxicity to aquatic organisms is considered to be high,[26] but the extent of the toxicity depends on the ethoxylation of NPEs. NPEs with more ethoxylate groups (higher molecular weight) exhibit lower toxicity than NPEs with fewer ethoxylate groups. For example, acute toxicity to kill fish was 1.4 mg/L for NP1E and 12 mg/L for NP9E.[27] Chronic toxicity to aquatic organisms is considered to be moderate with a No Observable Effects Concentration (NOEC) of 1.0 parts per million (PPM) in fish and NOEC of 10 ppm in *Ceriodaphnia magna* in 7-day growth assays with NP9E.[28]

NP has the capacity to cause estrogenic effects. Laboratory tests on rats identified estrogenic effects including reproductive effects such as reduced testosterone and increases in follicle stimulating hormone and luteinizing hormone in males. Laboratory tests also identified reproductive effects in female rats.[29]

Acute and chronic tests indicate NP is highly toxic to fish, aquatic invertebrates, and aquatic plants.[30] Toxic effects include reproductive and endocrine effects as well as general and systemic effects. Toxic effects generally occur at concentrations ranging from 1 to 1,000 micrograms per liter (µg/L), but some effects have been noted at concentrations less than 1 µg/L.[31] In addition, as most environmental concentrations of NP are less than 1 µg/L, it appears that only the most vulnerable species are likely to be affected and only at the high range of concentrations.

Mechanisms through which Algaecides and Aquatic Herbicides Applications could lead to Designated Use Impacts, given the Basic Features of the Area

[22] Bakke, D. 2003. Human and Ecological Risk Assessment of Nonylphenol Polyethoxylate-based (NPE) Surfactants in Forest Service Herbicide Applications. Vallejo, CA: Pacific Southwest Region, USDA Forest Service.

[23] *Ibid*.

[24] *Ibid*.

[25] *Ibid*.

[26] United States Environmental Protection Agency. 2012. DfE Alternatives Assessment for Nonylphenol Ethoxylates. Design for the Environment Program. May 2012.

[27] United States Environmental Protection Agency. 2010. Nonylphenol (NP) and Nonylphenol Ethoxylates (NPEs) Action Plan [RIN 2070-ZA09]. August 2010.

[28] United States Environmental Protection Agency. 2012. DfE Alternatives Assessment for Nonylphenol Ethoxylates. Design for the Environment Program. May 2012.

[29] Carlisle, J., Chan, D., Painter, P., Wu, L., 2009. Toxological Profile for Nonylphenol. Integrated Risk Assessment Branch Office of Environmental Health Hazard Assessment California Environmental Protection Agency. Prepared for Ocean Protection Council. September 2009.

[30] United States Environmental Protection Agency. 2010. Nonylphenol (NP) and Nonylphenol Ethoxylates (NPEs) Action Plan [RIN 2070-ZA09]. August 2010.

[31] Carlisle, J., Chan, D., Painter, P., Wu, L., 2009. Toxological Profile for Nonylphenol. Integrated Risk Assessment Branch Office of Environmental Health Hazard Assessment California Environmental Protection Agency. Prepared for Ocean Protection Council. September 2009.

The mechanisms by which Roundup Custom™ or Target™ Pro-Spreader Activator could lead to designated use impacts include herbicide spray drift, pooling of herbicides, and transport of herbicides downstream from target application area(s). Characteristics that may influence how Roundup Custom™ or Target™ Pro-Spreader Activator affect water quality include application location(s), water flow at application location(s), herbicide concentration in spray solution, amount of spray solution applied, time of year, and meteorological conditions (dry or wet weather). District herbicide application locations usually include dry flood control channels or flood control channels with minimal flow, which is mostly due to irrigation runoff as well as other non-storm water runoff. The District utilizes application BMPs to minimize the impact of herbicides on water quality. BMPs include minimizing drift through the consideration of weather conditions such as wind, temperature, and humidity; applying herbicides during dry weather; maintaining an adequate buffer from non-target areas; using the appropriate formulation of the herbicides; ensuring proper spray equipment functioning; applying while moving upstream to concentration; and spot spraying.

Known and Potential Impacts of Algaecides and Aquatic Herbicides Applications on Water Quality, Ranked in Terms of Relative Risk, Based on Factors such as Magnitude, Frequency and Duration.

Roundup Custom™ has the potential to contaminate surface waters and impact beneficial uses as glyphosate is highly soluble, there is low degradation from chemical or photochemical processes in water, and there is often low microbial degradation in water.[32] Target™ Pro-Spreader Activator has the potential to contaminate surface waters as NPE and NP are highly toxic to aquatic organisms and tend to resist biodegradation. In addition, NPEs and NP adsorb to soil particles and may accumulate in aquatic sediment.[33] Known and potential impacts, ranked based on most to least likely to occur, include:

1. Toxicity to aquatic organisms;
2. Toxicity to non-target plant species;
3. Low dissolved oxygen concentrations; and
4. Human effects.

DRAFT

[32] Scribner, E.A., Battaglin, W.A., Gilliom, R.J., and Meyer, M.T., 2007, Concentrations of glyphosate, its degradation product, aminomethylphosphonic acid, and glufosinate in ground- and surface-water, rainfall, and soil samples collected in the United States, 2001-06: U.S. Geological Survey Scientific Investigations Report 2007-5122, 111 p.

[33] Canadian Council of Ministers of the Environment. 2002. Canadian sediment quality guidelines for the protection of aquatic life: Nonylphenol and its ethoxylates. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

Appendix C - DPR Pesticide Safety Information Sheets

Pesticide Safety Information

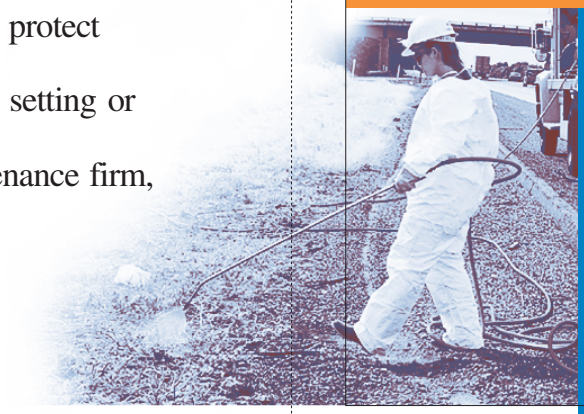
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION
1001 I Street,
Sacramento,
California 95814

N
No. 1

Working Safely With Pesticides in Non-Agricultural Settings

Workers who handle pesticides must be trained in ways they can protect themselves. If you handle pesticides in an industrial/institutional setting or work for a structural pest control business, landscape and maintenance firm, rights-of-way maintenance company, or similar business, this leaflet will tell you how to work safely with pesticides.



Handle means to mix, load, or apply pesticides; repair or clean equipment that was used for pesticides; or handle unrinsed pesticide containers.

WHY SHOULD I WORRY ABOUT PESTICIDES?

Pesticides can get into your body many different ways. If they do, they can have both acute and chronic effects on your health. If a pesticide can hurt you or make you sick right away, that's called an *acute* effect. If you have to be exposed to a pesticide for a long time (months or years) before it makes you sick, that's called a *chronic* effect. **Pesticides can make you sick by moving into your body through your skin, mouth or eyes, or through your lungs as you breathe.**

Keeping pesticides off your hands is often the hardest part of working safely with pesticides. Once a pesticide gets on your hands, it can get in your eyes if you rub them, or in your mouth if you touch your food. Always wash your hands before eating, drinking, smoking or going to the bathroom.

WHAT CAN A PESTICIDE LABEL TELL ME?

Most labels have a special word in capital letters on the front of the label. It tells you what the acute health hazard is.

The words you might see are:

- **DANGER**, which means the pesticide is extremely harmful.
- **WARNING**, which means moderately harmful.
- **CAUTION,** which means slightly harmful, but still can make you sick.

HS-1742
Revised September 2003

If the label doesn't have one of these words, it means that the pesticide is unlikely to harm you. However, you should handle every pesticide carefully.

You must use pesticides according to the directions on the label. If you can't read the label, ask your supervisor to tell you what it says. For some pesticides, California has stricter rules than those on the label. Your supervisor must know these rules and tell you about them.

WHAT SAFETY RULES DO I NEED TO FOLLOW?

1. Read and follow the label directions.
2. Be especially careful with pesticides before they are mixed with water.
3. Wear the right kind of protection.

First, read the label

Then look at the application situation. If you are applying the pesticide indoors, the pesticide or its vapors can be moved through the building by the air conditioning or heating system. You must look at all the conditions and decide if it's safe before you apply a pesticide. If you don't think it's safe, talk to your supervisor before applying the pesticide.

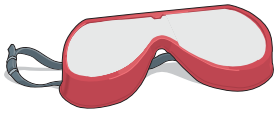
Be especially careful with pesticides before they are mixed with water

Moving pesticide containers before the pesticide is mixed with water, **and hand-pouring pesticides from their containers, are the most dangerous parts of working with pesticides**. Pesticides that are mixed with water and are in the application equipment may be less dangerous, but can still hurt you. When working with these or any pesticide, you should always try to avoid getting pesticide on yourself.

Wearing the right kind of protection

Protecting your eyes.

- You must wear eye protection when you mix, load or apply pesticides; or clean or repair equipment that was used for pesticides.
- Eye protection can be safety glasses (with brow and temple protection), goggles, a face shield, or a full-face mask. Pilots can use a visor for eye protection. Regular eyeglasses and sunglasses **DO NOT** provide enough protection. Pesticides can easily get under these glasses and into your eyes. The pesticide label will tell you what kind of eye protection to wear.



Always read the label before applying a pesticide. If you can't read it, ask your supervisor to tell you what it says.

Protecting your hands.

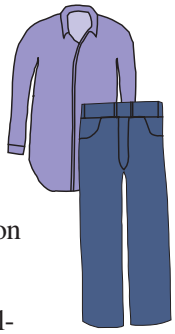
- You must wear gloves when you mix, load or apply pesticides; clean or repair equipment that was used for pesticides; during all hand applications, and anytime the label says so. If the label does not say what type of glove you need, you must use gloves made of chemical-resistant material like rubber or neoprene. Never wear fabric-lined gloves unless the label specifically says you may.
- Your supervisor must give you clean or new gloves every day you mix or load pesticides, repair or clean pesticide equipment, or apply pesticides with hand-held equipment. You must wear them.
- In a few cases, a pesticide label may tell you not to wear gloves. If it does, do not wear them.

Protecting your lungs.

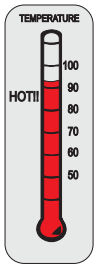
- You must wear a respirator while using pesticides that are harmful if you breathe them. This includes fumigants, powders, dusts, and some liquids. Ask your supervisor for a copy of the N-5 safety leaflet for more information about respirators.

- You must wear a respirator anytime the pesticide label requires one, or if you are mixing, loading or applying most pesticides on California's list of Minimal Exposure Pesticides. Ask your supervisor for a copy of the N-10 safety leaflet for more information on Minimal Exposure Pesticides.

Protecting your body



- Your employer must give you clean coveralls (or a long-sleeved shirt and long pants) every day that you work with pesticides with either the word **DANGER** or **WARNING** on the label.
- If you need to use chemical-resistant clothes, your employer must give you a clean chemical-resistant suit that covers your body, an apron (if called for on the label), and protection for your feet and head.



- When it's hot outside, wearing chemical-resistant clothing can make you so hot that you can get very sick. If the pesticide label says you must wear a chemical-resistant suit, then you must not work in temperatures above 80°F (27°C) during the day or 85°F (29°C) at night.
- You must use a closed system if you mix or load liquid pesticides with the word, **DANGER**, on the label or pesticides on California's minimal exposure list. Ask your supervisor for a copy of the N-3 safety leaflet that has more information on closed systems.
- Your employer must also give you a place to change clothes and wash up at the end of the day if you regularly work with pesticides that have the signal word DANGER or WARNING on the label.

HOW DO I LEARN ABOUT WORKING SAFELY WITH PESTICIDES?

California law requires that you be trained before you handle pesticides.

For each pesticide (or group of pesticides that are alike chemically), your training must include all of these things

Health effects

- how pesticides can make you sick
- how you may feel or look if you get pesticides in or on you
- how pesticides can get in your body
- how to prevent a heat-related illness, how you may feel or look if you get sick from the heat, and first aid for this illness
- ways to clean yourself if you get pesticides on you

What to do in an emergency

- emergency first aid
- how and where to get emergency medical care

Personal Protective Equipment (PPE)

- why you need to wear PPE
- how to take care of the PPE
- what PPE can and cannot protect you against

Pesticide safety

- the meaning of safety statements on the pesticide label
- safety rules for handling pesticides
- why you should not take pesticides or pesticide containers home
- pesticide dangers to the environment

Your rights as an employee and where you can find more information about pesticides

Job safety information, safety leaflets and Material Safety Data Sheets (MSDS). The MSDS tells you about the pesticide and its dangers.

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If you don't get all the information you need in your training, or from your supervisor, you should call your County Agricultural Commissioner, or the Department of Pesticide Regulation (DPR) for more information. You can find the Commissioner's number in your local white pages phone directory. DPR numbers are:

- Anaheim (714) 279-7690
- Fresno (559) 445-5401
- Sacramento (916) 324-4100

Pesticide Safety Information

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION
1001 I Street,
Sacramento,
California 95814

N No.10

Safety Rules for Minimal Exposure Pesticides (MEPs) in Non-Agricultural Settings

Pesticides can get into your body many different ways. They can make you sick by moving into your body through your skin or eyes, or through your lungs as you breathe.

WHAT ARE THE "MINIMAL EXPOSURE PESTICIDES"?

Some pesticides are called "Minimal Exposure Pesticides," or MEPs, because it's important to make sure that your body is exposed as little as possible. The pesticides are on this list because they can hurt you in ways you might not notice right away. If you are exposed to them, they could be doing damage in your body, causing problems you might not notice until much later. If you work with pesticides in non-farm settings, these are the two MEPS you might use.

1. Buctril

USE: Kills broadleaf weeds in ornamental turf. Also used in landscape maintenance and rights-of-way.

DANGER: If you are a pregnant woman and are exposed to even a little of this pesticide, it can harm both you and your unborn child.

2. Metasystox-R and Inject-A-Cide

USE: Kills insects and mites in landscape maintenance and rights-of-way.

DANGER: These pesticides can affect your nervous system. If you are exposed to too much of them, you may start vomiting right away, get a headache, feel sick to your stomach, or your vision may be blurred. If you are a man and are exposed to even a little of these pesticides, it might hurt your ability to have children.

It's important to make sure that your body is exposed as little as possible to MEPs.

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WHAT MUST MY EMPLOYER DO TO PROTECT ME WHEN I USE A MEP?

If you handle MEPs, your employer must make sure you have

- Clean coveralls (this is one or two pieces of clothing that covers your body, except your head, hands and feet). Your employer must make sure that you start each work day with clean coveralls.
- Clean, chemical resistant clothes that cover your body, including your hands and feet.
- A clean, pesticide-free place to store your own clothes while you work with these pesticides.
- Clean towels, soap and clean water at the place where you mix and load the pesticides. This is both for washing everyday, and in an emergency.
- A closed system for mixing and loading, so that you are never exposed to the pesticide.
- The right kind of respirator. (Ask your supervisor for the N-5 safety leaflet, for more information on respirators.)
- A place with clean towels, soap and water where you can change clothes and wash at the end of your work day.

ARE THERE ANY SPECIAL RULES I SHOULD KNOW?

If you use certain kinds of equipment to protect yourself at work, you may not have to wear full body personal protective equipment (PPE). Ask your supervisor for a copy of the N-3 safety leaflet, for more information about the equipment. There is also more information in the table below that explains the substitutions.

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PERSONAL PROTECTIVE EQUIPMENT YOU NEED WHEN USING CLOSED SYSTEMS, ENCLOSED CABS, OR WATER-SOLUBLE PACKAGING

If you use	You may use[1]	Instead of this
Closed system for pesticides with "Danger" or "Warning" [2,3]	Coveralls, chemical-resistant gloves, chemical-resistant apron eye protection	PPE required on the pesticide labeling
Closed system for pesticides with "Caution" [2,3]	Work clothing (shirt, pants, shoes) eye protection	PPE required on the pesticide labeling
Enclosed cab	Work clothing and respiratory protection required on the label	PPE required on the pesticide labeling
Enclosed cab acceptable for respiratory protection	Work clothing	PPE required on the pesticide labeling

1 For any substitution, all PPE required by the label must be available on site in case of an emergency.

2 If the closed system is not under pressure, you do not need to wear eye protection.

3 Using pesticides in water-soluble packages is considered the same as mixing with a closed system. However, transfer from mix tank to application tank must be made with a closed system.

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N
No. 2

Storing, Moving and Disposing of Pesticides in Non-Agricultural Settings

If you follow the directions in this leaflet, you can help prevent accidents with pesticides. Since pesticides are poisonous, they must be stored or disposed of with caution and concern for others, especially children. Every year children are poisoned from eating or drinking pesticides that someone did not put away or throw out correctly.

THESE ARE THE THREE MOST IMPORTANT THINGS TO REMEMBER

- Keep pesticides in their original containers.
- Never put pesticides in containers used for food, drink, or household products.
- **DO NOT** take home any pesticide used at work.

STORAGE

No job is really finished until the pesticides, containers, and equipment have been put away properly. Get into the habit of storing all of your materials safely before you clean up and go home, or move on to the next job. While you are cleaning up and putting away the pesticides, containers, and equipment, you should wear all the personal protective equipment you used on the job. Consider wearing gloves and other protective equipment, even if they weren't required on the label. Spills and accidents often occur while pesticides are being put away.

How should pesticides be stored?

Pesticides and their empty containers must be kept either in a locked area, or under the control of a person who can keep others away. If the pesticides are not locked up and are next to a road or an area where there are other people, the person in charge of the pesticides must be able to see the pesticide at all times.

Here are some acceptable ways to store pesticides

- A locked, fenced area.
- A storage compartment that can be locked.
- A truck or trailer with locked side racks. (The tops of the racks should be at least six feet above the ground.)

Never put pesticides in containers used for food, drink, or household products.

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The label will tell you the right way to store the pesticide. Read and follow these directions. If you have to store pesticides in the same place as fertilizers, keep them apart. Pesticides and fertilizers can react with each other and start a fire.

Do not store pesticides near food, animal feed or personal protective equipment. They can become contaminated with pesticide, and make people or animals sick.

MOVING PESTICIDES SAFELY

Accidents can happen even when you are moving pesticides a short distance. If there is a problem, it can make you or others sick, or contaminate the environment.

What do I need to know about moving pesticides?

Follow these rules

- Never carry pesticides inside your car, van, or truck cab. Pesticides can cause injury or death if they spill on you or your passengers. Dangerous fumes may be released. Spills on seat covers are very hard to get out. The pesticide may make people sick days or weeks later if it is not cleaned up properly.
- Close containers tightly.
- Vehicles make turns, and sudden starts and stops. To prevent spills, make sure the pesticides are secured in an upright position.
- Make sure all the pesticide containers have a label.
- If the pesticide has been put in another container, you must label this container. The label has to have the name of the pesticide, its signal word (Danger, Warning, Caution), and the name and address of the person responsible for the container and the pesticide.
- Never let your vehicle out of your sight when you are moving pesticides in an open bed truck. You are responsible if children or adults are accidentally poisoned by unattended pesticides.

What do I do with empty pesticide containers?

Empty pesticide containers are not really "empty." They still have small amounts of pesticide – even after they have been rinsed out. Never toss them into streams, ponds, fields, or vacant buildings. Be sure to keep track of every pesticide container you used for the job. Never allow children to play with them, or allow other persons to use them for anything else. You must rinse the empty containers properly. Then they must be disposed of the right way. Ask your supervisor about how to dispose of containers. Your county agricultural commissioner can tell you how to dispose of empty pesticide **bags**. All empty bags and containers must be kept locked up until they are disposed of.

How do I rinse the containers?

Most containers must be rinsed as soon as they are emptied. If you are using a closed mix/load system, the machine will do the rinsing. Otherwise you can use one of these methods.

Method #1

1. Wear all the required personal protective equipment (PPE).
2. Fill the pesticide container about 1/4 full with water.
3. Close it tightly and shake it.
4. Pour all of this rinse water into the mix tank so it will be applied with the pesticide.
5. Repeat steps 2, 3 and 4 at least two more times.

Method #2
(for equipment that has a rinsing unit)

1. Wear all the required PPE
2. Put the opening of the container over the nozzle of the machine so the liquid will drain into the tank.
3. Turn the nozzle on and rinse until clean.

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ARE THERE OTHER RULES?

There may be, depending on the pesticide. If you are moving the pesticide, it is your job to know all the rules. You or your supervisor should call the California Highway Patrol, Motor Carrier Safety Unit, if you are moving more pesticides than you will use in a few days. The Highway Patrol telephone number can be found in the Government Pages of your telephone book.
You can also ask the County Agricultural Commissioner's office for the number.

Pesticide Safety Information

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

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N
No. 3

Closed Systems, Enclosed Cabs, Water-Soluble Packaging in Non-Agricultural Settings

If you hand-pour or mix a dangerous pesticide, you are at great risk of getting hurt or sick unless you follow all the safety rules. Your supervisor must make sure you know these rules before you use the pesticides.

There are many ways to protect yourself while mixing and applying pesticides. You must follow label directions. You must wear the right kind of clothes and other personal protective equipment (PPE). There are also special kinds of equipment and pesticide packages that can help keep you safe.

Here are three kinds of extra protection from dangerous pesticides

1. CLOSED SYSTEMS

A "closed system" is a machine that takes the pesticide out of its container for you and then rinses the container. It also moves the pesticide into the application tank and then rinses the hoses. If you run the machine properly, it keeps the pesticide away from your body.

When should I use a closed system?

You must use one if:

- you mix any Minimal Exposure Pesticide (Buctril, Metasystox-R).
- the label requires it.

If I use a closed system, do I still need to wear personal protective equipment (PPE)?

You should wear eye protection, even when you are using a closed system. But sometimes you can wear different PPE. Pesticide labels and California laws list what PPE you need for certain pesticides. There is a chart on the back page of this sheet that lists the kinds of PPE you can wear when using a closed system. Even if you don't have to wear the PPE, your supervisor must make sure that the right kind of PPE is at the place where you mix pesticides in case of an emergency.

If you are mixing or loading the contents of a single original container of one gallon or less a day, you do not have to use a closed system.

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Who takes care of a closed system?

Your supervisor must make sure the system is regularly cleaned. He must make sure it is always working like it should. If it is not, it will not protect you. You have the right to wait until it is fixed before you work with the pesticide.

2. ENCLOSED CABS

An "enclosed cab" is a place where you can sit and be protected while pesticides are being applied around you. It can be a closed cab on a tractor. Or it might be a truck or car with the windows and doors closed. All of these would keep you from touching anything outside that has pesticide on it. Pesticide applicators can protect themselves by using enclosed cabs.

There are two types of enclosed cabs:

- Cabs that have only the doors and windows to protect you. There is nothing to clean the outside air that comes in so you are not protected from breathing in pesticides.
- Enclosed cabs that also have air filters, that can keep you from breathing pesticides.

3. WATER-SOLUBLE PACKAGING

Water-soluble packaging is a special pesticide container or package. Both the package and the pesticide dissolve when you put the package in water. Using pesticides in water-soluble packaging protects you the same as mixing with a closed system. Never cut open this kind of package, even if you only want to use part of it. This puts you in great danger of getting the pesticide on you and becoming sick or hurt.

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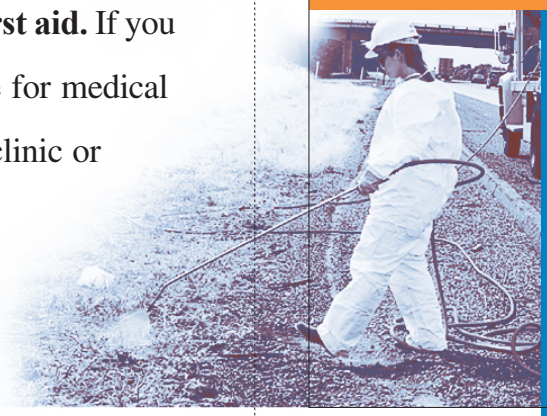
N
No. 4

First Aid

HOW DO I GET READY FOR AN EMERGENCY?

If you have a pesticide label, know what the label says about first aid. If you work with pesticides, your supervisor must arrange ahead of time for medical care in case of an emergency. You should know the name of this clinic or hospital and where it is. If you don't know, ask your supervisor before an emergency happens. Never let sick or hurt people drive themselves to a doctor. They could have an accident on the road.



WHAT SHOULD I DO IF SOMEONE COLLAPSES WHILE THEY ARE USING PESTICIDES?

- First, get the person away from the pesticides, if you can do this without hurting yourself. Remember, the sick person might have pesticides on them that could get on you.
- Then get help **RIGHT AWAY**. If you have a phone, **call 911**.
- Try to stop pesticides from getting in the person's body. You can find out how later in this handout.
- If the person is not breathing and you know how, give CPR (cardiopulmonary resuscitation). The 911-rescue team will take the CPR over when they arrive.

REMEMBER: Tell the rescue workers about the pesticides. Also, remember that pesticides may not be the problem. It could, for instance, be a heart attack.

WHAT SHOULD I DO IF SOMEONE SWALLOWS A PESTICIDE?

- **Get help RIGHT AWAY**. If you have a phone, **call 911**, or the free phone number for the poison control center, 1-800-876-4766.
- If people are sleepy or unconcious from poisoning and you don't have a phone, **TAKE THEM TO A DOCTOR OR HOSPITAL RIGHT AWAY**. **DO NOT** give them anything to eat or drink. **DO NOT** try to make them throw up.
- If the person is awake and alert, follow the first aid instructions on the label. These directions will tell you what will be helpful or dangerous. For instance, making the person throw up, or giving them milk or water to drink could be helpful or it

Call 911, or the free phone number for the poison control center, 1-800-876-4766.

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might be dangerous, depending on the pesticide. Never use salt water or mustard to make people throw up. Some old labels may still recommend those things, but they are not safe.

WHAT SHOULD I DO IF I GET SICK FROM PESTICIDES?

- **Stop work RIGHT AWAY**. You must stop working with the pesticide. You must also stop any more pesticide from getting in your body. Read below to find out how to do this.
- **GET HELP.** Tell someone at your workplace what happened.
- Ask to be taken to a doctor or hospital

HOW CAN PESTICIDES GET INTO MY BODY?

There are four ways

- breathing dust, mist or vapor,
- getting on your skin
- getting in your eyes, *or*
- swallowing the pesticide.

To stop a person from breathing in pesticides

Take sick people where the air is clean. In open areas, go at least 100 feet away. If there is a wind, make sure it is blowing the pesticide away from you.

Pesticides on your skin

Most often, pesticides get in your body through your skin. Some pesticides move very fast through your skin. Others move slowly. Many pesticides can move through your clothes, even if they are waterproof. That is why it is important to get rid of any pesticide that gets on your skin or clothing right away.

To get pesticides off of your skin

- Take off all clothes that have pesticides on them.
- Shower with soap and clean under your nails.
- Wash your hair.
- If you don't have a shower or soap, use any clean water.
- Get dressed only in clean clothes. Do not put the clothes with pesticides on them back on. If you do, more pesticides can get into you body. (Be sure to wash any clothes that have pesticides on them separately and completely before wearing them again. See the N-7 safety leaflet for information on how to do this safely.)

To get pesticides out of your eyes

- Rinse with plenty of water. Keep rinsing for at least 15 minutes. Rinsing in a shower is okay, but **DO NOT** use a hard spray.
- Otherwise, pour water over your eyes or use a gentle flow from a faucet or hose.
- Blink while you are rinsing.
- **DO NOT** force anybody's eyes open.

WHAT DO I NEED TO TELL THE DOCTOR?

Be ready to tell the doctor or nurse exactly what happened. Warn the doctor or nurse that the person might be sick from pesticides. That way they can protect themselves. Tell the doctor what you know about what happened with the pesticide to make the person sick. If you know, tell him the age of the sick people, and what pesticide was involved. Bring information about the pesticide to show the doctor. Copy the exact name of the pesticide from the label, and the active ingredient and EPA registration number. If you can't do this and have no other choice, bring the clean empty pesticide container (with the label still on it) or an unused, sealed container.

REMEMBER: People in the hospital can also get sick or hurt if a container with pesticides is dropped and broken.

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Always tell your supervisor if someone gets sick or hurt at work.

Pesticide Safety Information

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N
No. 5

Protecting Yourself From Breathing Pesticides in Non-Agricultural Settings

Sometimes, pesticide spray can stay in the air that you breathe.

One way to protect yourself is to wear a breathing mask called a respirator, like the one in the picture below.

WHEN SHOULD I WEAR A RESPIRATOR?

You **must** wear a respirator anytime the pesticide label requires one. You **may** need to wear a respirator if the pesticide label says, "Avoid breathing vapor or mist."

Your supervisor must give you a respirator when it is needed. You must wear it.

WHAT TRAINING DO I NEED?

Before you use a respirator for the first time, you must be trained how to use it safely. After that, you must get the training again every year. Training must tell you when you need to wear a respirator and show you how to safely wear it. You must also be told about what the respirator can't protect you against.

HOW DO I GET THE RIGHT RESPIRATOR?

There are different kinds of respirators that will protect you from different dangers. When using pesticides that could irritate your eyes, wear a full-face respirator to protect your eyes and lungs. Some fumigant labels require you to wear a self-contained breathing apparatus (SCBA). The pesticide label or your supervisor will tell you what kind of respirator to wear.

It is also very important that the respirator fits your face. Respirators come in different sizes. You must know how to check your respirator fit. While you are checking how your respirator fits and getting used to it, wear it in an area where there are no pesticides. Your supervisor or someone he hires will make sure it fits your face.

You must wear a respirator anytime the pesticide label requires one.

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On the outside of the respirator it must say that it is approved by the National Institute for Occupational Safety and Health (NIOSH).

CAN ANYONE USE A RESPIRATOR?

Breathing through a respirator can be very hard for some people. People with problems such as high blood pressure, heart disease, lung disease or a perforated eardrum may not be able to use respirators. If you are using a pesticide and are supposed to use a respirator, your supervisor must ask you if you have any of these health problems. If you do, you must get a doctor's permission to use a respirator. If you have told your supervisor that you might have a health problem, the doctor must examine you. The doctor then must give his report to your supervisor. Your supervisor must follow the doctor's written orders about whether or not you can wear a respirator.

IF I HAVE A MUSTACHE OR A BEARD, CAN I WEAR A RESPIRATOR?

- If you have a beard, a bushy mustache, or long sideburns, a regular respirator won't protect you because the mustache, beard or sideburns keep it from making a tight seal on your face. You need to use a special respirator
- If your supervisor doesn't have one of these special respirators, you cannot do the work.

HOW CAN I TELL IF MY RESPIRATOR IS WORKING?

Most respirators do not really clean the air. What they do is stop most harmful chemicals from getting into your lungs. They do this with special filters. But these filters stop working after a while. Then the pesticide will pass through and you will breathe it in. If you notice a smell or taste, if your eyes or throat burn, or if it gets hard for you to breathe, leave the area **RIGHT AWAY**. Go to a safe area that contains no pesticides. Then take off your respirator and look at it carefully. Is it torn or worn out? If there are no cracks or other problems you can see, you may need to change the filter.

Because many pesticides do not have a smell or cause irritation, your supervisor must replace the filter often.

THE FILTER MUST BE REPLACED

- when directions on the pesticide label say so, *or*
- when the respirator maker says it should be replaced, *or*
- when you first notice smell, taste or irritation, *or*
- at the end of each workday.

Follow the rule that replaces the filter soonest.

REMEMBER: Respirators only protect you from breathing chemicals. Most of the time when pesticides are used, protecting your skin is also important.

WHO TAKES CARE OF THE RESPIRATOR?

When respirators are broken, your supervisor must fix them. If they cannot be fixed, your supervisor must get new ones.

Respirators should be cleaned and inspected regularly by a person who is trained to do this job. Do not use someone else's respirator without cleaning and disinfecting it first. If the other person has a cold or the flu, you can get sick, too. It's best if each worker has his own respirator. Or you can use respirators that can be thrown away after they are used.

Respirators should be stored so the face piece does not become bent. They need to be protected from dust, sunlight, and big changes in temperature. Water or certain chemicals can also damage them. Hard plastic containers with lids are good storage containers for respirators. Store respirators and all personal protective equipment away from pesticides.

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N
No. 7

Washing Pesticide Work Clothing

If you work with pesticides, your work clothes can get pesticides on them. This can happen even if you wear coveralls or other personal protective equipment (PPE) over your own clothes.

It is your supervisor's job to clean your PPE. This sheet tells you how to clean your own work clothes. If you don't wash your clothes, the pesticides on them can make you sick. And if your dirty clothes are mixed with your family's clothes at home, your family could get sick, too. Follow these directions to protect yourself and your family from pesticides.

WEAR CLEAN WORK CLOTHES EVERY DAY

Wash clothes that have pesticides on them as soon as you can. The longer you wait, the harder it is to wash the pesticide off. And, if you keep wearing the clothes and get more pesticide on them, you could get sick because pesticides can get into your body through your skin.

WASHING PESTICIDE WORK CLOTHING

- Wear rubber gloves.
- Keep separate from other clothes.
- Use a pre-soak cycle or run through the wash cycle twice.
- Use the highest water level.
- Wash a full cycle, in very hot water.
- Use strong detergent.
- If possible, dry the clothes outside on a line.
- Clean the washing machine by running a cycle with no clothes.

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When you come home from work, do not hug or touch your family until you have changed out of your work clothes. Shower and wash your hair. This is to protect your family from pesticides.

BEFORE YOU WASH YOUR CLOTHES

- You cannot get all the pesticide off of leather items such as watchbands, belts and boots. You must throw them away if they have pesticides on them. If you wear them again and sweat, the pesticide can get in your body through your skin.
- If you have pesticide powder or granules on your clothes, shake them off before you leave work. Pay special attention to your cuffs and pockets.
- Keep all clothes with pesticides on them (including underwear) in closed plastic bags. Until you are ready to wash the clothes, keep the bags outside the house. Make sure children and pets cannot get to the bags.
- Tell the person that does the laundry at home that your clothes have pesticides on them. Explain how to wash them.

WHEN YOU WASH YOUR CLOTHES

- Do not mix clothes with pesticides on them with your family's laundry. They must not be washed together, or pesticide can get on your family's clothes and make them sick.
- Try to dump the clothes straight from the plastic bag into the washer, without touching the laundry.
- If you have to touch the pesticide work clothes, wear rubber gloves. Then wash the gloves, take them off, and throw them away. Then wash your hands and arms.
- Put only a few things in the washer at one time. This helps get them clean.
- Use the longest cycle, and **LOTS** of **HOT** water. Cold water will not do a good job taking out pesticides.
- Use a strong detergent. You can use bleach if you want, but it does not help take out pesticides.

AFTER YOU WASH YOUR CLOTHES

- Before you use the washing machine again, clean it by running it with no clothes - only hot water and detergent.
- Dry your clothes on a line, outside if you can. The sun will help get rid of any pesticides that are left.
- If you dry the clothes in a dryer, run it until the clothes are completely dry. Then run the empty dryer for 10 minutes.

WHAT IF I SPILL PESTICIDE ON MY CLOTHES?

If the spilled pesticide is full strength, not diluted with water, take the clothes off right away. Do not try to clean them. Instead, you must throw them away. Follow the state and local rules for doing this. (Ask your supervisor about how to do this.)

WHAT ABOUT CLEANING PERSONAL PROTECTIVE EQUIPMENT (PPE)?

It is your employer's job to clean coveralls and other PPE. Your supervisor may train you how to clean your PPE at work. Never take PPE home to clean it.

Your supervisor must make sure that you change out of coveralls and wash at the end of the workday. You should not take the coveralls home.

If you do not go to your employer's headquarters at the end of your workday, you must

- take off your coveralls at work;
- put them in a container (a plastic bag is good) and put it outside your home; return them to your employer for washing.

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If you don't get all the information you need in your training, or from your supervisor, you should call your County Agricultural Commissioner, or the Department of Pesticide Regulation (DPR) for more information. You can find the Commissioner's number in your local white pages phone directory. DPR numbers are:

- Anaheim (714) 279-7690
- Fresno (559) 445-5401
- Sacramento (916) 324-4100

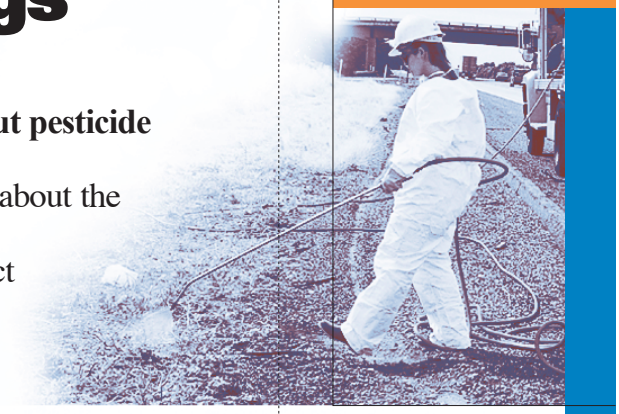
Pesticide Safety Information

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION
1001 I Street,
Sacramento,
California 95814

N
No. 8

Safety Rules for Pesticide Handlers in Non-Agricultural Settings



This leaflet, the pesticide label, and your training, tell you about pesticide dangers at work. Your supervisor must know and help you learn about the pesticides you will use, how to safely use them, and how to protect yourself. Pesticides are chemicals that are used to kill insects, weeds, germs and plant diseases. **Fertilizers are not pesticides.**

Your employer must make plans for emergency medical care before you start working with pesticides. If you think that pesticides made you sick or hurt you at work, he must make sure that you are taken to the doctor right away. You do not have to pay for medical care if you get sick or hurt from pesticides at work.

Emergency medical care is available at

_____

_____

_____

WHAT ARE MY RIGHTS?

You have the right to know the following about pesticides that have been used where you work

- when and where the pesticide was applied
- name of the pesticide
- the EPA registration number

When you are trained your supervisor must tell you where all this information is kept. You have the right to look at Material Safety Data Sheets (MSDS) and records for all pesticides used where you work. The MSDS tells you about the pesticide and its dangers.

If you think that pesticides have made you sick at work, your supervisor must make sure that you are taken to the doctor immediately.

EMPLOYERS: This is the hazard communication leaflet. Fill in the blank lines in this leaflet and display this handout at the employees' work site.

HS-1749
Revised September 2004

These records are kept at:

_____

_____

_____

If you get sick or hurt **BECAUSE OF YOUR JOB**, you have the right to file for worker's compensation. Workers' compensation will pay for your medical bills, and sometimes, lost pay.

Your supervisor must explain your rights to you. If you need more help in understanding your rights, call or go to your local county agricultural commissioner's office, local legal aid, and worker's rights office, union or the Department of Pesticide Regulation (DPR).

The DPR offices are:

- Anaheim (714) 279-7690
- Fresno (559) 243-8111
- Sacramento (916) 324-4100

WHO DO I TELL ABOUT DANGERS AT WORK?

Pesticides are only one kind of danger at your work. If you have a complaint about a pesticide safety problem, you should call the county agricultural commissioner.

Other health and safety complaints (bathrooms, drinking water, etc.) should be filed with the California Department of Industrial Relations-Cal/OSHA office. You can find the telephone numbers in the government pages of the telephone book.

What training should I get?

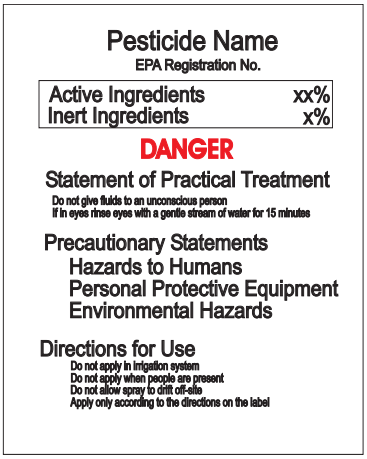
- You must be trained in a way that you understand **before** you begin working with pesticides, and anytime you work with new pesticides.
- You must also be given training each year to remind you how to work with pesticides safely.
- You must be told the ways a pesticide can hurt you and how to safely use each pesticide you work with. (Ask your supervisor for the N-1 safety leaflet to learn more about training.)
- You must get extra training if you have to use a respirator (ask your supervisor for the N-5 safety leaflet).

All the information in your training must also be written down. You will be given a paper to sign to show you have been trained. But only do that when you have finished the training and you understand what you heard.

WHAT CAN A PESTICIDE LABEL TELL ME?

Some of the most important things listed on the label are

- what chemicals are in the pesticide,
- first aid and health warnings,
- protective equipment you need,
- and directions for applying the pesticide.



All pesticides are poisonous. If a pesticide gets in or on you, it can hurt you or make you sick.

The pesticide label tells you how to safely mix and apply the pesticide. **The label must be at the place where you mix or apply the pesticide.** You must read and follow **ALL** directions on the label. There may also be product bulletins or other extra label information that you must read and follow.

If you have to move pesticides from one place to another, or dispose of empty pesticide containers, there are special rules your supervisor must tell you about. Ask for the N-2 safety leaflet for more information.

How can I tell which pesticides are more dangerous?

Most pesticide labels have a signal word in large print on the front of the label. This word tells you about the acute health effect of the pesticide. If a pesticide can hurt you or make you sick right away, that's called an acute effect. If it takes months or years of exposure to a pesticide before you get sick, that's called a chronic effect.

These are the words that tell about acute effects

- **DANGER** means the pesticide is extremely harmful
- **WARNING** means less harmful, but still dangerous
- **CAUTION** means much slightly harmful, but still can make you sick

If the label does not have one of these words, it means that the pesticide is unlikely to harm you. However, **always** handle pesticides carefully.

WHAT ELSE DOES THE LABEL TELL ME?

- If the pesticide can severely hurt your eyes or skin, the label will say something like "Corrosive, causes eye and skin damage."
- If the pesticide can make you very sick, the label will have a skull-and-crossbones symbol and the word "**POISON**."

- Words like "**FATAL**" or "may be fatal if swallowed, inhaled, or absorbed through the skin," mean the pesticide can make you very sick or even kill you.
- Some pesticide labels tell you about other health problems that might not show up until long after use, such as cancer (may take years) or dangers to unborn babies.

ARE THERE ANY EXTRA RULES FOR VERY DANGEROUS PESTICIDES?

Yes, there is a group of pesticides, called Minimal Exposure Pesticides (MEPs) that California has extra rules for because they could be especially dangerous to you.

These are the pesticides on this list

- Buctril
- Metasystox-R

See the N-10 safety leaflet or more information about these pesticides.

Other handouts mentioned in this document should be part of your training. They are free and are available from your supervisor and your local agricultural commissioner's office.

SUMMARY OF RECORDS YOUR EMPLOYER MUST KEEP

Information	Location
Training papers	Employer's office site
Written training program	Employer's office site
Respirator program procedures	Employer's office site
Accident response plan (fumigants)	Work site
Pesticide label	Work site
Pesticide Safety Information Series	Employer's office site
Material Safety Data Sheet	Employer's office site
Storage area posting[1]	Storage area
Emergency medical care notice	Work site
Doctor's report for respirator use	Employer's office site
Pesticide use records	Employer's office site

1 Required only for pesticides with the Signal word "DANGER" or "WARNING"

SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT

In 1986, a law called the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) was passed. Proposition 65 requires California to make a list of chemicals that cause cancer, birth defects, or other reproductive harm. The Proposition 65 list contains many different chemicals, including dyes, solvents, pesticides, drugs, and food additives. If a pesticide is on the Proposition 65 list, your supervisor must warn you if you could be exposed to enough pesticide to result in a significant health risk. Your supervisor may also choose to warn you if a pesticide on the Proposition 65 list has been sprayed, even if health problems are not likely. Your employer is required to keep information on each pesticide application and allow you to look at it. If you are not sure of the record location, ask your supervisor. *The following table lists pesticides that are on the Proposition 65 list and that might be used in California.*

CURRENTLY REGISTERED PESTICIDES ON THE PROPOSITION 65 LIST

PESTICIDES KNOWN TO THE STATE TO CAUSE CANCER

Arsenic acid
Arsenic pentoxide
Arsenic trioxide
Cacodylic acid
Captan
Chlorothalonil
Chromic acid
Creosote
Daminozide
DDVP (dichlorvos)
Diuron
p-Dichlorobenzene
1,3-Dichloropropene
Dioctyl phthalate
Ethylene oxide
Ethylene glycol monomethyl ether
Fenoxycarb
Folpet
Formaldehyde (gas)
Iprodione
Lindane
Mancozeb
Maneb
Metam Sodium
Metiram
Oxadiazon
Pentachlorophenol
Propargite
Pronamide (propyzamide)
Propylene oxide
Sodium dichromate
Terrazole
Thiodicarb
Vinclozolin

PESTICIDES KNOWN TO THE STATE TO CAUSE BIRTH DEFECTS OR REPRODUCTIVE HARM

Amitraz
Arsenic pentoxide
Arsenic trioxide
Bromoxynil octanoate
Chlorsulfuron
Diclofop methyl
Disodium cyano-dithioimidocarbonate
EPTC (ethyl dipropyl-thiocarbamate)
Ethylene oxide
Ethylene glcyol monomethyl ether
Fenoxaprop ethyl
Fluazifop butyl
Fluvalinate
Hydramethylnon
Linuron
Metam sodium
Metiram
Methyl bromide (as a structural fumigant)
Myclobutanil
Nitrapyrin
Oxadiazon
Oxydemeton-methyl
Potassium dimethyldithiocarbamate
Propargite
Resmethrin
Sodium dimethyldithiocarbamate
Streptomycin sulfate
Thiophanate methyl
Triadimefon
Tributyltin methacrylate
Triforine
Vinclozolin
Warfarin

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If you don't get all the information you need in your training, or from your supervisor, you should call your County Agricultural Commissioner, or the Department of Pesticide Regulation (DPR) for more information. You can find the Commissioner's number in your local white pages phone directory. DPR numbers are:

- Anaheim (714) 279-7690
- Fresno (559) 243-8111
- Sacramento (916) 324-4100

Appendix D - Manufacturer's Instructions and MSDS

58890 Agri-Dex (CA) BL 1/24/12 9:07 AM Page 1

CPDA Certified

AGRI-DEX®

A Crop Oil Concentrate

***PRINCIPAL FUNCTIONING AGENTS:**

Heavy range paraffinic oil, Polyol fatty acid esters, and Polyethoxylated derivatives thereof	99.0%
CONSTITUENTS INEFFECTIVE AS SPRAY ADJUVANTS	1.0%
TOTAL	100.0%
Surfactant Content	17.00%
Unsulfonated Oil Residue (UR) Value	95.00% minimum

*All ingredients are accepted for use under CFR 40, 180.

CONTAINS PETROLEUM DISTILLATES.

KEEP OUT OF REACH OF CHILDREN

CAUTION

See Inside Panel for Additional Precautionary Statements

SN 0410/0112

CA Reg. No. 5905-50094-AA

Manufactured For

HELENA CHEMICAL COMPANY

225 SCHILLING BOULEVARD, SUITE 300 • COLLIERVILLE, TENNESSEE 38017

0PM #110156

PEEL BACK BOOK HERE AND RESEAL AFTER OPENING

NET CONTENTS:

PRECAUTIONARY STATEMENT

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

BEFORE USING THIS PRODUCT, READ ALL PRECAUTIONS, DIRECTIONS FOR USE, CONDITIONS OF SALE–LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES.

Causes moderate eye irritation. Harmful if inhaled or absorbed through skin. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or smoking tobacco. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment: Wear chemical-resistant gloves, long-sleeved shirt and long pants, shoes plus socks when mixing or applying **AGRI-DEX®**.

FIRST AID	
IF IN EYES:	• Hold eye open and rinse slowly and gently with water for 15–20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF SWALLOWED:	• Call a poison control center or doctor immediately for treatment advice. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give **any** liquid to the person. • Do not give anything by mouth to an unconscious person.
IF INHALED:	• Move person to fresh air. • If not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
IF ON SKIN OR CLOTHING:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15–20 minutes. • Call a poison control center or doctor for treatment advice.
NOTE TO PHYSICIAN: Petroleum distillate may pose an aspiration pneumonia hazard.	
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information.	

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

STORAGE: Store in original container only. Keep container tightly closed. Do not allow water to be introduced into the contents of this container. Do not store near heat or open flame. Do not store with oxidizing agents or ammonium nitrate.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be dispersed of on site or at an approved waste disposal facility. Do not contaminate water sources by runoff from cleaning of equipment, disposal of cleaning equipment washwaters, or spray waste.

CONTAINER DISPOSAL: Do not reuse empty container. Triple rinse (or equivalent) during mixing and loading and add rinsate to spray tank. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your State and local ACRC recycler, visit the ACRC web page at www.acrecycle.org. Decontaminated containers may also be disposed of in a sanitary landfill. For help in chemical emergencies involving spill, leak, fire or exposure, call toll free 1-800-424-9300.

REFILLABLE CONTAINER: Refill this container with adjuvants only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from the container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. If the container is not being refilled, return the container to the point of purchase.

GENERAL INFORMATION

AGRI-DEX® is a non-ionic blend of special surfactants and a highly refined spray oil and is designed for use with a broad range of pesticides where an oil concentrate adjuvant is recommended. Subject to the cautionary statements set forth in the Directions for Use, **AGRI-DEX®** may be used with other pesticides and/or fertilizer products. The addition of **AGRI-DEX®** to a spray tank improves pesticide application by modifying the wetting and deposition characteristics of the spray solution resulting in a more even and uniform spray deposit. **AGRI-DEX®** can positively affect pesticide spray application and pesticide efficacy. Optimum application and effects, however, can be influenced by the crop, pest, spray equipment, spray volume, pressure, droplet size, spray mixture and environmental factors. Consequently, it is recommended that careful observations of the spray deposit be made and adjuvant concentrations be adjusted accordingly.

DIRECTIONS FOR USE

FOR USE WITH PRODUCTS REGISTERED FOR: AGRICULTURAL, AQUATIC, FORESTRY, INDUSTRIAL, MUNICIPAL, NON-CROPLAND, ORNAMENTAL, RIGHTS-OF-WAY, TURF AND OTHER USES.

The addition of an adjuvant to some pesticides or pesticide tank mix combinations may cause phytotoxicity to the foliage and/or fruit of susceptible crops. Prior to the addition of **AGRI-DEX®** to spray tank mixes or prior to the use of **AGRI-DEX®** with a pesticide or fertilizer where an oil concentrate adjuvant is not specifically recommended but not prohibited by the manufacturer, the user or application advisor must have experience with the combination or must have conducted a phytotoxicity trial.

AGRI-DEX® may be applied by Ground, CDA, Aerial or Aquatic spray equipment and any other type spray equipment recommended by pesticide labels. In most applications, use enough **AGRI-DEX®** to allow for uniform wetting and deposition of the spray onto plant surfaces without undue runoff.

GROUND: Use 1–4 pints per acre or 1.0% by v/v with a minimum of 0.50% by volume.

AERIAL, LOW VOLUME, CDA: Use 4–8 pints per 100 gallons water or 0.50–1.00% v/v concentration.

AQUATIC: Use 1–4 pints per acre.

NOTE: The above use recommendations are considered to be adequate for most uses. Do not exceed 2.5% v/v concentration. Some pesticides, however, may require higher or lower rates for optimum effect. Follow the pesticide label directions when this occurs.

CAUTION: Do not mix with oxidizing agents unless oxidizing agents are in solution.

MIXING

Prior to any pesticide application all spray mixing and application equipment must be cleaned. Carefully observe all cleaning directions on the pesticide label.

Fill spray tank one-half full with water and begin agitation. Add pesticides and/or fertilizers as directed by labeling or in the following sequence:

1. Dry flowables or water dispersible granules
2. Wettable powders
3. Flowables
4. Solutions
5. Emulsifiable concentrates

and continue filling. Add **AGRI-DEX®** last and continue agitating.

CONDITIONS OF SALE – LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES

Read the Conditions of Sale – Warranty and Limitations of Liability and Remedies before using this product. If the terms are not acceptable, return the product, unopened, and the full purchase price will be refunded.

The directions on this label are believed to be reliable and should be followed carefully. Insufficient control of pests and/or injury to the crop to which the product is applied may result from the occurrence of extraordinary or unusual weather conditions or the failure to follow the label directions or good application practices, all of which are beyond the control of Helena Chemical Company (the "Company") or the seller. In addition, failure to follow label directions may cause injury to crops, animals, man or the environment. The Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the factors noted above which are beyond the control of the Company. The Company makes no other warranties or representations of any kind, express or implied, concerning the product, including no implied warranty of merchantability or fitness for any particular purpose, and no such warranty shall be implied by law.

The exclusive remedy against the Company for any cause of action relating to the handling or use of this product shall be limited to, at Helena Chemical Company's election, one of the following:

1. Refund of the purchase price paid by buyer or user for product bought, or
2. Replacement of the product used

To the extent allowed by law, the Company shall not be liable and any and all claims against the Company are waived for special, indirect, incidental, or consequential damages or expense of any nature, including, but not limited to, loss of profits or income. The Company and the seller offer this product and the buyer and user accept it, subject to the foregoing conditions of sale and limitation of warranty, liability and remedies.

© Copyright Helena Holding Company, 2012.

AGRI-DEX® is a registered trademark of Helena Holding Company.

A Crop Oil Concentrate

***PRINCIPAL FUNCTIONING AGENTS:**	
Heavy range paraffinic oil, Polyol fatty acid esters, and Polyethoxylated derivatives thereof	99.0%
CONSTITUENTS INEFFECTIVE AS SPRAY ADJUVANTS	1.0%
TOTAL	100.0%
Surfactant Content	17.00%
Unsulfonated Oil Residue (UR) Value	95.00% minimum

*All ingredients are accepted for use under CFR 40, 180.

CONTAINS PETROLEUM DISTILLATES.

KEEP OUT OF REACH OF CHILDREN

CAUTION

See Inside Panel for Additional Precautionary Statements

SN 0410/0112

CA Reg. No. 5905-50094-AA

Manufactured For

HELENA CHEMICAL COMPANY

225 SCHILLING BOULEVARD, SUITE 300 • COLLIERVILLE, TENNESSEE 38017

Material Safety Data Sheet

Effective Date: 01-AUG-2012
Product: AGRI-DEX

I. IDENTIFICATION

Chemical Name: NONIONIC OIL CONCENTRATE
Chemical Family: OIL SURFACTANTS
Formula: NOT APPLICABLE, FORMULATED MIXTURE.
Synonyms: NONE
CAS Number: 64741-88-4; 64741-89-5
EPA Number: NONE REQUIRED

II. PHYSICAL DATA

Boiling Point: 625 TO 830 DEG F.
Freezing Point: <32 DEGREES F.
Spec Gravity: .879 GMS/CC
Vapor Pressure: .0001 MM HG
Vapor Density: 10+
Solubility: DISPERSIBLE
Volatiles: <1%
Evaporation: 1000X
Melting Point: >10 DEGREES F.
Appearance: CLEAR AMBER LIQUID, MINERAL OIL ODOR.

III. INGREDIENTS

Material	CAS Number	Percent	TLV	Hazard
PROPRIETARY BLEND OF HEAVY RANGE PARAFFIN BASE PETROLEUM OIL, POLYOL FATTY ACID ESTERS, AND POLYETHOXYLATED DERIVATIVES		100.00	5 MG/M3	MILD SKIN & EYE IRRITANT

IV. FIRE AND EXPLOSION HAZARD

Flash Point: >200 DEGREES F.
Autoignition Temp: 670 DEG F.(ESTIMATE)
Flammable Limit: NOT DETERMINED
Extinguishing Media: WATER FOG, FOAM, DRY CHEMICAL AND CARBON DIOXIDE.
Special Fire Fight Proc: WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.
Fire and Expl Hazard: CAN BE MADE TO BURN (FLASH POINT GREATER THAN 200 DEGREES F).

Material Safety Data Sheet

Effective Date: 01-AUG-2012
Product: AGRI-DEX

V. HEALTH HAZARD

Carcinogen Information: NONE CURRENTLY KNOWN.

ACUTE EFFECTS OF OVER EXPOSURE

Swallowing:	LOW TOXICITY, ORAL LD50 (RAT) >5,010 GM/KG. PULMONARY ASPIRATION HAZARD - IF SWALLOWED AND/OR VOMITING OCCURS, CAN ENTER LUNGS AND CAUSE DAMAGE.
Skin Absorption:	LOW TOXICITY, DERMAL LD50 (RABBIT) >2,020 GM/KG.
Inhalation:	NO HAZARD EXPECTED.
Skin contact:	MODERATE IRRITATION, REMOVES NATURAL OILS AND FATS FROM SKIN WITH PROLONGED OR REPEATED CONTACT.
Eye Contact:	CONTACT WITH EYES MAY CAUSE MILD IRRITATION.
Chronic Effects:	EXCESSIVE EXPOSURES MAY CAUSE IRRITATION TO EYES, NOSE AND THROAT.
Other Hazard:	NONE CURRENTLY KNOWN.

EMERGENCY AND FIRST AID PROCEDURES

Swallowing:	DO NOT INDUCE VOMITING. DO NOT GIVE LIQUIDS. OBTAIN EMERGENCY MEDICAL ATTENTION. SMALL AMOUNTS WHICH ACCIDENTALLY ENTER MOUTH SHOULD BE RINSED OUT UNTIL TASTE OF IT IS GONE.
Skin:	WASH CONTAMINATED AREA WITH SOAP AND WATER. IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN.
Inhalation:	MOVE PERSON TO FRESH AIR. CONSULT A PHYSICIAN IF IRRITATION DEVELOPS.
Eyes:	FLUSH EYES WITH WATER FOR 15 MINUTES, HOLDING EYELIDS OPEN. IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN.
Notes to Physician:	IN THE EVENT OF AN ADVERSE RESPONSE, TREATMENT SHOULD BE DIRECTED TOWARD CONTROL OF THE SYMPTOMS. PULMONARY ASPIRATION HAZARD - IF SWALLOWED AND/OR VOMITING OCCURS, CAN ENTER LUNGS AND CAUSE DAMAGE.

VI. REACTIVITY

Stability:	Stable
Conditions to Avoid:	NONE CURRENTLY KNOWN
Polymerization:	Will Not Occur
Conditions to Avoid:	NONE CURRENTLY KNOWN.

Material Safety Data Sheet

Effective Date: 01-AUG-2012
Product: AGRI-DEX

Incompatibility material: ALKALIES AND STRONG OXIDIZERS.
Hazardous Combustion: MAY PRODUCE OXIDES OF CARBON AND ASPHYXIANTS UNDER FIRE CONDITIONS.

VII. SPILL OR LEAK PROCEDURES

Spill or Leak Proc: CLEANUP SPILLS WITH AN OIL ABSORBENT MATERIAL, SUCH AS CLAY, SAND, OR SAWDUST. SPILL AREA WILL BE QUITE SLIPPERY. PLACE CONTAMINATED MATERIAL IN RECOVERY/SALVAGE DRUMS FOR PROPER DISPOSAL.
Waste Disposal Method: THIS MATERIAL MUST BE DISPOSED OF ACCORDING TO FEDERAL, STATE, OR LOCAL PROCEDURES UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT.

VIII. SPECIAL PROTECTION INFORMATION

Respiration: USE ONLY NIOSH CERTIFIED RESPIRATORY PROTECTION. RESPIRATORY PROTECTION NOT NEEDED UNLESS PRODUCT IS HEATED OR MISTED.
Ventilation: VENTILATE AS NEEDED TO COMPLY WITH EXPOSURE LIMIT.
Gloves: IMPERVIOUS
Eyes: CHEMICAL WORKERS GOGGLES.
Other: EYE WASH STATION, IMPERVIOUS APRON AND FOOTWEAR.

IX. SPECIAL PRECAUTIONS

Special precaution: KEEP OUT OF REACH OF CHILDREN. DO NOT STORE WITH FOOD, FEED, OR OTHER MATERIAL TO BE USED OR CONSUMED BY HUMANS OR ANIMALS. DO NOT CONTAMINATE WATER SUPPLIES, LAKES, STREAMS, OR PONDS. DO NOT STORE NEAR OPEN HEAT OR FLAMES. DO NOT STORE WITH OXIDIZING AGENTS OR AMMONIUM NITRATE FERTILIZER. KEEP CONTAINER CLOSED, DO NOT ALLOW WATER TO BE INTRODUCED TO THE CONTENTS OF THE CONTAINER.
Other precaution: CALIFORNIA REGISTRATION NUMBER 5905-50094-AA.

X. SHIPPING INFORMATION

Shipping name: NOT REGULATED BY DOT, IATA, OR IMO.

Material Safety Data Sheet

Effective Date: 01-AUG-2012
Product: AGRI-DEX

Hazard Class: NONE
Identification No: NONE
Labels Required: NONE
Placarding: NONE
Freight Class: ADHESIVES, ADJUVANTS, SPREADERS OR STICKERS, N.O.I. (NMFC ITEM 42652, CLASS 60)

Chemical Name	Equivalent R.Q.
NOT APPLICABLE	NOT APPLICABLE

XI. GENERAL PRODUCT INFORMATION

National Fire Protection Association Rating:
(Rating level: 4-Extreme, 3-High, 2-Moderate, 1-Slight, 0-Minimum

Health: 1 Fire: 1 Reactivity: 0

S.A.R.A. Title III Hazard Classification: (Yes/No)

Immediate (Acute) Health: Y Delayed (Chronic) Health: N
Sudden Release of pressure: N Fire: N
Reactive: N

Mail inquiries to: 225 Schilling Blvd., Suite 300 Collierville, TN 38017
Helena Chemical Company believes that the data contained herein is factual. This data is not to be taken as a warranty or representation of legal responsibility. It is offered solely for your consideration, investigation and verification.

BullsEye®

Spray Pattern Indicator

General Product Description

Bullseye® Spray Pattern Indicator is a non-staining blue liquid colorant designed to be used with pesticide, fertilizer and/or plant growth regulator tank mixes. Bullseye® provides visual assurance that these solutions are uniformly applied, with minimum overlap and no missed areas. Bullseye® helps to alert the operator to improper equipment operation - the blue color immediately indicates line and/or connection leaks and clogged nozzles. Bullseye® is an excellent safety tool - the blue color provides real time feedback in the event of operator exposure to the solution.

Bullseye®:

- is a blue liquid, containing 100% non-ionic polymeric colorant
- is patented, non-staining colorant technology
- is non-hazardous
- is ***not*** a dye, and will not permanently stain skin

Package Availability

PRODUCT NAME	CONTAINER	NET CONTENTS
Bullseye® Blue	2 x 2.5 gal. cont./cs.	46 lbs/case
Bullseye® Blue	55 gal. drum	475 lbs/drum

Product Characteristics

- pH: 7.0
- Freeze/Thaw Stability: Excellent
- Shelf Stability: Excellent
- Solubility in Water: Complete

Recommended Application Guidelines and Rates

Bullseye® Spray Pattern Indicator may be used effectively to improve many industrial and forestry applications. Some recommended applications are:

- Handgun broadcast or spot applictions of herbicides for industrial weed control on plant sites, sub-stations, oil fields, parking areas, etc.
- Handgun or boom herbicide applications on utility transmission or distribution rights-of-way.
- Spotgun or banded herbicide treatment of roadsides, forest site preparation or release, or rights-of-way.
- Boom or fixed nozzle application of herbicides or growth regulators for roadsides or medians, where more than one pass is made, frequent stops and starts are made, or where identification of the edge line is critical.
- Backpack foliar application of herbicides. (An oil soluble version of Bullseye® is available for non-aqueous applications)

Experience will be the best determinant of the rates required for your application, but the following rates are typically used:

- **Handgun or Boom Foliar:** 12 - 20 ounces per 100 gallons
- **Handgun or Boom Bareground:** 6 - 14 ounces per 100 gallons
- **Spotgun or Backpack Application:** 0.5 ounces per gallon

Your rates may vary based on conditions in your area. Therefore, it is recommended that you begin at the higher rates and reduce with each successive tank to a color that is just visible to the applicator. Fill tank halfway, then add the color. Minimal agitation is required. Avoid contact or spills with the concentrate as it is a highly colored solution.

MILLIKEN

Milliken Chemical, Division of Milliken & Company, M-206
920 Milliken Road, Spartanburg, SC 29303
800-845-8502 or 864-503-6171, Fax: 864-503-6186

BullsEye®

Spray Pattern Indicator

Unique Features

- **Colorant** - Bullseye® is a water soluble polymeric colorant, not a dye – it is *NON- STAINING* to skin, clothing and equipment.
- **Inert** - Pesticides are active at very low rates, and even a small amount of interference from a dye could affect the entire application. Bullseye® is an inert product at all pH's and has been university tested to prove compatibility.
- **No heavy metals** - Bullseye®'s unique manufacturing process does not require the use of heavy metals. None are used so there are none in the final product.
- **Highly visible** - The product is designed to be discreet but highly visible to the trained eye. Even on thick foliage or bare ground, the evidence of chemical application is provided by the bright colorant.
- **Cost Effective** - Because of its highly concentrated nature, Bullseye® is more cost effective than dyes, even though the case price of these products may be lower.

Directions for Use

- Application rates will vary due to: vegetation type, height, color & density; the color of other spray solution components; spray nozzle type, configuration & pressure; total volume of spray solution .
- Initial applications should be made at the highest rates. This allows the operator to become familiar with Bullseye®'s appearance on the foliage. In subsequent applications, the Bullseye® rate should be adjusted to a level appropriate for the individual operator.
- Bullseye® may be added anytime during the spray tank filling process. Minimum agitation is required. Bullseye® may be applied from a separate container.

General Use Precautions

- Individual operators perceive color differently - adjustments to the above rates may be necessary.
- Use caution before a general application of Bullseye® near porous surfaces (e.g. - concrete, rocks, stonework, bricks).
- Decolorization may be obtained by applying a bleach solution (1 part bleach/2 parts water).
- **Not intended for application to edible crops.**

Health Safety & First Aid Information

Effects of overexposure may cause slight eye and skin irritation. In case of contact, flush with water. For additional information, see MSDS.

Transportation, Storage and Disposal

- **Transportation** - Bullseye® is a non-hazardous chemical. Not regulated by the U.S. Department of Transportation.
- **Storage** - Store in original container only and keep sealed. Store in secured storage areas. Use caution when moving, opening, closing or pouring.
- **Product Disposal** – Wastes resulting from use of this product should be disposed of through on-site spray application or at an approved waste disposal facility.
- **Container Disposal** - Triple rinse, then offer for recycling or reconditioning, dispose of in a sanitary landfill, or follow other procedures approved by federal, state and local authorities. Re-use of this container is not recommended.

According to the Office of Pesticides and Toxic Substances of the U.S. E.PA., no clearance is required under 40 CFR 180.1001 for use on non-crop vegetation. ***Not approved for edible crop use.*** *The information contained herein is provided for the purpose of disclosing product application and does not constitute product specifications regarding which, if any, warranties are expressed or implied.*

MILLIKEN

Milliken Chemical, Division of Milliken & Company, M-206
920 Milliken Road, Spartanburg, SC 29303
800-845-8502 or 864-503-6171, Fax: 864-503-6186

rev. 04/08 #183-02

MATERIAL SAFETY DATA SHEET

Version: 1.6
Date:
09/17/2008

Safety Data Sheet Status: Released

1. PRODUCT AND COMPANY IDENTIFICATION

BULLSEYE® BLUE 2X2.5

Product Information: BULLSEYE® BLUE 2X2.5

Company Identification:

Milliken Chemical
P.O. Box 1926
Spartanburg, SC, 29303 USA
1-864-472-9041
msds@milliken.com

Emergency Telephone Number:

Chemtrec:
1-800-424-9300 (Chemtrec - US)
1-703-527-3887 (International)

2. HAZARDS IDENTIFICATION

Emergency Overview

This material is a concentrated colorant. The health hazards of this product should be low under normal industrial and commercial uses. Do not allow material to enter soil or surface water.

HFRP Rating

Health	1
Flammability	1
Reactivity	0
Personal protection	B

Eye

May cause eye irritation. Not known to cause permanent injury to eye tissue.

Inhalation

No information regarding inhalation available.

Skin

Prolonged or repeated skin contact may cause irritation. Not expected to be a skin irritant

Ingestion

Essentially non-toxic.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Product name	CAS Number	Amount
Proprietary Colorant Blend	Proprietary	100.0 %

4. FIRST AID MEASURES

Eye
Flush thoroughly with water. If irritation occurs, get medical assistance.

Inhalation
Under normal conditions of intended use, this material is not expected to be an inhalation hazard. When breathing is difficult, properly trained personnel may assist affected person by administering 100% oxygen. Get medical attention if any discomfort continues.

Skin
Wash skin thoroughly with soap and water for several minutes. Immediately remove contaminated clothing. Get medical attention if any discomfort continues.

Ingestion
Give one or two glasses or water if patient is alert and able to swallow. Seek immediate medical attention. Do not induce vomiting.

5. FIRE-FIGHTING MEASURES

Flammable Properties

Flash Point
> 260.0 °C
Method: Cleveland Open Cup

Fire Fighting Instructions
Use standard firefighting procedures and consider the hazards of other involved materials. Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Unusual Fire & Explosion Hazards
Decomposition may produce fumes, smoke, oxides of carbon and hydrocarbons.

6. ACCIDENTAL RELEASE MEASURES

Safety Advice
Non-hazardous substance. Wear appropriate personal protective equipment.

Spill Cleanup Methods
This material is a concentrated colorant. Do not allow material to enter soil or surface water. Dam and absorb spillage with sand, sawdust or other absorbent. In case of spills, beware of slippery floors and surfaces. Report

spills as required to appropriate authorities.

7. HANDLING AND STORAGE

Handling

No specific hygiene procedures noted, but good personal hygiene practices are always advisable, especially when working with chemicals. Wash promptly with soap and water if skin becomes contaminated. Practice good housekeeping. Provide adequate ventilation if fumes or vapors are generated. Wash promptly if skin becomes contaminated. Avoid prolonged contact with skin or eyes.

Handling / Physical Hazards

Avoid extreme temperatures.

Storage Precautions

Store in a cool, dry place with adequate ventilation. Keep away from incompatible materials, open flames, and high temperatures. Keep containers tightly closed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

No special requirements under ordinary conditions of use and with adequate ventilation.

Eye protection

Wear necessary protective equipment. Avoid contact with eyes and prolonged skin contact. Where contact with this material is likely, chemical goggles are recommended.

Skin and Body Protection

Wash promptly with soap and water if skin becomes contaminated. Wear protective gloves to minimize skin contamination. When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material.

Personal protection

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Respiratory Protection

No protection is ordinarily required under normal conditions of use and with adequate ventilation.

9. PHYSICAL AND CHEMICAL PROPERTIES

State of Matter

Liquid

Color

Dark blue

Odor

Mild sweet

pH	3.5 - 5.5
Specific Gravity	1.116
Volatiles	40 %
Solubility (in Water)	Completely Soluble
Boiling Point	100 °C
Melting Point	< 0 °C

10. STABILITY AND REACTIVITY

Conditions to Avoid	No special precautions are necessary beyond normal good hygiene practices. See Section 8 of the MSDS for additional personal protection advice when handling this product.
Hazardous Polymerization	Hazardous polymerization will not occur.
Hazardous decomposition products	Decomposition will not occur if handled and stored properly.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity : Oral

Type: LD50
Species: Rat
Result: > 5,000 mg/kg
No test data are available for the complete formulated material. The potential health hazards described were based upon a comparison with similar materials.

Skin irritation.

Species: Rabbit
Slightly irritating. No test data are available for the complete formulated material. The potential health hazards described were based upon a comparison with similar materials.

Eye Irritation

Species: Rabbit
Slightly irritating.

Skin Sensitization

Species: Guinea Pig
Not a skin sensitizer.

Genetic Toxicity - in Vitro

Type: Ames Assay
Result: Negative

12. ECOLOGICAL INFORMATION

Acute Toxicity Aquatic

Species: Ceriodaphnia
Exposure time: 48 h
Result: 3,574 mg/l

13. DISPOSAL CONSIDERATIONS

Disposal Recommendations

This material is a concentrated colorant. Avoid washing material into sewer systems without proper treatment and authorization by the treatment facility management. Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. Recycle empty drums at an appropriate facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal. Ensure drums are tightly sealed.

14. TRANSPORT INFORMATION

Transport classifications may vary by container volume and may be influenced by regional or country variations in regulations.

15. REGULATORY INFORMATION

Chemical Inventory

All ingredients are either listed or exempt from listing on TSCA.

Regulatory Lists Searched	**Component**

16. OTHER INFORMATION

The information contained in this Material Safety Data Sheet is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Milliken Chemical.

FOAMBUSTER™

A SILICONE DEFOAMER FOR USE IN AQUEOUS SOLUTIONS

ACTIVE INGREDIENTS:	**(By Weight)**
Dimethylpolysiloxane	20.0%
CONSTITUENTS INEFFECTIVE AS SPRAY ADJUVANT	80.0%
TOTAL	100.0%

All ingredients are exempt from the requirement of a tolerance as specified in CFR 40, 180.1001(d).

KEEP OUT OF REACH OF CHILDREN

CAUTION

See Inside Panel for Additional Precautionary Statements

SN 0306/0810

Cal. Reg. No. 5905-50072-AA

Manufactured For

HELENA CHEMICAL COMPANY

225 SCHILLING BOULEVARD, SUITE 300 • COLLIERVILLE, TENNESSEE 38017

0PM #111695

PEEL BACK BOOK HERE AND RESEAL AFTER OPENING

NET CONTENTS:

PRECAUTIONARY STATEMENTS
CAUTION

BEFORE USING THIS PRODUCT READ ALL PRECAUTIONS, DIRECTIONS FOR USE, CONDITIONS OF SALE – LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES.

Harmful if swallowed, inhaled or absorbed through the skin. Avoid breathing vapors or spray mist. Avoid contact with skin, eyes, or clothing. Do not apply this product in such a manner as to directly or through drift expose workers or other persons. In addition, follow precautionary statements on the accompanying pesticide(s) label(s).

FIRST AID	
IF SWALLOWED:	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
IF IN EYES:	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF ON SKIN OR CLOTHING:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
IF INHALED:	• Move person to fresh air. • If not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information.	

ENVIRONMENTAL HAZARDS

Do not contaminate water sources by cleaning of equipment or disposal of rinsate.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

STORAGE: Store in original container only. Keep container tightly closed. Do not allow water to be introduced into the contents of this container. Do not store near heat or open flame. Do not store with oxidizing agents or ammonium nitrate.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be dispersed of on site or at an approved waste disposal facility. Do not contaminate water sources by runoff from cleaning of equipment, disposal of cleaning equipment wash waters, or spray waste.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For help in chemical emergencies involving spill, leak, fire or exposure, call toll free 1-800-424-9300.

GENERAL INFORMATION

FOAM BUSTER™ is a high-quality organosilicone solution which is designed to prevent the formation, suppress or break foam in aqueous spray mixes.

DIRECTIONS FOR USE

To control foam before it forms, add one (1) ounce of **FOAM BUSTER™** to one hundred (100) gallons of aqueous carrier before pesticides or any other product is added to the spray tank. To control foam that has already formed in the tank, add one (1) to two and one-half (2.5) ounces of **FOAM BUSTER™**.

The foaming characteristics of a tank mix also may reflect the hardness of the water being used. Very soft water (low hardness) will require a larger amount of **FOAM BUSTER™** than the rates above to control foam. In areas where soft water is prevalent, it is recommended that a small mixture of tank ingredients be combined to determine the correct dosage of **FOAM BUSTER™**.

CONDITIONS OF SALE – LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES

Read the Conditions of Sale–Warranty and Limitations of Liability and Remedies before using this product. If the terms are not acceptable, return the product, unopened, and the full purchase price will be refunded.

The directions on this label are believed to be reliable and should be followed carefully. Insufficient control of pests and/or injury to the crop to which the product is applied may result from the occurrence of extraordinary or unusual weather conditions or the failure to follow the label directions or good application practices, all of which are beyond the control of Helena Chemical Company (the "Company") or seller. In addition, failure to follow label directions may cause injury to crops, animals, man or the environment. The Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the factors noted above which are beyond the control of the Company. The Company makes no other warranties or representations of any kind, express or implied, concerning the product, including no implied warranty of merchantability or fitness for any particular purpose, and no such warranty shall be implied by law.

The exclusive remedy against the Company for any cause of action relating to the handling or use of this product shall be limited to, at Helena Chemical Company's election, one of the following:

1. Refund of the purchase price paid by buyer or user for product bought, or
2. Replacement of the product used

To the extent allowed by law, the Company shall not be liable and any and all claims against the Company are waived for special, indirect, incidental, or consequential damages or expense of any nature, including, but not limited to, loss of profits or income. The Company and the seller offer this product and the buyer and user accept it, subject to the foregoing conditions of sale and limitation of warranty, liability and remedies.

© Copyright Helena Holding Company, 2010.
FOAM BUSTER™ is a trademark of Helena Holding Company.

A SILICONE DEFOAMER FOR USE IN AQUEOUS SOLUTIONS

ACTIVE INGREDIENTS:	**(By Weight)**
Dimethylpolysiloxane	20.0%
CONSTITUENTS INEFFECTIVE AS SPRAY ADJUVANT	80.0%
TOTAL	100.0%

All ingredients are exempt from the requirement of a tolerance as specified in CFR 40, 180.1001(d).

KEEP OUT OF REACH OF CHILDREN

CAUTION

See Inside Panel for Additional Precautionary Statements

SN 0306/0810

Cal. Reg. No. 5905-50072-AA

Manufactured For
HELENA CHEMICAL COMPANY
225 SCHILLING BOULEVARD, SUITE 300 • COLLIERVILLE, TENNESSEE 38017

Material Safety Data Sheet

Effective Date: 23-JAN-2000
Product: FOAMBUSTER 20

I. IDENTIFICATION

Chemical Name: DIMETHYL POLYSILOXANE
Chemical Family: SILICONES
Formula: NOT APPLICABLE, FORMULATED MIXTURE
Synonyms: 20% SILICONE DEFOAMER
CAS Number: 63148-62-9
EPA Number: NONE REQUIRED

II. PHYSICAL DATA

Boiling Point: INITIAL - 212 DEG F.
Freezing Point: <35 DEGREES F.
Spec Gravity: 1.000 @ 72 F
Vapor Pressure: NOT ESTABLISHED
Vapor Density: NOT ESTABLISHED
Solubility: DISPERSIBLE
Volatiles: <1%
Evaporation: NOT ESTABLISHED
Melting Point: NOT APPLICABLE
Appearance: MILKY, WHITE LIQUID, FAINT ODOR

III. INGREDIENTS

Material	CAS Number	Percent	TLV	Hazard
DIMETHYL POLYSILOXANE		20.00	NOT ESTABLISHED	SKIN & EYE IRRITANT
WATER AND NONIONIC EMULSIFIERS		80.00	NOT ESTABLISHED	NONHAZARDOUS

IV. FIRE AND EXPLOSION HAZARD

Flash Point: >200 DEGREES F.
Autoignition Temp: NOT APPLICABLE
Flammable Limit: NOT APPLICABLE
Extinguishing Media: DRY CHEMICAL, ALCOHOL FOAM, AND CARBON DIOXIDE.
Special Fire Fight Proc: WEAR SELF-CONTAINED BREATHING APPARATUS AND AVOID BREATHING FUMES.
Fire and Expl Hazard: NONE NOTED.

Material Safety Data Sheet

Effective Date: 23-JAN-2000
Product: FOAMBUSTER 20

V. HEALTH HAZARD

Carcinogen Information: NONE CURRENTLY KNOWN.

ACUTE EFFECTS OF OVER EXPOSURE

Swallowing: NONE CURRENTLY KNOWN.
Skin Absorption: NONE CURRENTLY KNOWN.
Inhalation: NONE CURRENTLY KNOWN.
Skin contact: MAY CAUSE IRRITATION AFTER REPEATED EXPOSURE.
Eye Contact: MAY CAUSE EYE IRRITATION.
Chronic Effects: NONE CURRENTLY KNOWN.
Other Hazard: NONE CURRENTLY KNOWN.

EMERGENCY AND FIRST AID PROCEDURES

Swallowing: GIVE MINIMUM OF 2 GLASSES OF WATER. INDUCE VOMITING AND CONSULT A PHYSICIAN.
Skin: WASH SKIN THOROUGHLY WITH SOAP AND WATER. IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN.
Inhalation: MOVE TO FRESH AIR IF IRRITATION IS NOTED.
Eyes: FLUSH EYES WITH WATER FOR 15 MINUTES, HOLDING EYELIDS OPEN. IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN.
Notes to Physician: IN THE EVENT OF AN ADVERSE RESPONSE, TREATMENT SHOULD BE DIRECTED TOWARD CONTROL OF THE SYMPTOMS.

VI. REACTIVITY

Stability: Stable
Conditions to Avoid: NONE CURRENTLY KNOWN.
Polymerization: Will Not Occur
Conditions to Avoid: NONE CURRENTLY KNOWN.
Incompatibility material: NONE CURRENTLY KNOWN.
Hazardous Combustion: MAY PRODUCE CARBON OXIDES AND SILICON OXIDES UNDER FIRE CONDITIONS.

VII. SPILL OR LEAK PROCEDURES

Spill or Leak Proc: DIKE AND ABSORB SPILL WITH AN ABSORBENT SUCH AS CLAY, SAND, OR SAWDUST. TRANSFER TO SUITABLE CONTAINERS FOR PROPER DISPOSAL. FLUSH SPILL AREA WITH WATER. ABSORB AND PLACE IN SAME CONTAINERS WITH OTHER MATERIAL.

Material Safety Data Sheet

Effective Date: 23-JAN-2000
Product: FOAMBUSTER 20

Waste Disposal Method: THIS MATERIAL MUST BE DISPOSED OF ACCORDING TO FEDERAL, STATE, OR LOCAL PROCEDURES UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT.

VIII. SPECIAL PROTECTION INFORMATION

Respiration: NONE NEEDED UNDER NORMAL CONDITIONS.
Ventilation: LOCAL EXHAUST SUFFICIENT.
Gloves: IMPERVIOUS
Eyes: CHEMICAL WORKERS GOGGLES.
Other: EYE WASH STATION, IMPERVIOUS APRON AND FOOTWEAR.

IX. SPECIAL PRECAUTIONS

Special precaution: KEEP OUT OF REACH OF CHILDREN. DO NOT STORE WITH FOOD, FEED, OR OTHER MATERIAL TO BE USED OR CONSUMED BY HUMANS OR ANIMALS. DO NOT CONTAMINATE WATER SUPPLIES, LAKES, STREAMS, OR PONDS.

Other precaution:

A) NOT REGULATED UNDER RCRA OR CERCLA ("SUPERFUND").

X. SHIPPING INFORMATION

Shipping name: NOT REGULATED BY DOT, IATA AND IMO.
Hazard Class: NONE
Identification No: NONE
Labels Required: NONE
Placarding: NONE
Freight Class: SILICONE EMULSION, LIQUID, NOIBN

Chemical Name	Equivalent R.Q.
NOT APPLICABLE	NOT APPLICABLE

XI. GENERAL PRODUCT INFORMATION

Material Safety Data Sheet

Effective Date: 23-JAN-2000
Product: FOAMBUSTER 20

National Fire Protection Association Rating:
(Rating level: 4-Extreme, 3-High, 2-Moderate, 1-Slight, 0-Minimum

Health: 1 Fire: 0 Reactivity: 0

S.A.R.A. Title III Hazard Classification: (Yes/No)

Immediate (Acute) Health: Y Delayed (Chronic) Health: N
Sudden Release of pressure: N Fire: N
Reactive: N

Helena Chemical Company believes that the data contained herein is factual. This data is not to be taken as a warranty or representation of legal responsibility. It is offered solely for your consideration, investigation and verification.

SPECIMEN LABEL

QUEST®

WATER CONDITIONING AGENT FOR PESTICIDE SPRAYS

***ACTIVE INGREDIENTS:**

Hydroxy carboxylic, phosphoric acids, and ammonium salts	48.76%
Polyacrylic acid	1.00%
Components ineffective as water conditioners	50.24%
TOTAL	100.00%

*All ingredients are acepted for use as adjuvant under CFR 40, 180.

KEEP OUT OF REACH OF CHILDREN

CAUTION

See Inside Panel for Additional Precautionary Statements.

CASN 1205/0408

NET CONTENTS: □ 1 Gallon (3.785 Liters)
□ 2.5 Gallons (9.46 Liters)
□ Mini-Bulk
□ Bulk

CAL Reg. No. 5905-50076-AA

MANUFACTURED FOR
HELENA CHEMICAL COMPANY
225 SCHILLING BOULEVARD, SUITE 300
COLLIERVILLE, TN 38017

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

BEFORE USING THIS PRODUCT READ ALL PRECAUTIONS, DIRECTIONS FOR USE, CONDITIONS OF SALE-LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES

Harmful if swallowed, inhaled, or absorbed through the skin. Avoid breathing spray mist. Avoid contact with skin, eyes, or clothing.

FIRST AID	
IF SWALLOWED:	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to by a poison control center or doctor. • Do not give anything to an unconscious or convulsing person.
IF ON SKIN OR CLOTHING:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
IF INHALED:	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
IF IN EYES:	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal.

PESTICIDE STORAGE: Store in original container only. Keep container tightly closed. Do not allow water to be introduced into the contents of this container. Do not store near heat or open flame. Do not store with oxidizing agents.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Do not contaminate water sources by runoff from clearing of equipment, disposal of equipment washwater or spray waste.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Disclaimer: Always refer to the label **on the product** before using Helena or any other product.

GENERAL INFORMATION

QUEST® is a water conditioning agent designed to enhance pesticide performance by modifying factors such as pH and hardness of the spray water. In addition, ammoniacal nitrogen has been added along with the buffers, sequestrants, and chelating agents making up **QUEST®.** Ammoniacal nitrogen has been recognized as an effective uptake enhancer for some pesticides by some plant species. As a result, **QUEST®**can positively affect pesticide spray application and pesticide efficacy by conditioning the spray water and providing a source of ammoniacal nitrogen.

Never mix **QUEST®** with undiluted pesticides which are incompatible with low pH (acid conditions). Spray mixes containing **QUEST** should not be utilized in combination with herbicides containing DSMA.

Do not mix **QUEST®**with spray mixes containing fixed copper fungicides (products such as cupric hydroxide, basic copper, COPPER COUNT N, or copper oxychloride) unless the pH of the spray mix is 6.0 or above.

Do not apply this product in such a manner as to directly or through drift expose workers or other persons. Do not spray pesticides when conditions for thermal inversion exist, or if wind direction and speed may cause drift onto adjacent areas. With both aerial and ground application, the use of a drift control spray deposition additive (in accordance with pesticide(s) label(s) directions) may reduce the potential for drift to occur. Drift minimization is the responsibility of the applicator. Consult your local or state agricultural authorities for information regarding avoiding or minimizing spray drift.

DIRECTIONS FOR USE

FOR USE WITH PRODUCTS REGISTERED FOR: AGRICULTURAL, AQUATIC, FORESTRY, INDUSTRIAL, MUNICIPAL, NON-CROPLAND, ORNAMENTAL, RIGHTS-OF-WAY, TURF AND OTHER USES.

In all applications of **QUEST®** read and follow directions for use on the pesticide(s) label(s) as to procedures, dosage rates, timing of application and restrictions for the crop on which the pesticide is to be applied. **QUEST®** can increase the activity of some herbicides. The use of test areas is recommended when applying during periods of high humidity or high temperature or to other situations where field experience is limited. The addition of an adjuvant to some pesticides or pesticide tank mix combinations may cause phytotoxicity to the foliage and/or fruit of susceptible crops. Prior to the addition of **QUEST®** to spray mixes, the user or application advisor must have experience with this combination or must have conducted a phytotoxicity trial or must take the recommendations from the labels of the products, with which it is to be tank mixed.

RECOMMENDED USE RATES

The following use rates are recommended for **QUEST®.**

GROUND: Apply at the rate of 1 – 4 pints per acre in100 gallons of spray (0.125 - 0.50% v/v).

AERIAL: Use 2 - 4 pints per 100 gallons of spray (0.25 - 0.50% v/v).

WATER CONDITIONING: Use 1 to 5 pints per 100 gallons of water as a general use water conditioning agent for pH reduction and hard water sequestering.

NOTE: QUEST® is a water conditioning agent . **QUEST®** will not replace a crop oil concentrate adjuvant or nonionic surfactant in a spray tank mix. If the pesticide(s) label(s) recommends it, then additional crop oil concentrate or nonionic surfactant should be added along with **QUEST®**.

MIXING

Prior to any pesticide application, all spray mixing and application equipment must be cleaned. Carefully observe all cleaning directions on the pesticide(s) label(s).

Fill spray tank one-half full with water and begin agitation. Add pesticides as directed by labeling or in the following sequence

1. **QUEST®**
2. Dry flowables or water dispersible granules
3. Wettable powders
4. Flowables
5. Solutions
6. Emulsifiable concentrates

CONDITIONS OF SALE - LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES

Read the Conditions of Sale - Warranty and Limitations of Liability and Remedies before using this product. If the terms are not acceptable, return the product, unopened, and the full purchase price will be refunded.

The directions on this label are believed to be reliable and should be followed carefully. Insufficient control of pests and/or injury to the crop to which the product is applied may result from the occurrence of extraordinary or unusual weather conditions or the failure to follow the label directions or good application practices, all of which are beyond the control of Helena Chemical Company (the "Company") or seller. In addition, failure to follow label directions may cause injury to crops, animals, man or the environment. The Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the factors noted above which are beyond the control of

the Company. The Company makes no other warranties or representations of any kind, express or implied, concerning the product, including no implied warranty of merchantability or fitness for any particular purpose, and no such warranty shall be implied by law.

The exclusive remedy against the Company for any cause of action relating to the handling or use of this product shall be limited to, at Helena Chemical Company's election, one of the following:

1. Refund of the purchase price paid by buyer or user for product bought, or
2. Replacement of the product used

To the extent allowed by law, the Company shall not be liable and any and all claims against the Company are waived for special, indirect, incidental, or consequential damages or expense of any nature, including, but not limited to, loss of profits or income. The Company and the seller offer this product and the buyer and user accept it, subject to the foregoing conditions of sale and limitation of warranty, liability and remedies.

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QUESTt® is a trademark of Helena Holding Company.

Disclaimer: Always refer to the label **on the product** before using Helena or any other product.

Material Safety Data Sheet

Effective Date: 04-NOV-2008
Product: QUEST (NON-CORROSIVE)

I. IDENTIFICATION

Chemical Name: NOT APPLICABLE, FORMULATED MIXTURE.
Chemical Family: INORGANIC SALTS
Formula: NOT APPLICABLE, FORMULATED MIXTURE.
Synonyms: NONE
CAS Number: NOT APPLICABLE, FORMULATED MIXTURE.
EPA Number: CAL. REG. NO. 5905-50076-AA

II. PHYSICAL DATA

Boiling Point: >100 DEGREES C.
Freezing Point: <10 DEGREES C.
Spec Gravity: 1.320 GMS/CC
Vapor Pressure: NOT DETERMINED
Vapor Density: NOT DETERMINED
Solubility: MISCIBLE
Volatiles: <0.1%
Evaporation: NOT DETERMINED
Melting Point: NOT APPLICABLE
Appearance: CLEAR LIQUID, WITH SLIGHT ODOR.

III. INGREDIENTS

Material	CAS Number	Percent	TLV	Hazard
PROPRIETARY BLEND OF AMMONIUM SALTS OF POLYACRYLIC, HYROXYCARBOXYLIC, AND PHOSPHORIC ACID		50.00	1 MG/M3	SLIGHT SKIN & EYE IRRITANT
INERT INGREDIENTS		50.00	N/E	NONHAZARDOUS

IV. FIRE AND EXPLOSION HAZARD

Flash Point: NONCOMBUSTIBLE
Autoignition Temp: NOT APPLICABLE
Flammable Limit: NOT APPLICABLE
Extinguishing Media: NONCOMBUSTIBLE LIQUID. USE EXTINGUISHING MEDIA FOR UNDERLYING CAUSE OF FIRE.
Special Fire Fight Proc: USE SELF-CONTAINED BREATHING APPARATUS WITH FULL PROTECTIVE EQUIPMENT. USE WATER SPRAY TO KEEP FIRE-EXPOSED CONTAINERS COOL.
Fire and Expl Hazard: PRODUCT MAY PRODUCE TOXIC FUMES UNDER FIRE CONDITIONS.

Material Safety Data Sheet

Effective Date: 04-NOV-2008
Product: QUEST (NON-CORROSIVE)

V. HEALTH HAZARD

Carcinogen Information: NONE CURRENTLY LISTED.

ACUTE EFFECTS OF OVER EXPOSURE

Swallowing:	THE ACUTE ORAL LD50 (RATS) = >5,000 MG/KG. VERY LOW TOXICITY BY INGESTION. EPA TOXICITY CATEGORY III.
Skin Absorption:	THE ACUTE DERMAL LD50 (RATS) = >2,000 MG/KG. VERY LOW TOXICITY BY CONTACT. EPA TOXICITY CATEGORY III.
Inhalation:	THERE IS NO LC50 FOR THIS MATERIAL SINCE NO FATALITIES OCCURRED AT THE HIGHEST ATMOSPHERIC CONCENTRATION ACHIEVABLE IN THIS STUDY.
Skin contact:	MAY CAUSE SLIGHT SKIN IRRITATION AFTER REPEATED OR PROLONGED CONTACT WITH THIS MATERIAL. EPA CATEGORY IV.
Eye Contact:	MAY CAUSE MILD EYE IRRITATION AFTER DIRECT CONTACT WITH THIS MATERIAL. EPA CATEGORY III.
Chronic Effects:	NONE CURRENTLY KNOWN.
Other Hazard:	MAY CAUSE PULMONARY EDEMA IN EXTREME CASES.

EMERGENCY AND FIRST AID PROCEDURES

Swallowing:	GIVE A LARGE AMOUNT OF WATER TO DRINK, DO NOT INDUCE VOMITING. IMMEDIATELY CALL A PHYSICIAN. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.
Skin:	REMOVE CONTAMINATED CLOTHING. WASH SKIN THOROUGHLY WITH SOAP AND WATER. IF IRRITATION DEVELOPS OR PERSISTS, CALL A PHYSICIAN.
Inhalation:	MOVE TO FRESH AIR. IF BREATHING BECOMES DIFFICULT. OBTAIN MEDICAL ATTENTION IMMEDIATELY.
Eyes:	FLUSH EYES WITH WATER FOR 15 MINUTES, HOLDING EYELIDS APART. IF IRRITATION DEVELOPS OR PERSISTS, CALL A PHYSICIAN.
Notes to Physician:	PRODUCT CONTAINS AMMONIA IN SOLUTION. IN THE EVENT OF AN ADVERSE RESPONSE, TREATMENT SHOULD BE DIRECTED TOWARD CONTROL OF THE SYMPTOMS.

VI. REACTIVITY

Stability:	Stable
Conditions to Avoid:	AVOID EXTREME HEAT AND OPEN FLAMES. AMMONIA GAS

Material Safety Data Sheet

Effective Date: 04-NOV-2008
Product: QUEST (NON-CORROSIVE)

WILL BE GIVEN OFF.
Polymerization: Will Not Occur
Conditions to Avoid: NONE CURRENTLY KNOWN.
Incompatibility material: AVOID CONTACT WITH POTASSIUM CHLORATE AND POTASSIUM NITRATE.
Hazardous Combustion: BURNING MATERIAL MAY PRODUCE AMMONIA GAS, NITROGEN OXIDES, AND OXIDES OF CARBON.

VII. SPILL OR LEAK PROCEDURES

Spill or Leak Proc: CONTAIN MATERIAL, REUSE IF UNCONTAMINATED. IF CONTAMINATED, ABSORB SPILL WITH CLAY OR SAND. PLACE IN A SUITABLE CONTAINER FOR PROPER DISPOSAL. DO NOT CONTAMINATE WATER SUPPLIES.
Waste Disposal Method: THIS MATERIAL MUST BE DISPOSED OF ACCORDING TO FEDERAL, STATE, OR LOCAL PROCEDURES UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT.

VIII. SPECIAL PROTECTION INFORMATION

Respiration: NONE NEEDED UNDER NORMAL CONDITIONS. UNDER FIRE CONDITIONS OR IF VAPORS EXCEED TLV, USE NIOSH/MSHA APPROVED RESPIRATOR.
Ventilation: LOCAL EXHAUST SUFFICIENT.
Gloves: IMPERVIOUS
Eyes: SPLASH PROOF GOGGLES.
Other: EMERGENCY SHOWER, EYE WASH STATION, IMPERVIOUS APRON AND FOOTWEAR.

IX. SPECIAL PRECAUTIONS

Special precaution: KEEP OUT OF REACH OF CHILDREN. DO NOT STORE WITH FOOD, FEED, OR OTHER MATERIAL TO BE USED OR CONSUMED BY HUMANS OR ANIMALS. DO NOT CONTAMINATE WATER SUPPLIES, LAKES, STREAMS, OR PONDS.
Other precaution: NONE

X. SHIPPING INFORMATION

Shipping name: NOT REGULATED BY DOT, IATA OR IMDG.
Hazard Class: NONE
Identification No: NONE

Material Safety Data Sheet

Effective Date: 04-NOV-2008
Product: QUEST (NON-CORROSIVE)

Labels Required: NONE REQUIRED
Placarding: NONE REQUIRED
Freight Class: COMPOUND, FERTILIZER (MANUFACTURED FERTILIZER) LIQUID, NOIBN

Chemical Name	Equivalent R.Q.
NOT APPLICABLE	NOT APPLICABLE

XI. GENERAL PRODUCT INFORMATION

National Fire Protection Association Rating:
(Rating level: 4-Extreme, 3-High, 2-Moderate, 1-Slight, 0-Minimum

Health: 2 Fire: 0 Reactivity: 0

S.A.R.A. Title III Hazard Classification: (Yes/No)

Immediate (Acute) Health: Y Delayed (Chronic) Health: N
Sudden Release of pressure: N Fire: N
Reactive: N

Mail inquiries to: 225 Schilling Blvd., Suite 300 Collierville, TN 38017
Helena Chemical Company believes that the data contained herein is factual. This data is not to be taken as a warranty or representation of legal responsibility. It is offered solely for your consideration, investigation and verification.

ATTENTION:

This specimen label is provided for general information only.

- This pesticide product may not yet be available or approved for sale or use in your area.
- It is your responsibility to follow all Federal, state and local laws and regulations regarding the use of pesticides.
- Before using any pesticide, be sure the intended use is approved in your state or locality.
- Your state or locality may require additional precautions and instructions for use of this product that are not included here.
- Monsanto does not guarantee the completeness or accuracy of this specimen label. The information found in this label may differ from the information found on the product label. You must have the EPA approved labeling with you at the time of use and must read and follow all label directions.
- You should not base any use of a similar product on the precautions, instructions for use or other information you find here.
- Always follow the precautions and instructions for use on the label of the pesticide you are using.

21153L1-37

Roundup CUSTOM™

FOR AQUATIC & TERRESTRIAL USE

TRUEBLUE ADVANTAGE
PROVEN | RELIABLE | SUPPORTED

Complete Directions for Use

Roundup Custom™ for Aquatic and Terrestrial Use is a complete broad-spectrum postemergence herbicide for aquatic, crop, non-agricultural crop, industrial, turf, ornamental, forestry, roadside, and utility rights-of-way weed control.

EPA Reg. No. 524-343 2012-2

GROUP	9	HERBICIDE

AVOID CONTACT OF HERBICIDE WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS, DESIRABLE PLANTS AND TREES, BECAUSE SEVERE INJURY OR DESTRUCTION MAY RESULT.

Read the entire label before using this product.

Use only according to label instructions.

Not all products listed on this label are registered for use in California. Check the registration status of each product in California before using.

Read the "LIMIT OF WARRANTY AND LIABILITY" statement at the end of the label before buying or using. If terms are not acceptable, return at once unopened.

THIS IS AN END-USE PRODUCT. MONSANTO DOES NOT INTEND AND HAS NOT REGISTERED IT FOR REFORMULATION. SEE INDIVIDUAL CONTAINER LABEL FOR REPACKAGING LIMITATIONS.

PRODUCT INFORMATION

1.0 INGREDIENTS

ACTIVE INGREDIENT:

*Glyphosate, N-(phosphonomethyl)glycine, in the form of its isopropylamine salt	53.8%
OTHER INGREDIENTS:	46.2%
	100.0%

*Contains 648 grams per liter or 5.4 pounds per U.S. gallon of the active ingredient glyphosate, in the form of its isopropylamine salt. Equivalent to 480 grams per liter or 4.0 pounds per U.S. gallon of the acid, glyphosate.

No license granted under any non-U.S. patent(s).

2.0 IMPORTANT PHONE NUMBERS

FOR **PRODUCT INFORMATION** OR ASSISTANCE IN USING THIS PRODUCT, CALL TOLL-FREE, **1-800-332-3111.**

IN CASE OF AN **EMERGENCY** INVOLVING THIS PRODUCT, OR FOR **MEDICAL ASSISTANCE**, CALL COLLECT, DAY OR NIGHT, **(314)-694-4000.**

3.0 PRECAUTIONARY STATEMENTS

3.1 Hazards to Humans and Domestic Animals

Keep Out of Reach of Children.

CAUTION!

DOMESTIC ANIMALS: This product is considered to be relatively nontoxic to dogs and other domestic animals; however, ingestion of this product or large amounts of freshly sprayed vegetation may result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear: long-sleeved shirt and long pants, shoes plus socks. Follow manufacturer's instructions for cleaning/maintaining PPE (Personal Protective Equipment). If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Control Statements: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations:

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove contaminated clothing and wash clothing before reuse.

3.2 Environmental Hazards

Do not contaminate water when cleaning equipment or disposing of equipment washwaters. Treatment of aquatic weeds can result in oxygen depletion or loss due to decomposition of dead plants. This oxygen loss can cause fish suffocation.

In case of SPILL or LEAK, soak up and remove to a landfill.

3.3 Physical or Chemical Hazards

Spray solutions of this product should be mixed, stored and applied using only stainless steel, fiberglass, plastic or plastic-lined steel containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. This product can only be used in accordance with the Directions for Use on this label or in separately published Monsanto Supplemental Labeling or Fact Sheets. Supplemental labeling can be found on the Internet at www.cdms.net, www.agrian.com or www.greenbook.net websites but may not be approved for use in all states. Copies can also be obtained by contacting your Authorized Monsanto Retailer or Monsanto Company Representative.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any

requirements specific to your State or Tribe, consult the agency responsible for pesticide regulations.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, are: coveralls, shoes plus socks, and chemical resistant gloves made of any waterproof material.

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

Keep people and pets off treated areas until spray solution has dried.

4.0 STORAGE AND DISPOSAL

Proper pesticide storage and disposal are essential to protect against exposure to people and the environment due to leaks and spills, excess product or waste, and vandalism. Do not allow this product to contaminate water, foodstuffs, feed or seed by storage and disposal.

PESTICIDE STORAGE: STORE ABOVE 5°F (-15°C) TO KEEP PRODUCT FROM CRYSTALLIZING. Crystals will settle to the bottom. If allowed to crystallize, place in a warm room 68°F (20°C) for several days to redissolve and roll or shake container or recirculate in mini-bulk containers to mix well before using. Store pesticides away from food, pet food, feed, seed, fertilizers, and veterinary supplies. Keep container closed to prevent spills and contamination.

PESTICIDE DISPOSAL: To avoid wastes, use all material in this container, including rinsate, by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program. Such programs are often run by state or local governments or by industry. All disposal must be in accordance with applicable federal, state and local regulations and procedures.

CONTAINER HANDLING AND DISPOSAL: See container label for container handling and disposal instructions and refilling limitations.

5.0 PRODUCT INFORMATION

Product Description: This product is a postemergent, systemic herbicide with no residual soil activity. It gives broad-spectrum control of many annual weeds, perennial weeds, woody brush and trees. It is formulated as a water-soluble liquid and may be applied through standard equipment after dilution and mixing with water or other carriers according to label instructions.

Time to Symptoms: This product moves through the plant from the point of foliage contact to and into the root system. Visible effects are a gradual wilting and yellowing of the plant which advances to complete browning of above-ground growth and deterioration of underground plant parts. Effects are visible on most annual weeds within 2 to 4 days, but on most perennial weeds may not occur for 7 days or more. Extremely cool or cloudy weather following treatment may slow activity of this product and delay development of visual symptoms.

Stage of Weeds: Annual weeds are easiest to control when they are small. Best control of most perennial weeds is obtained when treatment is made at late growth stages approaching maturity. See the **WEEDS CONTROLLED** section of this label for specific weed rates.

Always use the higher product application rate in the range when weed growth is heavy or dense, or when weeds are growing in an undisturbed (non-cultivated) area. Reduced weed control may result from treating weeds with disease or insect damage, weeds heavily covered with dust, or weeds under poor growing conditions.

Mode of Action in Plants: The active ingredient in this product inhibits production of an enzyme in plants and microorganisms that is essential to formation of specific amino acids.

Cultural Considerations: Reduced control could result when applications are made to annual or perennial weeds that have been mowed, grazed or cut, and have not been allowed to regrow to the specified stage for treatment.

Rainfastness: Heavy rainfall soon after application may wash this product off of the foliage and a repeat application may be required for adequate weed control.

Spray Coverage: For best results, spray coverage should be uniform and complete. Do not spray foliage to the point of run-off.

No Soil Activity: Weeds must be emerged at the time of application to be controlled by this product. Weeds germinating from seed after application will not be controlled. Unemerged plants arising from unattached underground rhizomes or rootstocks of perennials will not be affected by the herbicide and will continue to grow.

Maximum Application Rates: The maximum application or use rates stated throughout this label are given in units of volume (fluid ounces or quarts) of this product per acre. However, the maximum allowed application rates apply to this product combined with the use of any and all other herbicides containing the active ingredient glyphosate, whether applied separately or as tank mixtures, on a basis of total pounds of glyphosate (acid equivalents) per acre. If more than one glyphosate-containing product is applied to the same site within the same year, you must ensure that the total use of glyphosate (pounds acid equivalents) does not exceed the maximum allowed. The combined total of all treatments must not exceed 8 quarts of this product (8 pounds of glyphosate acid) per acre per year. See the **INGREDIENTS** section of this label for necessary product information.

ATTENTION

AVOID CONTACT OF HERBICIDE WITH FOLIAGE, STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS, DESIRABLE PLANTS AND TREES, BECAUSE SEVERE INJURY OR DESTRUCTION MAY RESULT.

AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS.

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which treatment was not intended. The likelihood of injury occurring from the use of this product increases when winds are gusty, as wind velocity increases, when wind direction is constantly changing or when there are other meteorological conditions that favor spray drift. When spraying, avoid combinations of pressure and nozzle type that will result in splatter or fine particles (mist) that are likely to drift. AVOID APPLYING AT EXCESSIVE SPEED OR PRESSURE.

NOTE: Use of this product in any manner not consistent with this label may result in injury to persons, animals or crops, or other unintended consequences.

5.1 Weed Resistance Management

GROUP	9	HERBICIDE

Glyphosate, the active ingredient in this product, is a Group 9 herbicide based on the mode of action classification system of the Weed Science Society of America. Any weed population may contain plants naturally resistant to Group 9 herbicides. Weed species resistant to Group 9 herbicides may be effectively managed utilizing another herbicide from a different Group or using other cultural or mechanical practices.

To minimize the occurrence of glyphosate-resistant biotypes observe the following general weed management recommendations:

- Scout your application site before and after herbicide applications.
- Control weeds early when they are relatively small.
- Incorporate other herbicides and cultural or mechanical practices as part of your weed control system where appropriate.
- Use the labeled rate for the most difficult to control weed in the site. Avoid tank-mixtures with other herbicides that reduce this product's efficacy through antagonism or with tank mixtures that encourage rates of this product below those specified on this label.
- Control weed escapes and prevent weeds from setting seeds.
- Clean equipment before moving from site to site to minimize spread of weed seed.
- Use new commercial seed as free of weed seed as possible.
- Report any incidence of repeated non-performance of this product on a particular weed to your Monsanto representative, local retailer, or county extension agent.

5.2 Management of Glyphosate Resistant Weed Biotypes

NOTE: Appropriate testing is critical in order to confirm weed resistance to glyphosate. Contact your Monsanto representative to determine if resistance has been confirmed to any particular weed biotype in your area. Directions for the control of biotypes confirmed to be resistant to glyphosate are made available on separately published supplemental labeling or Fact Sheets for this product and may be obtained from your local retailer or Monsanto representative.

Since the occurrence of new glyphosate resistant weeds cannot be determined until after product use and scientific confirmation, Monsanto Company is not responsible for any losses that may result from the failure of this product to control glyphosate-resistant weed biotypes.

The following good weed management practices are recommended to reduce the spread of confirmed glyphosate resistant biotypes:

- If a naturally occurring resistant biotype is present at your site, this product may be tank-mixed or applied sequentially with an appropriately labeled herbicide with a different mode of action to achieve control.

- Cultural and mechanical control practices may also be used as appropriate.
- Scout treated sites after herbicide applications and control escapes of resistant biotypes before they set seed.
- Thoroughly clean equipment before leaving sites known to contain resistant biotypes.

6.0 MIXING

Spray solutions of this product can be mixed, stored and applied using only clean stainless steel, fiberglass, plastic or plastic-lined steel containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS.

Use caution to avoid siphoning back into the carrier source. Use approved anti-back-siphoning devices where required by state or local regulations.

Clean sprayer parts promptly after using this product by thoroughly flushing with water.

NOTE: REDUCED PRODUCT PERFORMANCE CAN OCCUR IF WATER CONTAINING SOIL SEDIMENT IS USED AS CARRIER OR WATER THAT IS VISIBLY MUDDY OR MURKY FROM PONDS AND DITCHES.

6.1 Mixing with Water

This product mixes readily with water. Mix spray solutions of this product as follows: Fill the mixing or spray tank with the required amount of clean water. Add the labeled amount of this product near the end of the filling process and mix gently (well). During mixing and application, foaming of the spray solution may occur. To prevent or minimize foam, avoid the use of mechanical agitators, terminate by-pass and return lines at the bottom of the tank and, if needed, use an approved anti-foam or defoaming agent.

6.2 Tank Mixtures

This product does not provide residual weed control. This product can be tank-mixed with other herbicides to provide residual weed control, a broader weed control spectrum or an alternate mode of action. Always read and follow label directions for all products in the tank mixture.

When this product is tank-mixed with other products, refer to these product labels for approved sites and application rates. Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used. Use according to the most restrictive precautionary statements for each product in the mixture. Any labeled rate of this product may be used in a tank mix.

When this label lists a tank mixture with a generic active ingredient such as diuron, 2,4-D or dicamba, the user is responsible for ensuring the mixture product label allows the specific application.

Buyer and all users are responsible for all loss or damage in connection with the use or handling of mixtures of this product with herbicides or other materials that are not expressly listed in this label. Mixing this product with herbicides or other materials not specified on this label may result in reduced performance.

This product provides control of the emerged weeds listed on this label. When applied as a tank mixture, the following herbicides will provide preemergence and/or postemergence control of the weeds listed in the individual product labels.

This product can be tank-mixed with the following products. Any labeled rate of this product can be used in a tank mixture with these products. User is responsible for ensuring that the specific product is registered for use on the target site. Refer to these product labels for approved application sites and application rates. Read and carefully observe the cautionary statements and all other information on the labels of all the herbicides used. Use according to the most restrictive precautionary statements for each product in the mixture.

Tank-mix Products

Arsenal
Banvel
2,4-D
Garlon 3A
Garlon 4
diuron
diuron + 2,4-D
diuron + Garlon 3A
diuron + Garlon 4
Hyvar X
Hyvar X + 2,4-D
Hyvar X + Garlon 3A
Hyvar X + Garlon 4
Krovar I DF
Krovar I DF + 2,4-D
Krovar I DF + Garlon 3A
Krovar I DF + Garlon 4
Oust XP
Oust XP + 2,4-D
Oust XP + Garlon 3A
Oust XP + Garlon 4
Ronstar
Spike 80W
Spike 80W + 2,4-D
Spike 80W + Garlon 3A
Spike 80W + Garlon 4
Surflan

When used in combination as recommended by Monsanto Company, the liability of Monsanto shall in no manner extend to any damage, loss or injury not solely and directly caused by the inclusion of the Monsanto product in such combination use.

6.3 Tank Mixing Procedure

When tank mixing, read and carefully observe label directions, cautionary statements and all information on the labels of all products used. Add the tank-mix product to the tank as directed by the label. Maintain agitation and add the specified amount of this product.

Maintain good agitation at all times during the mixing process. Ensure that the tank-mix products are well mixed with the spray solution before adding this product.

Mix only the quantity of spray solution that can be used during the same day. Tank mixtures allowed to stand overnight may result in reduced weed control.

Maintain good agitation at all times until the contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed.

Keep by-pass line on or near the bottom of the tank to minimize foaming. Screen size in nozzle or line strainers should be no finer than 50 mesh.

Always predetermine the compatibility of labeled tank mixtures of this product with water carrier by mixing small proportional quantities in advance. Ensure that the specific tank mixture product is registered for application at the desired site.

6.4 Mixing Percent Solutions

Prepare the desired volume of spray solution by mixing the amount of this product in water as shown in the following table:

Spray Solution

Desired Volume	Amount of Roundup Custom for Aquatic and Terrestrial Use					
	0.5%	0.75%	1%	1.5%	4%	8%
1 gal	2/3 oz	1 oz	1.3 oz	2 oz	5 oz	10 oz
25 gal	1 pt	1.5 pt	1 qt	1.5 qt	4 qt	2 gal
100 gal	2 qt	3 qt	1 gal	1.5 gal	4 gal	8 gal

2 tablespoons = 1 fluid ounce

For use in backpack, knapsack or pump-up sprayers, it is suggested that the specified amount of this product be mixed with water in a larger container. Fill sprayer with the mixed solution.

6.5 Surfactant

This product requires the use of a nonionic surfactant unless otherwise specified. When using this product, unless otherwise specified, mix 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution. Increasing the rate of surfactant may enhance performance. Examples of when to use the higher surfactant rate include, but are not limited to: hard to control woody brush, trees and vines, high water volumes, adverse environmental conditions, tough to control weeds, weeds under stress, surfactants with less than 70 percent active ingredient, tank mixes, etc.

Always read and follow the manufacturer's surfactant label for best results. Carefully observe all cautionary statements and other information appearing in the surfactant label.

6.6 Colorants or Dyes

Approved colorants or marking dyes may be added to this product. At lower rates or dilution, colorants or dyes used in spray solutions of this product may reduce performance. Use colorants or dyes according to the manufacturer's instructions.

6.7 Drift Reduction Additives

Drift reduction additives can be used with all equipment types, except wiper applicators and sponge bars. When a drift reduction additive is used, read and carefully observe precautionary statements and all other information appearing on the additive label. The use of drift reduction additives can affect spray coverage which may result in reduced performance.

7.0 APPLICATION EQUIPMENT AND TECHNIQUES

Do not apply this product through any type of irrigation system.

APPLY THESE SPRAY SOLUTIONS IN PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF DELIVERING DESIRED VOLUMES.

SPRAY DRIFT MANAGEMENT

AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS.

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which treatment was not intended.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and/or the grower are responsible for considering all these factors when making decisions.

7.1 Aerial Equipment

DO NOT APPLY THIS PRODUCT USING AERIAL SPRAY EQUIPMENT EXCEPT UNDER CONDITIONS AS SPECIFIED WITHIN THIS LABEL.

FOR AERIAL APPLICATION IN CALIFORNIA, OR SPECIFIC COUNTIES THEREIN, REFER TO THE FEDERAL SUPPLEMENTAL LABELING FOR AERIAL APPLICATIONS OF THIS PRODUCT IN THAT STATE OR COUNTY FOR SPECIFIC INSTRUCTIONS, RESTRICTIONS AND REQUIREMENTS.

This product, tank-mixed with dicamba, may not be applied by air in California. Only 2,4-D amine formulations may be applied by air in California.

Use the labeled rates of this herbicide in 3 to 25 gallons of water per acre.

TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Avoid direct application to any body of water. Drift control reduction additives may be used. When a drift control reduction additive is used, read and carefully observe the cautionary statements and all other information appearing on the additive label.

Ensure uniform application. To avoid streaked, uneven or overlapped application, use appropriate marking devices.

Aircraft Maintenance

PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. The maintenance of an organic coating (paint) which meets aerospace specification MIL-C-38413 may prevent corrosion. To prevent corrosion of exposed parts, thoroughly wash aircraft after each day of spraying to remove residues of this product accumulated during spraying or from spills. Landing gear is most susceptible.

AERIAL SPRAY DRIFT MANAGEMENT

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications or to public health uses.

1. The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they should be observed.

Importance of Droplet Size

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see the Wind, Temperature and Humidity, and Temperature Inversions sections of this label).

Controlling Droplet Size

Volume: Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with the higher rated flows produce larger droplets.

Pressure: Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.

Number of nozzles: Use the minimum number of nozzles that provide uniform coverage.

Nozzle orientation: Orienting nozzles so that the spray is released backwards, parallel to the air stream, will produce larger droplets than other orientations. Significant deflection from the horizontal will reduce droplet size and increase drift potential.

Nozzle type: Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce larger droplets than other nozzle types.

Boom length: For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

Application height: Applications must not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces the exposure of the droplets to evaporation and wind.

Swath Adjustment

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller droplets, etc.).

Wind

Drift potential is lowest between wind speeds of 2 to 10 miles per hour. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 miles per hour due to variable wind direction and high inversion potential. **NOTE:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect drift.

Temperature and Humidity

Set up equipment to produce larger droplets when making applications in low relative humidity to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions

Applications must not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas

This product must only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

7.2 Ground Broadcast Equipment

For broadcast ground applications, unless otherwise specified in this label or in separate supplemental labeling or Fact Sheets published by Monsanto, use this product at the rate of 1.5 to 3 pints per acre for annual weeds, 3 to 7.5 pints per acre for perennial weeds and 3 to 7.5 pints per acre for woody brush and trees. When used according to label directions this product will give control or partial control of herbaceous weeds, woody brush and trees listed in the **WEEDS CONTROLLED** section of this label.

Use the labeled rates of this product in 3 to 40 gallons of water per acre as a broadcast spray unless otherwise specified in this label or in separate supplemental labeling or Fact Sheets published by Monsanto. As weed density increases, the spray volume should be increased toward the upper end of the specified range to ensure complete coverage. Carefully select proper nozzles to avoid spraying a fine mist. For best results with ground application equipment, use flat-fan nozzles. Check spray pattern for even distribution of spray droplets.

7.3 Hand-Held Equipment

Apply to foliage of vegetation to be controlled. For applications made on a spray-to-wet basis, spray coverage should be uniform and complete. Do not spray to the point of runoff. Use coarse sprays only.

For control of weeds listed in the **Annual Weeds** section of **WEEDS CONTROLLED**, apply a 0.5-percent solution of this product to weeds less than 6 inches in height or runner length. For annual weeds over 6 inches tall, or unless otherwise specified, use a 1-percent solution. Apply prior to seedhead formation in grass or bud formation in broadleaf weeds.

For best results, use a 1.5-percent solution on harder-to-control perennials, woody vines, brush and trees. Make applications to perennials after seedhead emergence in grasses or bud formation in broadleaf weeds, woody brush and trees for best results.

For low-volume directed spray applications, use a 4- to 8-percent solution of this product for control or partial control of annual weeds, perennial weeds, or woody brush and trees. Spray coverage should be uniform with at least 50 to 75 percent of the foliage contacted. Coverage of the top one half of the plant is important for best results. If a straight stream nozzle is used, start the application at the top of the targeted vegetation and spray from top to bottom in a lateral zig-zag motion. For flat-fan and cone nozzles and with hand-directed mist blowers, mist the application over the foliage of the targeted vegetation. To ensure adequate spray coverage, spray both sides of large or tall woody brush and trees, when foliage is thick and dense, or where there are multiple sprouts. For best results, apply to actively growing woody brush and trees after full leaf expansion and before fall color and leaf drop.

Unless otherwise specified, use the rates listed in the following table for various methods of foliar application using high-volume, backpack, knapsack and similar types of hand-held equipment. When used according to label directions this product will give control or partial control of herbaceous weeds, woody brush and trees listed in the **WEEDS CONTROLLED** section of this label.

APPLICATION RATES

APPLICATION		SPRAY VOLUME Gallons/Acre
SPRAY-TO-WET		
Handgun or Backpack	0.5 to 1.5% by volume	spray-to-wet*
LOW-VOLUME DIRECTED SPRAY		
Backpack	4 to 8% by volume	15 to 25**
Modified High-volume	1.5 to 3% by volume	40 to 60**

* For applications made on a spray-to-wet basis, spray coverage should be uniform and complete. Do not spray to the point of runoff.

**Low-volume directed applications with backpacks work best when treating weeds and brush less than 10 feet tall. For taller weeds and brush, high-volume handguns can be modified by reducing nozzle size and spray pressure to produce a low-volume directed spray.

7.4 Selective Equipment

This product can be applied through recirculating spray systems, shielded applicators, hooded sprayers, wiper applicators or sponge bars, after dilution and thorough mixing with water, to listed weeds growing in any aquatic or non-agricultural crop site specified on this label.

A recirculating spray system directs the spray solution onto weeds growing above desirable vegetation, while spray solution not intercepted by weeds is collected and returned to the spray tank for reuse.

AVOID CONTACT OF THIS HERBICIDE WITH DESIRABLE VEGETATION, AS SERIOUS INJURY OR DEATH TO DESIRABLE VEGETATION IS LIKELY TO OCCUR.

Applicators used above desired vegetation should be adjusted so that the lowest spray stream or wiper contact point is at least 2 inches above the desirable vegetation. Droplets, mist, foam or splatter of the herbicide solution settling on desirable vegetation is likely to result in discoloration, stunting or destruction.

Better results may be obtained when more of the weed is exposed to the herbicide solution. Weeds not contacted by the herbicide solution will not be affected. This may occur in dense clumps, severe infestations or when the height of the weeds varies so that not all weeds are contacted. In these instances, repeat treatment may be necessary.

Shielded and Hooded Applicators

A shielded or hooded applicator directs the herbicide solution onto weeds, while shielding desirable vegetation from the herbicide. Use nozzles that provide uniform coverage within the treated area. Keep shields on these sprayers adjusted to protect desirable vegetation. USE EXTREME CARE TO AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION.

Wiper Applicators and Sponge Bars

Wiper applicators are devices that physically wipe this product directly onto the weed.

Equipment must be designed, maintained and operated to prevent the herbicide solution from contacting desirable vegetation. Operate this equipment at ground speeds no greater than 5 miles per hour. Performance may be improved by reducing speed in areas of heavy weed infestations to ensure adequate wiper saturation. Better results may be obtained if 2 applications are made in opposite directions.

Avoid leakage or dripping onto desirable vegetation. Adjust height of applicator to ensure adequate contact with weeds. Keep wiping surfaces clean. Be aware that, on sloping ground, the herbicide solution may migrate, causing dripping on the lower end and drying of the wicks on the upper end of a wiper applicator.

Do not use wiper equipment when weeds are wet.

Mix only the amount of solution to be used during a 1-day period, as reduced activity may result from the use of leftover solutions. Clean wiper parts immediately after using this product by thoroughly flushing with water.

Nonionic surfactant at a rate of 10 percent by volume of total herbicide solution is recommended with all wiper applications.

For Rope or Sponge Wick Applicators—Solutions ranging from 33 to 75 percent of this product in water may be used.

For Panel Applicators—Solutions ranging from 33 to 100 percent of this product in water may be used in panel wiper applicators.

7.5 Injection Systems

This product can be used in aerial or ground injection spray systems. It may be used as a liquid concentrate or diluted prior to injecting into the spray stream. Do not mix this product with the undiluted concentrate of other products when using injection systems unless specifically recommended.

7.6 CDA Equipment

The rate of this product applied per acre by controlled droplet application (CDA) equipment must not be less than the amount in this label when applied by conventional broadcast equipment. For vehicle-mounted CDA equipment, apply 2 to 15 gallons of water per acre.

For the control of annual weeds with hand-held CDA units — Apply a 15-percent solution of this product (19.25 oz of product per gallon) at a flow rate of 2 fluid ounces per minute and a walking speed of 1.5 miles per hour (1 quart per acre). For the control of perennial weeds, apply a 15- to 30-percent solution of this product at a flow rate of 2 fluid ounces per minute and a walking speed of 0.75 mile per hour (2 to 4 quarts per acre).

CDA equipment produces a spray pattern that is not easily visible. Extreme care must be exercised to avoid spray or drift contacting the foliage or any other tissue of desirable vegetation, as damage or destruction is likely to result.

8.0 SITE AND USE INSTRUCTIONS

This product can be used to control weeds, woody brush and trees in aquatic sites, non-agricultural crop sites and crop sites listed on this label.

Non-agricultural crop sites include airports, apartment complexes, commercial sites, ditch banks, dry ditches, dry canals, fence rows, forestry sites, golf courses, habitat restoration and management areas, industrial sites, lumber yards, manufacturing sites, municipal sites, natural areas, office complexes, public areas, parks, parking areas, pastures, petroleum tank farms and pumping installations, railroads, rangeland, recreational areas, residential areas, roadsides, schools, storage areas, substations, utility rights-of-way, utility sites, warehouse areas, and wildlife management areas.

Crop sites include citrus, sugarcane, turf, sod and vegetable fallow.

Unless otherwise specified on this label or in separate supplemental labeling or Fact Sheets published by Monsanto, applications may be made to control any weeds listed in the **Annual Weeds, Perennial Weeds** and **Woody Brush And Trees** rate tables. Refer also to the **Selective Equipment** section.

8.1 Aquatic Sites

This product can be applied to emerged weeds in all bodies of fresh and brackish water which may be flowing, non-flowing or transient. This includes lakes, rivers, streams, ponds, estuaries, rice levees, seeps, irrigation and drainage ditches, canals, reservoirs, wastewater treatment facilities, wildlife habitat restoration and management areas.

If aquatic sites are present in the area and are part of the intended treatment, read and observe the following directions:

This product does not control plants which are completely submerged or have a majority of their foliage under water.

There is no restriction on the use of treated water for irrigation, recreation or domestic purposes.

Consult your local state fish and game agency and water control authorities before applying this product to public water. Permits may be required to treat such water.

NOTE: Do not apply this product **directly to water** within 0.5 mile upstream of an active potable water intake in flowing water (i.e., river, stream, etc.) or within 0.5 mile of an active potable water intake in a standing body of water such as lake, pond or reservoir. To make aquatic applications around and within 0.5 mile of active potable water intakes, the water intake must be turned off for a minimum period of 48 hours after the application. The water intake may be turned on prior to 48 hours if the glyphosate level in the intake water is below 0.7 parts per million as determined by laboratory analysis. These aquatic applications may be made ONLY in those cases where there are alternative water sources or holding ponds which would permit the turning off of an active potable water intake for a minimum period of 48 hours after the applications. This restriction does **NOT** apply to intermittent inadvertent overspray of water in terrestrial use sites.

For treatments after drawdown of water or in dry ditches, allow 7 or more days after treatment before reintroduction of water to achieve maximum weed control. Apply this product within 1 day after drawdown to ensure application to actively growing weeds.

Floating mats of vegetation may require retreatment. Avoid wash-off of sprayed foliage by spray boat or recreational boat backwash or by rainfall within 6 hours of application. Do not retreat within 24 hours following the initial treatment.

Applications made to moving bodies of water must be made while traveling upstream to prevent concentration of this herbicide in water. When making any bankside applications, do not overlap more than 1 foot into open water. Do not spray in bodies of water where weeds do not exist. The maximum application rate of 7.5 pints per acre must not be exceeded in any single broadcast application that is being made over water except as follows, where any labeled rate may be applied:

- Stream crossings in utility rights-of-way.
- Where applications will result in less than 20 percent of the total water area being treated.

When emerged infestations require treatment of the total surface area of impounded water, treating the area in strips may avoid oxygen depletion due to decaying vegetation. Oxygen depletion may result in fish kill.

For Control of Cordgrass (*Spartina spp.*)

The presence of debris and silt on the surface of cordgrass plants will reduce product performance. It may be necessary to wash targeted plants prior to application to improve herbicide uptake. Where cordgrass has been cut or mowed prior to application, allow significant regrowth before application to ensure adequate interception and uptake of the herbicide solution. Rainfall within 2 hours or immersion within 4 hours after application may reduce effectiveness.

Prior to application, survey the areas to be treated to determine if shellfish beds exist within the intended treatment area. Wait either until shellfish have been harvested before application is made or do not harvest shellfish for 14 days following treatment.

Add 1 to 2 quarts or more of nonionic surfactant or other adjuvant approved for use on aquatic sites and compatible with this product per 100 gallons of spray solution for broadcast applications (ground or air) and when using optical sensing application equipment.

Do not apply this product through any type of irrigation system.

APPLICATION

Under ideal application conditions, that is, where silt and debris are not present on plant surfaces, good spray coverage is achievable, target plants are actively growing and labeled rates and application volumes are used, allow at least 4 hours drying time before plants are covered by tidewater. Where one or more of these conditions are not met, schedule applications to allow at lest 5 hours drying time before plants are covered by tidewater. Do not apply when wind speed at the application site exceed 10 miles per hour.

Broadcast Application (Ground): Apply 2 to 8 quarts of this herbicide in 5 to 100 gallons of spray solution per acre. For best results, complete coverage of cordgrass clumps is required.

Broadcast Application (Ground/Optical Sensing Application Equipment): Apply 2 to 8 quarts of this product in 5 to 100 gallons of spray solution per acre using equipment designed and calibrated to deliver spray solution only when cordgrass plants are present and detected by optical sensors. For best results, complete coverage of cordgrass clumps is required.

Hand-Held Backpack or High-volume Equipment: Apply a 5 to 8 percent solution of this product. Ensure that complete coverage of cordgrass clumps is achieved. Do not spray to the point of runoff.

Broadcast Application (Air): Apply 2 to 8 quarts of this product in 5 to 10 gallons of spray solution per acre. Maintain at least a 50-foot buffer between commercial shellfish beds and treated areas. The potential for spray drift is dependent upon weather- and equipment-related factors. The applicator must be familiar with local wind patterns and monitor and record temperature and wind speed prior to and periodically during application. Schedule application in order to allow at least 5 hours before treated plants are covered by tidewater.

For Foliar and Broadcast Treatment of Japanese Knotweed

For control of Japanese knotweed (*Polygonum cuspidatum*), this product may be applied as a 2.0% v/v spray-to-wet solution with 0.5 to 2.0% v/v of a nonionic surfactant containing at least 70 percent active ingredient. Ensure thorough coverage when using spray-to-wet treatments using hand-held equipment.

For broadcast applications, apply 3 quarts of this product with an aquatic approved surfactant system containing 0.1% v/v nonionic organosilicone and 0.25% v/v nonionic spreader sticker surfactant in 3 to 40 gallons per acre as a broadcast treatment.

Allow at least 3 days after application before disturbing treated vegetation. This product does not control plants which are completely submerged or have a majority of their foliage under water.

For Foliar and Broadcast Treatment of Oriental Bittersweet

For control of Oriental bittersweet (*Celastrus orbiculatus*), this product may be applied as a 2.0% v/v spray-to-wet solution with 0.5 to 2.0% v/v of a nonionic surfactant containing at least 70 percent active ingredient. Ensure thorough coverage when using spray-to-wet treatments using hand-held equipment.

For broadcast application, apply 2.25 quarts of this product with an aquatic approved surfactant system containing 0.1% v/v nonionic organosilicone and 0.25% v/v nonionic spreader sticker surfactant in 3 to 40 gallons per acre as a broadcast treatment.

Allow at least 3 days after application before disturbing treated vegetation. This product does not control plants which are completely submerged or have a majority of their foliage under water.

Tank Mixtures

Tank mixtures of this product plus 2,4-D amine may be used to increase the spectrum of vegetation controlled in aquatic sites. Use 1.5 to 2 pints of this product plus 1 to 2 quarts of 2,4-D amine (4 pounds active ingredient per gallon, labeled for aquatic sites) for control of annual weeds. Use 3 to 7.5 pints of this product plus 2 to 4 quarts of 2,4-D amine (4 pounds active ingredient per gallon, labeled for aquatic sites) for control or partial control of perennial weeds, woody brush and trees.

When tank mixing, read and carefully observe the label claims, cautionary statements and all information on the labels of all products used. Use according to the most restrictive precautionary statements for each product in the mixture. Mix in the following sequence: Fill sprayer tank one-half full with water, add Roundup Custom for Aquatic and Terrestrial Use, then 2,4-D amine and finally surfactant. Fill sprayer tank to final volume of water.

NOTE: DO NOT MIX ROUNDUP CUSTOM FOR AQUATIC AND TERRESTRIAL USE AND 2,4-D AMINE CONCENTRATES WITHOUT WATER CARRIER. DO NOT MIX ROUNDUP CUSTOM FOR AQUATIC AND TERRESTRIAL USE AND 2,4-D AMINE IN BYPASS INJECTOR-TYPE SPRAY EQUIPMENT.

8.2 Cut Stump

Cut stump treatments may be made on any site listed on this label. This product will control many types of woody brush and tree species. Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut trees or resprouts close to the soil surface. Apply a 50- to 100-percent solution of this product to the freshly-cut surface **immediately after** cutting. Delays in application may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

For control of *Ailanthus altissima* (Tree-of-heaven) make a cut stump treatment according to the directions in this section using a spray mixture of 50% Roundup Custom for Aquatic and Terrestrial Use and 10% Arsenal.

DO NOT MAKE CUT STUMP APPLICATIONS WHEN THE ROOTS OF DESIRABLE WOODY BRUSH OR TREES MAY BE GRAFTED TO THE ROOTS OF THE CUT STUMP. Some sprouts, stems, or trees may share the same root system. Adjacent trees having a similar age, height and spacing may signal shared roots. Whether grafted or shared, injury is likely to occur to non-treated stems/trees when one or more trees sharing common roots are treated.

8.3 Conifer and Herbaceous Release Sites

This product can be used for conifer release as a broadcast spray for control, partial control or suppression of herbaceous weeds and hardwoods listed in the **WEEDS CONTROLLED** section of this label. Use only where conifers have been established for more than one year unless otherwise stated below. This product can be applied as a directed spray or by using selective equipment in forestry hardwood and conifer sites, including Christmas tree plantations and silvicultural nurseries.

Use a nonionic surfactant that is labeled for use in over-the-top conifer release applications. Refer to the surfactant manufacturer's label for surfactant use rates and other precautionary statements. Use of this product without a surfactant will result in reduced herbicide performance.

APPLICATION MUST BE MADE AFTER FORMATION OF FINAL CONIFER RESTING BUDS IN THE FALL OR PRIOR TO INITIAL BUD SWELLING IN THE SPRING.

Injury may occur to conifers treated for release, especially where spray patterns overlap or the higher rates are applied. Damage can be accentuated if applications are made when conifers are actively growing, or are under stress from drought, flood water, improper planting, insects, animal damage or diseases.

For release of the following conifer species outside the Southeastern United States:

Douglas fir, Fir, Hemlock, Pines*, California Redwood, Spruce

*Includes all species except loblolly pine, longleaf pine, shortleaf pine or slash pine.

Use 1.5 to 3 pints of this product per acre as a broadcast spray.

To release Douglas fir, and pine and spruce species at the end of the first growing season (except in California), this product can be used at the lower labeled rates of 1.5 to 2.5 pints per acre. Ensure that the conifers are well hardened off before application. Make sure that the nonionic surfactant has been adequately tested for safety to Douglas fir before use.

For release of Spruce (*Picea spp.*) in Maine, Michigan, Minnesota, New Hampshire and Wisconsin, up to 4.5 pints per acre of this product may be used for the control of difficult woody brush and tree species and application must be made after formation of final conifer resting buds in the fall.

Use of a surfactant is not recommended for release of hemlock species or California redwood. In mix conifer stands injury to these species may result if a surfactant is used.

For release of the following conifer species in the Southeastern United States:

Loblolly pine, Slash pine, Eastern white pine, Virginia pine, Shortleaf pine, Longleaf pine

Apply 2.25 to 3.75 pints of this product per acre as a broadcast spray during late summer or early fall after the pines have hardened off.

For applications made at the end of the first growing season, use 1.5 pints per acre of this product.

TANK MIXTURES: This product can be tank-mixed with the following products for conifer or herbaceous release. When tank mixing, read and carefully observe the label claims, cautionary statements and all information on the labels of all products used. Use according to the most restrictive precautionary statements and label uses for each product in the mixture.

When applied as directed, this product plus listed residual herbicides provides postemergence control of the annual weeds and control or suppression of the perennial weeds listed in this label, and residual control of the weeds listed in the residual herbicide label. Use only on conifer species that are labeled for over-the top sprays for both products.

atrazine
Arsenal Applicator Concentrate
Oust XP

Late Summer and Fall after Resting Bud Formation

For release of jack pine, white pine and white spruce, apply 1.5 to 3 pints of this product plus 1 to 3 ounces of Oust XP per acre. For white pine tank mix a maximum of 1 to 1.5 ounces of Oust XP per acre.

For conifer release of Douglas fir, use 1.5 to 2.25 pints of this product plus 2 to 6 ounces of Arsenal Applicator Concentrate per acre. For conifer release of balsam fir and red spruce, apply 3 pints of this product plus 1 to 2.5 ounces of Arsenal Applicator Concentrate per acre.

Herbaceous Release

For spring and early summer herbaceous release of loblolly pine, Virginia and longleaf pine apply 12 to 18 fluid ounces of this product with 2 to 4 ounces of Oust XP.

For early spring release of Douglas fir, prior to bud swell, apply 1.5 pints of this product plus 4 pounds active ingredient of atrazine per acre. Allow one full growing season before application. Do not add surfactant to this treatment.

8.4 Forestry Site Preparation

Use this product for the control or partial control of woody brush, trees and herbaceous weeds in forestry or for use in preparing or establishing wildlife openings within these sites and maintaining logging roads.

This product can also be used in site preparation prior to planting any tree species, including Christmas trees, eucalyptus, hybrid tree cultivars and silvicultural nursery sites.

For applications using different types of equipment, see **APPLICATION RATES** table in the **HAND-HELD EQUIPMENT** section of this label.

TANK MIXTURES: Tank mixtures of this product can be used to increase the spectrum of vegetation controlled in forestry site preparation. When tank mixing, read and carefully

observe the label claims, cautionary statements and all information on the labels of all products used. Use according to the most restrictive precautionary statements for each product in the mixture.

NOTE: For forestry site preparation, make sure the tank-mix product is approved for use prior to planting the desired species. Observe planting interval restrictions.

Any labeled rate of this product can be used in a tank mix with the following products for forestry site preparation.

Arsenal Applicators Concentrate	Garlon 3A
Chopper	Garlon 4
Chopper GEN2	Oust XP
Escort	

For control of herbaceous weeds, use the lower specified tank mixture rates. For control of dense stands or tough-to-control woody brush and trees, use the higher labeled rates.

Unless otherwise directed on this label or in separately published Monsanto supplemental labeling or Fact Sheet, do not apply this product as an over-the-top broadcast spray for forestry conifer or hardwood release.

8.5 Non-Crop Areas and Industrial Sites

Use in areas including airports, apartment complexes, commercial sites, ditch banks, dry ditches, dry canals, fencerows, forestry sites, golf courses, industrial sites, lumber yards, manufacturing sites, office complexes, parks, parking areas, petroleum tank farms and pumping installations, railroads, recreational areas, residential areas, roadsides, sod or turf seed farms, schools, storage areas, substations, utility sties, warehouse areas, and wildlife management areas.

Weed Control, Trim-and-Edge and Bare Ground

This product can be used in non-agricultural crop areas. It can be applied with any application equipment described in this label. This product can be used to trim-and-edge around objects for spot treatment of unwanted vegetation and to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. This product can be used prior to planting an area to ornamentals, flowers, turfgrass (sod or seed), or prior to laying asphalt or beginning construction projects.

Repeat applications of this product as weeds emerge to maintain bare ground.

TANK MIXTURES: This product can be tank-mixed with the following products.

Arsenal	Garlon 3A	Ronstar 50WP
atrazine*	Garlon 4	simazine*
Barricade 65WG	Goal 2XL	Surflan AS
Certainty®	Krovar I DF	Surflan WDG
Crossbow L	Landmark II	Telar DF
dicamba*	Landmark II MP	Transline
diuron*	Outrider®	Velpar DF
Endurance	Oust XP	Velpar L
Escort XP	Plateau	2,4-D*
Gallery 75DF	Poast	

*User is responsible for ensuring that tank mixtures with products containing this generic active ingredient may be made provided the specific product is registered for this use.

Do not apply dicamba tank mixtures by air in California. Only 2,4-D amine formulations can be applied by air in California.

Brush Control Tank Mixtures

TANK MIXTURES: Tank mixtures of this product can be used to increase the spectrum of control for herbaceous weeds, woody brush and trees. When tank mixing, read and carefully observe the label claims, cautionary statements and all information on the labels of all products used. Use according to the most restrictive precautionary statements for each product in the mixture. Any labeled rate of this product can be used in a tank mix.

For control of herbaceous weeds, use the lower tank mixture rates. For control of dense stands or tough-to-control woody brush and trees, use the higher labeled rates.

NOTE: For side trimming treatments, this product can be used alone or in tank mixture with Garlon 4.

Arsenal	Garlon 3A
Escort XP	Garlon 4

Chemical mowing - Perennials

This product will suppress perennial grasses listed in this section to serve as a substitute for mowing. Use 6 fluid ounces of this product per acre when treating tall fescue, fine fescue, orchardgrass, quackgrass or reed canarygrass covers. Use 5 fluid ounces of this product per acre when treating Kentucky bluegrass. Apply treatments in 10 to 40 gallons of spray solution per acre. Apply after grasses have greened up to at least 75 percent green color in the spring, or 7 to 10 days after mowing when sufficient regrowth has occurred to provide a desirable height for growth regulation.

Use only in areas where some temporary injury or discoloration of perennial grasses can be tolerated.

Chemical mowing - Annuals

For growth suppression of some annual grasses, such as annual ryegrass, wild barley and wild oats growing in coarse turf on roadsides or other industrial areas, apply 3 to 4 fluid ounces of this product in 10 to 40 gallons of spray solution per acre. Applications should be made when annual grasses are actively growing and before the seedheads are in the boot stage of development. Treatments may cause injury to the desired grasses.

Dormant Turfgrass

Use this product to control or suppress many winter annual weeds and tall fescue for effective release of dormant bermudagrass and bahiagrass turf. Treat only when turf is dormant and prior to spring greenup.

Apply 6 to 48 fluid ounces of this product per acre. Apply the labeled rates in 10 to 40 gallons of water per acre. Use only in areas where bermudagrass or bahiagrass are desirable ground covers and where some temporary injury or discoloration can be tolerated.

Treatments in excess of 12 fluid ounces per acre may result in injury or delayed greenup in highly maintained areas, such as golf courses and lawns. DO NOT apply tank mixtures of this product plus Oust XP or Outrider in highly maintained turfgrass areas. For further uses, refer to the **ROADSIDES** section of this label, which gives rates for dormant bermudagrass and bahiagrass treatments.

Actively Growing Bermudagrass

This product can be used to control or partially control many annual and perennial weeds for effective release of actively growing bermudagrass. DO NOT apply more than 12 fluid ounces of this product per acre in highly maintained turfgrass areas. DO NOT apply tank mixtures of this product plus Oust XP or Outrider in highly maintained turfgrass areas. For further uses, refer to the **ROADSIDES** section of this label, which gives rates for actively growing bermudagrass treatments. Use only in areas where some temporary injury or discoloration can be tolerated.

Turfgrass Renovation, Seed, or Sod Production

This product controls most existing vegetation prior to renovating turfgrass areas or establishing turfgrass grown for seed or sod. For maximum control of existing vegetation, delay planting or sodding to determine if any regrowth from escaped underground plant parts occurs. Where repeat treatments are necessary, sufficient regrowth must be attained prior to application. For warm-season grasses such as bermudagrass, summer or fall applications provide the best control. Where existing vegetation is growing under mowed turfgrass management, apply this product after omitting at least one regular mowing to allow sufficient growth for good interception of the spray.

Do not disturb soil or underground plant parts before treatment. Tillage or renovation techniques such as vertical mowing, coring or slicing should be delayed for 7 days after application to allow translocation into underground plant parts.

Desirable turfgrasses can be planted following the above procedures.

Hand-held equipment can be used for spot treatment of unwanted vegetation growing in existing turfgrass. Broadcast or hand-held equipment can be used to control sod remnants or other unwanted vegetation after sod is harvested.

Do not feed or graze turfgrass grown for seed or sod production for 8 weeks following application.

8.6 Habitat Management

Habitat Restoration and Management

Use this product to control exotic and other undesirable vegetation in habitat management and natural areas, including riparian and estuarine areas, rangeland and wildlife refuges. Applications can be made to allow recovery of native plant species, prior to planting desirable native species, and for similar broad-spectrum vegetation control requirements. Spot treatments can be made to selectively remove unwanted plants for habitat management and enhancement.

Wildlife Food Plots

Use this product as a site preparation treatment prior to planting wildlife food plots. Any wildlife food species may be planted after applying this product, or native species may be allowed to repopulate the area. If tillage is needed to prepare a seedbed, wait 7 days after application before tillage to allow translocation into underground plant parts.

8.7 Hollow Stem Injection

Apply this product through hand-held injection devices that deliver specified amounts of this product into targeted hollow-stem plants growing in any aquatic or non-crop site specified on this label. For control of the following hollow-stem plants, follow the use instructions below:

Castorbean (*Ricinus communis*)
Inject 4 mL/plant of this product into the lower portion of the main stem.

Hemlock, Poison (*Conium maculatum*)
Inject one leaf cane per plant 10 to 12 inches above root crown with 5 mL of a 5% v/v solution of this product.

Hogweed, Giant (*Heracleum mantegazzianum*)
Inject one leaf cane per plant 12 inches above root crown with 5 mL of a 5% v/v solution of this product.

Horsetail, Field (*Equisetum arvense*)
Inject one segment above the root crown with 0.5 mL/stem of this product. Use a small syringe that calibrates to this rate.

Iris, Yellow Flag (*Iris Pseudocorus*)

Cut flower stems with clippers 8 to 9 inches above the root crown. Use a cavity needle that is pushed into the stem center and then slowly removed as 0.5 mL/stem of this product is injected into the stem.

Knotweed, Bohemian (*Polygonum bohemicum*), **Knotweed, Giant** (*Polygonum sachalinense*), and **Knotweed, Japanese** (*Polygonum cuspidatum*)
Inject 5 mL/stem of this product into the second or third internode.

Reed, Common (*Phragmites australis*)
Inject 5 mL per stem of a 50% solution of this product into the second or third internode or into freshly cut stems.

Reed, Giant (*Arundo donax*)
Inject 6 mL/stem of this product into the second or third internode.

Thistle, Canada (*Cirsium arvense*)
Cut 8 to 9 of the tallest plants at bud stage in a clump with clippers. Use a cavity needle that is pushed into the stem center and then slowly removed as 0.5 mL/stem of this product is injected into the stem.

NOTE: Based on the maximum annual use rate of glyphosate for these non-crop sites, the combined total for all treatments must not exceed 8 quarts of this product per acre. At 5 mL per stem, 8 quarts should treat approximately 1500 stems.

8.8 Injection and Frill (Woody Brush and Trees)

This product can be used to control woody brush and trees by injection or frill applications. Apply using suitable equipment that must penetrate into the living tissue. Apply the equivalent of 1 mL of this product per each 2 to 3 inches of trunk diameter at breast height (DBH). This is best achieved by applying a 50- to 100-percent concentration of this product either to a continuous frill around the tree or as cuts evenly spaced around the tree below all branches. As tree diameter increases in size, better results are achieved by applying diluted material to a continuous frill or more closely spaced cuttings. Avoid application techniques that allow runoff to occur from frilled or cut areas in species that exude sap freely. In species such as this, make the frill or cuts at an oblique angle to produce a cupping effect and use a 100-percent (undiluted) concentration of this product. For best results, application should be made during periods of active growth and after full leaf expansion.

8.9 Ornamentals, Plant Nurseries, and Christmas Trees

Post-directed, Trim-and-edge

This product can be used as a post-directed spray around established woody ornamental species such as arborvitae, azalea, boxwood, crabapple, eucalyptus, euonymus, fir, douglas fir, jojoba, hollies, lilac, magnolia, maple, oak, poplar, privet, pine, spruce and yew. This product can also be used to trim and edge around trees, buildings, sidewalks and roads, potted plants and other objects in a nursery setting.

Desirable plants may be protected from the spray solution by using shields or coverings made of cardboard or other impermeable material. THIS PRODUCT IS NOT TO BE USED AS AN OVER-THE-TOP BROADCAST SPRAY IN ORNAMENTALS AND CHRISTMAS TREES. Care must be exercised to avoid contact of spray, drift or mist with foliage or bark of established ornamental species.

Site Preparation

This product can be used prior to planting any ornamental, nursery or Christmas tree species.

Wiper Applications

This product can be used through wick or other suitable wiper applicators to control or partially control undesirable vegetation around established eucalyptus or poplar trees. See the **Selective Equipment** section of this label for further information about the proper use of wiper applicators.

Greenhouse/Shadehouse

This product can be used to control weeds growing in and around greenhouses and shadehouses. Desirable vegetation must not be present during application and air circulation fans must be turned off.

8.10 Parks, Recreational and Residential Areas

All of the instructions in the **Non- Crop Areas and Industrial Sites** section apply to park and recreational areas.

This product can be used in parks, recreational and residential areas. It may be applied with any application equipment described in this label to trim-and-edge around trees, fences, and paths, around buildings, sidewalks, and other objects in these areas. This product can be used for spot treatment of unwanted vegetation and to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. This product can be used prior to planting an area to ornamentals, flowers, turfgrass (sod or seed), or prior to laying asphalt or beginning construction projects.

8.11 Railroads

All of the instructions in the **Non-crop Areas and Industrial Sites** section apply to railroads.

Bare ground, Ballast and Shoulders, Crossings, and Spot Treatment

This product can be used to maintain bare ground on railroad ballast and shoulders. Repeat applications can be made as weeds emerge to maintain bare ground. This product can be used to control tall-growing weeds to improve line-of-sight at railroad crossings and reduce the need for mowing along rights-of-way. For crossing applications, up to 80 gallons of spray solution per acre may be used.

TANK MIXTURES: This product can be tank-mixed with the following products for ballast, shoulder, spot, bare ground and crossing treatments provided that the specific product is registered for use on such sites.

Arsenal	Hyvar X-L	Spike 80DF
atrazine*	Krovar I DF	Telar DF
dicamba*	Oust XP	Transline
Escort XP	Outrider	Velpar DF
Garlon 3A	Sahara DG	Velpar L
Garlon 4	simazine*	2,4-D*
Hyvar X		

*Tank mixtures with products containing this active ingredient can be made provided the specific product is registered for this use. User is responsible for ensuring that the mixture product labels allow the specific applications when tank mixing with a generic active ingredient.

Brush Control

This product can be used to control woody brush and trees on railroad rights-of-way. Apply 3 to 8 quarts of this product per acre as a broadcast spray, using boom-type or boomless nozzles. Up to 80 gallons of spray solution per acre may be used. Apply a 0.75- to 1.5-percent solution of this product when using high-volume spray-to-wet applications. Apply a 4- to 8-percent solution of this product when using low-volume directed sprays for spot treatment.

TANK MIXTURES: This product can be mixed with the following products for enhanced control of woody brush and trees provided that the specific product is registered for use on such sites.

Arsenal	Krenite	Transline
Escort XP	Telar DF	Vanquish
Garlon 3A	Tordon K	Velpar DF
Garlon 4	Tordon 22K	Velpar L

Additional instructions are located in the **Non-Crop Areas and Industrial Sites** section under **Brush Control Tank Mixtures**.

Bermudagrass Release

This product can be used to control or partially control many annual and perennial weeds for effective release of actively growing bermudagrass. Apply 12 to 36 fluid ounces of this product in up to 80 gallons of spray solution per acre. Use the lower rate when treating annual weeds below 6 inches in height (or runner length). Use the higher rate as weeds increase in size or as they approach flower or seedhead formation. These rates will also provide partial control of the following perennial species:

Bahiagrass	Fescue, tall	Trumpetcreeper
Bluestem, silver	Johnsongrass	Vaseygrass

TANK MIXTURES: This product can be tank-mixed with Oust XP. If tank-mixed, use no more than 12 to 36 fluid ounces of this product with 1 to 2 ounces of Oust XP per acre. Use the lower rates of each product to control annual weeds less than 6 inches in height (or runner length) that are listed in this label and the Oust XP label. Use the higher rates as annual weeds increase in size and approach the flower or seedhead stages. These rates will also provide partial control of the following perennial weeds:

Bahiagrass	Dock, curly	Trumpetcreeper
Blackberry	Dogfennel	Vaseygrass
Bluestem, silver	Fescue, tall	Vervain, blue
Broomsedge	Johnsongrass	
Dallisgrass	Poorjoe	
Dewberry	Raspberry	

Use only on well-established bermudagrass. Bermudagrass injury may result from the treatment, but regrowth will occur under moist conditions. Do not make repeat applications in the same season since severe injury may occur.

8.12 Roadsides

All of the instructions in the **Non-Crop Areas and Industrial Sites** section apply to roadsides.

Shoulder Treatments

Use this product on road shoulders and applied with boom sprayers, shielded boom sprayers, high-volume off-center nozzles, hand-held equipment, and similar equipment.

Guardrails and Other Obstacles to Mowing

This product can be used to control weeds growing under guardrails and around signposts and other objects along the roadside.

Spot Treatment

This product can be used as a spot treatment to control unwanted vegetation growing along roadsides.

TANK MIXTURES: This product can be tank-mixed with the following products for shoulder, guardrail, spot and bare ground treatments, provided that the specific tank mixture product is registered for use on such sites. Refer to these product labels and observe the cautionary statements and all other information appearing on the labels of all herbicides used. Use according to the most restrictive precautionary statements for each product in the mixture.

atrazine*	Landmark MP	Sahara DG
Crossbow L	Landmark XP	simazine*
dicamba*	Oust XP	Surflan AS
diuron*	Outrider	Surflan WDG
Escort XP	pendimethalin*	Telar DF
Endurance	Plateau	Velpar DF
Gallery 75 DF	Plateau DG	Velpar L
Krovar I DF	Poast	2,4-D*
Landmark II MP	Ronstar 50 WSP	

* Tank mixtures with products containing this generic active ingredient can be made provided the specific product is registered for this use. User is responsible for ensuring the mixture product allows the specific application.

Release of Bermudagrass or Bahiagrass

Dormant Applications

This product can be used to control or partially control many winter annual weeds and tall fescue for effective release of dormant bermudagrass or bahiagrass. Treat only when turf is dormant and prior to spring greenup. This product can also be tank-mixed with Outrider or Oust XP for residual control. Tank mixtures of this product with Oust XP may delay greenup.

For best results on winter annuals, treat when plants are in an early growth stage (below 6 inches in height) after most have germinated. For best results on tall fescue, treat when fescue is at or beyond the 4- to 6-leaf stage.

Apply 6 to 48 ounces of this product in a tank mixture with 0.75 to 1.33 ounces Outrider herbicide per acre. Read and follow all label directions for Outrider herbicide.

TANK MIXTURES: Apply 6 to 48 fluid ounces of this product per acre alone or in a tank mixture with 0.25 to 1 ounce per acre of Oust XP. Apply the labeled rates in 10 to 40 gallons of water per acre. Use only in areas where bermudagrass or bahiagrass are desirable ground covers and where some temporary injury or discoloration can be tolerated. To avoid delays in greenup and minimize injury, add no more than 1 ounce of Oust XP per acre on bermudagrass and no more than 0.5 ounce of Oust XP per acre on bahiagrass and avoid treatments when these grasses are in a semi-dormant condition.

Actively Growing Bermudagrass

This product can be used to control or partially control many annual and perennial weeds for effective release of actively growing bermudagrass. Apply 12 to 36 fluid ounces of this product in 10 to 40 gallons of spray solution per acre. Use the lower rate when treating annual weeds below 6 inches in height (or runner length). Use the higher rate as weeds increase in size or as they approach flower or seedhead formation. These rates will also provide partial control of the following perennial species:

Bahiagrass	Fescue, tall	Trumpetcreeper
Bluestem, silver	Johnsongrass	Vaseygrass

TANK MIXTURES: This product can be tank-mixed with Outrider for control or partial control of Johnsongrass and other weeds listed in the Outrider label. Use 6 to 24 ounces of this product with 0.75 to 1.33 ounces of Outrider. Use the higher rates of both products for control of perennial weeds or annual weeds greater than 6 inches in height.

This product can be tank-mixed with Oust XP. If tank-mixed, use no more than 12 to 24 fluid ounces of this product with 1 to 2 ounces of Oust XP per acre. Use the lower rates of each product to control annual weeds less than 6 inches in height (or runner length) that are listed in this label and the Oust XP label. Use the higher rates as annual weeds increase in size and approach the flower or seedhead stages. These rates will also provide partial control of the following perennial weeds:

Bahiagrass	Dock, curly	Poorjoe
Bluestem, silver	Dogfennel	Trumpetcreeper
Broomsedge	Fescue, tall	Vaseygrass
Dallisgrass	Johnsongrass	Vervain, blue

Use only on well-established bermudagrass. Bermudagrass injury may result from the treatment, but regrowth will occur under moist conditions. Do not make repeat applications of the tank mix in the same season since severe injury may occur.

Actively Growing Bahiagrass

For suppression of vegetative growth and seedhead inhibition of bahiagrass for approximately 45 days, apply 4 fluid ounces of this product in 10 to 40 gallons of water per acre. Apply 1 to 2 weeks after full greenup or after mowing to a uniform height of 3 to 4 inches. This application must be made prior to seedhead emergence.

For suppression up to 120 days, apply 3 fluid ounces of this product per acre, followed by an application of 2 to 3 fluid ounces per acre about 45 days later. Make no more than 2 applications per year.

This product can be used for control or partial control of Johnsongrass and other weeds listed on the Outrider label in actively growing bahiagrass. Apply 1.5 to 3.5 fluid ounces of this product with 0.75 to 1.33 ounces of Outrider per acre. Use the higher rates for control of perennial weeds or annual weeds greater than 6 inches in height. Use only on well established bahiagrass.

A tank mixture of this product plus Oust XP may be used. Apply 4 fluid ounces of this product plus 1/4 ounce of Oust XP per acre 1 to 2 weeks following an initial spring mowing. Make only one application per year.

8.13 Utility Sites

In utilities, use this product along electrical power, pipeline and telephone rights-of-way, and in other sites associated with these rights-of-way, such as substations, roadsides, railroads or similar rights-of-way that run in conjunction with utilities. Use in preparing or establishing wildlife openings within these sites, maintaining access roads and for side trimming along utility rights-of-way.

TANK MIXTURES: Tank mixtures of this product can be used to increase the spectrum of control for herbaceous weeds, woody brush and trees. Any labeled rate of this product can be used in a tank mix.

For control of herbaceous weeds, use the lower tank mixture rates. For control of dense stands or tough-to-control woody brush and trees, use the higher rates.

NOTE: For side trimming treatments, this product may be used alone or in tank mixture with Garlon 4.

Arsenal	Krenite	Surflan AS
atrazine*	Krovar I DF	Surflan WDG
dicamba*	Oust XP	Telar DF
diuron*	Outrider	Transline
Endurance	pendimethalin*	Vanquish
Escort XP	Plateau	Velpar DF
Garlon 3A**	Sahara DG	Velpar L
Garlon 4	simazine*	2,4-D*

* Tank mixtures with products containing this generic active ingredient can be made provided the specific product is registered for this use. User is responsible for ensuring the mixture product allows the specific application.

** Ensure that Garlon 3A is thoroughly mixed with water according to label directions before adding this product. Have spray mixture agitating at the time this product is added to avoid spray compatibility problems.

Bare Ground and Trim-and-Edge

Use this product in and around utility sites and substations for bare ground, trim-and-edge around objects, spot treatment of unwanted vegetation and to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. This product can be used prior to planting a utility site to ornamentals, flowers, turfgrass (sod or seed), or beginning construction projects.

Repeat applications of this product as weeds emerge to maintain bare ground.

TANK MIXTURES: Tank mix with the following products. Refer to the specific product labels for approved sites and application rates. Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used. Use according to the most restrictive precautionary statements for each product in the mixture.

Arsenal	Garlon 3A	Poast
atrazine*	Garlon 4	Ronstar 50WP
Barricade 65WG	Goal 2XL	simazine*
Certainty	Krovar I DF	Surflan AS
Crossbow L	Landmark II MP	Surflan WDG
dicamba *	Landmark II	Telar DF
diuron*	Outrider	Transline
Endurance	Oust XP	Velpar DF
Escort XP	pendimethalin*	Velpar L
Gallery 75DF	Plateau	2,4-D*

*Tank mixtures with products containing this generic active ingredient may be made provided the specific product is registered for this use. User is responsible for ensuring the mixture product label allows the specific application.

9.0 PASTURE AND RANGELANDS

9.1 Pastures

LABELED GRASSES: Bahiagrass, Bermudagrass, Bluegrass, Brome, Fescue, Guineagrass, Kikuyugrass, Orchardgrass, Pangola grass, Ryegrass, Timothy, Wheatgrass.

Preplant, Preemergence, Pasture Renovation

This product can be applied prior to planting or emergence of forage grasses. In addition, this product can be used to control perennial pasture species listed on this label prior to re-planting.

If application rates total 4.5 pints per acre or less, no waiting period between treatment and feeding or livestock grazing is required. If the rate is greater than 4.5 pints per acre, remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Spot Treatment, Over-the-Top Wiper Applications

This product can be applied as a spot treatment or with wiper applicators in pastures. Applications may be made in the same area at 30-day intervals.

For spot treatments or wiper application methods using rates of 4.5 pints per acre or less, the entire field or any portion of it may be treated. When spot treatments or wiper application are made using rates above 4.5 pints per acre, no more than 10 percent of the total pasture may be treated at any one time. To achieve maximum performance, remove domestic livestock before application and wait 7 days after application before grazing livestock or harvesting.

Postemergent Weed Control (Broadcast Treatments)

This product can be used to suppress competitive growth and seed production of annual weeds and undesirable vegetation in pastures. For selective applications with broadcast spray equipment, apply 9 to 12 fluid ounces of this product per acre in early spring before desirable perennial grasses break dormancy and initiate green growth. Late fall applications can be made after desirable perennial grasses have reached dormancy.

Some stunting of perennial grasses will occur if broadcast applications are made when plants are not dormant. No waiting period is required between application and grazing or harvesting for feed. Use of higher application rates will cause stand reductions. Do not apply more than 4.5 pints per acre per year onto pasture grasses except for renovation uses. If replanting is needed due to severe stand reduction, applications must be made at least 30 days prior to planting any grass not listed for treatment in this label.

9.2 Rangelands

Postemergence application of this product will control or suppress many annual weeds growing in perennial cool- and warm-season grass rangelands.

Preventing viable seed production is key to the successful control and invasion of annual grassy weeds in rangelands. Follow-up applications in sequential years should eliminate most of the viable seeds.

Grazing of treated areas should be delayed to encourage growth of desirable perennials. Allowing desirable perennials to flower and reseed in the treated area will encourage successful transition.

Apply 9 to 12 fluid ounces of this product per acre to control or suppress many weeds, including downy brome, cheatgrass, cereal rye and jointed goatgrass in rangelands. Apply when most brome plants are in early flower and before the plants, including seedheads, turn color. Allowing for secondary weed flushes to occur in the spring following rain events further depletes the seed reserve and encourages perennial grass conversion on weedy sites. Fall applications are possible and recommended, where spring moisture is usually limited and fall germination allows for good weed growth.

For medusahead, apply 12 fluid ounces of this product per acre at the 3-leaf stage. Delaying applications beyond this stage will result in reduced or unacceptable control. Controlled burning may be useful in eliminating the thatch layer produced by slowly decaying culms prior to application. Allow new growth to occur before spraying after a burn. Repeat applications in subsequent years may be necessary to eliminate the seedbank before reestablishing desirable perennial grasses in medusahead-dominated rangelands.

Slight discoloration of the desirable grasses may occur, but they will regreen and regrow under moist soil conditions as effects of this product wear off. Do not use ammonium sulfate when spraying rangeland grasses with this product. No waiting period between treatment and feeding of livestock grazing is required.

10.0 CROP USES

10.1 Citrus

For use in Florida and Texas on Calamondin, Chironja, Citron, Citrus Hybrids, Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Orange (all), Pummelo, Satsuma Mandarin, Tangelo (ugli), Tangor.

This product can be applied preplant (site preparation) broadcast spray, middles (between rows of trees, vines or bushes), strips (within rows of trees, vines or bushes), shielded sprayers, wiper applications, directed spray, or as spot treatment.

Applications may be made with boom equipment, CDA equipment, shielded sprayers, hand-held and high-volume wands, lances, orchard guns or with wiper applicator equipment, except as directed.

The following instructions pertain to Florida and Texas.

For burndown or control of the weeds listed below, apply the labeled rates of this product in 3 to 30 gallons of water per acre. Where weed foliage is dense, use 10 to 30 gallons of water per acre.

For goatweed, apply 3 to 4.5 pints of this product per acre. Apply in 20 to 30 gallons of water per acre when plants are actively growing. Use 3 pints per acre when plants are less than 8 inches tall and 4.5 pints per acre when plants are greater than 8 inches tall. If goatweed is greater than 8 inches tall, the addition of Krovar I or Karmex may improve control. Refer to the individual product labels for specific crops, rates, geographic restrictions and precautionary statements.

Perennial weeds:

S = Suppression B = Burndown PC = Partial control C = Control

ROUNDUP CUSTOM FOR AQUATIC AND TERRESTRIAL USE RATE PER ACRE

WEED SPECIES	1.5 PT	3 PT	4.5 PT	7.5 PT
Bermudagrass	B	--	PC	C
Guineagrass				
Texas and Florida Ridge	B	C	C	C
Florida Flatwoods	--	B	C	C
Paragrass	B	C	C	C
Torpedograss	S	--	PC	C

Allow a minimum of 1 day between last application and harvest in citrus crops. For citron groves, apply as directed sprays only.

10.2 Sugarcane

This product can be applied fallow, preplant, preemergence or at-planting using hooded sprayers, shielded sprayers, or by wiper application in row-middles, as a post-harvest treatment, as a spot treatment or as foliar treatment for plant growth regulation.

Preplant, Preemergence, At-Planting

Apply this product in or around sugarcane fields or in fields prior to the emergence of plant cane. Do not apply to vegetation in or around ditches, canals or ponds containing water to be used for irrigation.

Spot Treatment

Apply this product as a spot treatment in sugarcane. For control of volunteer or diseased sugarcane, make a 0.75-percent solution of this product in water and spray-to-wet the foliage of vegetation to be controlled. Volunteer or diseased sugarcane should have at least 7 new leaves. Avoid spray contact with healthy cane plants since severe damage or destruction may result. Do not feed or graze treated sugarcane foliage following application.

Fallow Treatments

Apply this product as a replacement for tillage in fields that are lying fallow between sugarcane crops. This product can also be used to remove the last stubble of ratoon cane. For removal of last stubble of ratoon cane, apply 6 to 7.5 pints of this product in 10 to 40 gallons of water per acre to new growth having at least 7 new leaves. Allow 7 or more days after application before tillage. Ground or aerial application equipment may be used. Applications up to 4.5 pints per acre may be made by aerial application in fallow sites where there is sufficient buffer to prevent injury due to drift onto adjacent crops. Tank mixtures with 2,4-D and dicamba can be used.

Hooded Sprayers

Apply this product through hooded sprayers for weed control between the rows of sugarcane. See the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for additional use instructions.

Do not allow treated weeds to come into contact with the crop. Droplets, mist, foam or splatter of the herbicide solution settling on the crop can result in discoloration, stunting or destruction. Such damage shall be the sole responsibility of the applicator.

Foliar Treatment for Plant Growth Regulation

Do not plant to subsequent crops other than the following for 30 days after application: Corn (All), Soybean, Sorghum (Milo), Cotton, Alfalfa, Beans (All), Forage Grasses, Potatoes (Irish, Sweet), Wheat.

When applied as directed under the conditions described, this product will hasten ripening and extend the period of high sucrose level in sugarcane. It is effective in both low- and high-tonnage sugarcane. As a result of leaf desiccation, improved trash burn can be expected. Within 2 to 3 weeks after application, this product can produce a slight yellowing to pronounced browning and drying of leaves, and a shortening of upper internodes; spindle death may occur. Most of the sucrose increase is concentrated in the top nodes of the treated cane stalk. In order to recover the maximum sugar where topping is practiced, during harvest, top at the base of the fourth leaf. Prior to application, consult your state sugarcane authority or local Monsanto representative regarding the degree of sucrose response anticipated from the variety of sugarcane to be treated.

See the following for rates and time of application for the State in which applications are to be made. **NOTE:** Use the higher rate within the specified range when treating sugarcane under adverse ripening conditions or when less responsive varieties are to be treated.

FLORIDA—Apply 6 to 14 fluid ounces of this product per acre 3 to 5 weeks before harvest of LAST RATOON CANE ONLY.

HAWAII—Apply 10 to 24 fluid ounces of this product per acre 4 to 10 weeks before harvest.

LOUISIANA—Apply 4 to 14 fluid ounces of this product per acre 3 to 7 weeks before harvest of RATOON CANE ONLY.

PUERTO RICO—Apply 6 fluid ounces of this product per acre 3 to 5 weeks before harvest of RATOON CANE ONLY.

TEXAS—Apply 6 to 14 fluid ounces of this product per acre 3 to 5 weeks before harvest of RATOON CANE ONLY.

Application of this product can initiate development of shooting eyes. This product can not increase the sucrose content of sugarcane under conditions of good natural ripening. Do not apply to sugarcane to be harvested for seed purposes. Do not feed or graze treated sugarcane forage following application.

10.3 Chemical Fallow Treatments

Apply this product during fallow intervals preceding planting, prior to planting or transplanting, at-planting, or preemergent to vegetable crops.

When applying this product prior to transplanting or direct-seeding vegetable crops into plastic mulch, care must be taken to remove residues of this product, which could cause crop injury, from the plastic prior to planting. Residues can be removed by a single 0.5-inch application of water, either by natural rainfall or via a sprinkler system. Ensure that the wash water flushes off the plastic mulch and does not enter the transplant holes. Applications made at emergence will result in injury or death to emerged seedlings.

Avoid contact of herbicide with foliage, shoots or stems, green bark, exposed roots (including those emerging from plastic mulch), or fruit of crops because severe injury or

destruction may result. Post-harvest or fallow applications must be made at least 30 days prior to planting any non-labeled crop.

10.4 Sod or Commercial Sod Production

Preplant, Preemergence, At-Planting, Renovation, Site Preparation

This product controls most existing vegetation prior to renovating turf or forage grass seed areas or establishing turf grass grown for sod. Make applications before, during, or after planting or for renovation. For maximum control of existing vegetation, delay planting to determine if any regrowth from escaped underground plant parts occurs. Where existing vegetation is growing under mowed turfgrass management, apply this product after omitting at least one regular mowing to allow sufficient growth for good interception of the spray. Where repeat treatments are necessary, sufficient regrowth must be attained prior to application. For warm-season grasses, such as Bermudagrass, summer or fall applications provide best control. Broadcast equipment may be used to control sod remnants or other unwanted vegetation after sod is harvested.

Do not disturb soil or underground plant parts before treatment. Tillage or renovation techniques such as vertical mowing, coring or slicing should be delayed for 7 days after application to allow proper translocation into underground plant parts. If application rates total 72 fluid ounces per acre or less, no waiting period between treatment and feeding or livestock grazing is required. If the rate is greater than 4.5 pints per acre, remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting. For any crop not listed for treatment in this label, applications must be made at least 30 days prior to planting. Applications must be made prior to the emergence of the crop to avoid crop injury.

Shielded Sprayers

Apply 1.5 to 4.5 pints of this product in 10 to 20 gallons of water per acre to control weeds between grass seed rows. Uniform planting in straight rows aid in shielded sprayer applications. Best results are obtained when the grass seed crop is small enough to easily pass by the protective shields. For additional instructions, see **Hooded and Shielded Applicators** in the **Selective Equipment** section.

Contact of this product in any manner to any vegetation to which treatment is not intended can cause damage. Such damage shall be the sole responsibility of the applicator.

Over-the-Top Wiper Applications

Adjust applicators so that the wiper contact point is at least 2 inches above the desirable vegetation. Weeds should be a minimum of 6 inches above the desirable vegetation. Better results may be obtained when more of the weed is exposed to the herbicide solution. Weeds not contacted by the herbicide solution will not be affected. This may occur in dense clumps, severe infestations, or when height of weeds varies so that not all weeds are contacted. In these instances, repeat treatments may be necessary. For additional instructions, see **Wiper Applicators** in the **Selective Equipment** section.

Contact of the herbicide solution with desirable vegetation can result in damage or destruction.

Spot Treatment

Apply this product as a 1-percent solution prior to heading of grasses grown for seed. The crop receiving the spray in the treated area will be killed. Take care to avoid drift or spray outside the target area for the same reason. Use hand-held equipment to control sod remnants or other unwanted vegetation after sod is harvested.

Creating Rows in Annual Ryegrass

Use 12 to 24 fluid ounces of this product per acre. Use the higher rate when the ryegrass is greater than 6 inches tall. Best results are obtained when applications are made before the ryegrass reaches 6 inches in height.

Set nozzle heights to allow the establishment of the desired row spacing while preventing spray droplets, spray fines, or drift to contact the ryegrass plants not treated. Use of low-pressure nozzles, or drop nozzles designed to target the application over a narrow band are recommended.

Grower assumes all responsibility for crop losses from misapplication.

11.0 USES AROUND THE FARMSTEAD

11.1 Weed Control and Trim-And-Edge

This product can be used to control annual weeds, perennial weeds and woody brush which are found in any part of the farmstead, including building foundations, along and in fences, in dry ditches and canals, along ditchbanks, farm roads, shelterbelts, prior to landscape plantings and equipment storage areas.

This product can be tank-mixed with the following products, provided that the specific product is registered for use on such non-agricultural crop sites. Refer to these product labels for approved farmstead sites and application rates. For annual weeds, use 1.5 pints per acre of this product when weeds are less than 6 inches tall, 2.25 pints per acre when weeds are 6 to 12 inches tall and 3 pints per acre when weeds are greater than 12 inches tall. For perennial weeds, apply 3 to 7.5 pints per acre in these tank mixes. For tank mixtures with these products through backpack sprayers, handguns or other high-volume spray-to-wet applications, see the **ANNUAL WEEDS** section for hand-held or high-volume equipment of this label for specific rates.

Arsenal	Krovar I DF	Ronstar 50 WP
Banvel/Clarity	Oust XP	Sahara
Barricade 65WG	Pendulum 3.3 EC	simazine
diuron	Pendulum WDG	Surflan
Endurance	Plateau	Telar
Escort	Princep DF	Vanquish
Karmex DF	Princep Liquid	2,4-D

This product plus dicamba tank mixtures may not be applied by air in California.

11.2 Greenhouse/Shadehouse

This product can be used to control weeds in and around greenhouses and shadehouses. Desirable vegetation must not be present during application and air circulation fans must be turned off.

11.3 Chemical Mowing

This product will suppress perennial grasses listed in this section to serve as a substitute for mowing. Use 4.5 fluid ounces of this product per acre when treating Kentucky bluegrass. Use 6 fluid ounces of this product per acre when treating tall fescue, fine fescue, orchardgrass, bahiagrass or quackgrass covers. Use 12 fluid ounces of this product per acre when treating bermudagrass. Use 48 fluid ounces of this product per acre when treating torpedograss or paragrass. Apply treatments in 10 to 20 gallons of spray solution per acre. Chemical mowing applications may be made along farm ditches and other parts of farmsteads.

Use only in areas where some temporary injury or discoloration of perennial grasses can be tolerated.

12.0 WEEDS CONTROLLED

Always use the higher rate of this product per acre within the labeled range when weed growth is heavy or dense or weeds are growing in an undisturbed (non-cultivated) area.

Reduced results can occur when treating weeds heavily covered with dust. For weeds that have been mowed, grazed or cut, allow regrowth to occur prior to treatment.

Refer to the following label sections for application rates for the control of annual and perennial weeds and woody brush and trees. For difficult to control perennial weeds and woody brush and trees, where plants are growing under stressed conditions, or where infestations are dense, use this product at 4.5 to 8 quarts per acre for enhanced results.

12.1 Annual Weeds

Apply to actively growing annual grasses and broadleaf weeds.

Allow at least 3 days after application before disturbing treated vegetation. After this period the weeds may be mowed, tilled or burned. See **DIRECTIONS FOR USE**, **PRODUCT INFORMATION** and **MIXING** and **APPLICATION INSTRUCTIONS** for labeled uses and specific application instructions.

Use 1.5 pints per acre if weeds are less than 6 inches in height or runner length and 1 to 4 quarts per acre if weeds are over 6 inches in height or runner length or when weeds are growing under stressed conditions.

For spray-to-wet applications, apply a 0.5-percent solution of this product to weeds less than 6 inches in height or runner length. Apply prior to seedhead formation in grass or bud formation in broadleaf weeds. For annual weeds over 6 inches tall, or for smaller weeds growing under stressed conditions, use a 0.75- to 1.5-percent solution. Use the higher labeled rate for tough-to-control species or for weeds over 24 inches tall.

WEED SPECIES

Anoda, spurred	Copperleaf, Virginia
Balsamapple**	Coreopsis, plains/tickseed*
Barley*	Corn*
Barley, little*	Crabgrass*
Barnyardgrass*	Cupgrass, woolly*
Bassia, fivehook	Dwarfdandelion*
Bittercress*	Eclipta*
Bluegrass, annual*	Falsedandelion*
Bluegrass, bulbous*	Falseflax, smallseed*
Brome, downy*	Fiddleneck
Brome, Japanese*	Filaree
Broomsedge	Fleabane, annual*
Buttercup*	Fleabane, hairy *(Conyza bonariensis)**
Castorbean	Fleabane, rough*
Cheatgrass*	Foxtail*
Cheeseweed *(Malva parviflora)*	Foxtail, Carolina*
Chervil*	Geranium, Carolina
Chickweed*	Goatgrass, jointed*
Cocklebur*	Goosegrass
Copperleaf, hophornbeam	Groundsel, common*

Henbit	Rocket, London*
Horseweed/Marestail *(Conyza canadensis)*	Rocket, Yellow
Itchgrass*	Rye*
Johnsongrass, seedling	Ryegrass*
Junglerice	Sandbur, field*
Knotweed	Sesbania, hemp
Kochia	Shattercane*
Lamb's-quarters*	Shepherd's-purse*
Lettuce, prickly*	Sicklepod
Mannagrass, eastern*	Signalgrass, broadleaf*
Mayweed	Smartweed, ladysthumb*
Medusahead*	Smartweed, Pennsylvania*
Morningglory *(Ipomoea spp)*	Sorghum, grain (milo)*
Mustard, blue*	Sowthistle, annual
Mustard, tansy*	Spanishneedles***
Mustard, tumble*	Speedwell, Corn*
Mustard, wild*	Speedwell, purslane*
Nightshade, black*	Sprangletop*
Oats	Spurge, annual
Panicum, browntop*	Spurge, prostrate*
Panicum, fall*	Spurge, spotted*
Panicum, Texas*	Spurry, umbrella*
Pennycress, field*	Starthistle, yellow
Pepperweed, Virginia*	Stinkgrass*
Pigweed*	Sunflower*
Puncturevine	Teaweed / Prickly sida
Purslane, common	Thistle, Russian
Pusley, Florida	Velvetleaf
Ragweed, common*	Wheat*
Ragweed, giant	Wild oats*
Rice, red	Witchgrass*

* When using field broadcast equipment (aerial applications or boom sprayers using flat-fan nozzles) these species will be controlled or partially controlled using 12 fluid ounces of this product per acre. Applications must be made using 3 to 10 gallons of carrier volume per acre. Use nozzles that ensure thorough coverage of foliage and treat when weeds are in an early growth stage.

** Apply with hand-held equipment only.

*** Apply 3 pints of this product per acre.

12.2 Perennial Weeds

Best results are obtained when perennial weeds are treated after they reach the reproductive stage of growth (seedhead initiation in grasses and bud formation in broadleaves). For non-flowering plants, best results are obtained when the plants reach a mature stage of growth. In many situations, treatments are required prior to these growth stages. Under these conditions, use the higher application rate within the labeled range.

- Apply when target plants are actively growing. Do not treat when target plants are under drought stress.
- Ensure thorough coverage when using spray-to-wet treatments using hand-held equipment.
- When using hand-held equipment for low-volume directed spot treatments, apply a 4- to 8-percent solution of this product.
- Allow 7 or more days after application before tillage or mowing. If weeds have been mowed or tilled, do not treat until regrowth has reached the specified stages.
- Fall treatments must be applied before a killing frost.
- Repeat treatments may be necessary to control weeds regenerating from underground parts or seed.

Weed Species	Rate (QT/A)	Hand-Held % Solution
Alfalfa*	0.7	1.5
Alligatorweed*	3	1.3
Apply when most of the target plants are in bloom. Repeat applications will be required to maintain such control.		
Anise (fennel)	1.5 – 3	1 – 1.5
Bahiagrass	2.3 – 3.75	1.5
Beachgrass, European *(Ammophila arenaria)*	–	3.5
Apply an 8-percent solution of this product plus 0.5- to 1.5-percent nonionic surfactant on a low-volume spray-to-wet basis. Best results are obtained when applications are made when European beachgrass is actively growing through the boot to the full heading stages of growth. Make applications prior to the loss of more than 50% green leaf color in the fall. Repeat applications may be necessary to treat skips. Monitor treated areas prior to reseeding of desirable vegetation. For selective control of European beachgrass with wiper application, apply a 33.3-percent solution of this product plus 1 to 2.5 percent nonionic surfactant during active growth. Avoid contact of herbicide solution with desirable vegetation. Wiping the plants in opposite directions may improve performance. Maximizing the amount of individual leaf tissue contacted with the wiping equipment will result in optimal performance.		
Bentgrass*	1	1.5
Bermudagrass	4	1.5
Apply to target plants when seed heads appear.		
Bermudagrass, water (knotgrass)	1	1.5
Bindweed, field	2.3 – 3.75	1.5
Apply 3 to 3.75 quarts of this product per acre as a broadcast spray west of the Mississippi River and 2.3 to 3 quarts of this product per acre east of the Mississippi River. Apply when most target plants are at or beyond full bloom. New leaf development indicates active growth. For best results apply in late summer or fall.		
Bluegrass, Kentucky	1.5 – 2.3	0.75
Apply when most target plants have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained. In the fall, apply before plants have turned brown.		
Blueweed, Texas	2.3 – 3.75	1.5
Apply 3 to 3.75 quarts of this product per acre as a broadcast spray west of the Mississippi River and 2.3 to 3 quarts of this product per acre east of the Mississippi River. Apply when most target plants are at or beyond full bloom. New leaf development indicates active growth. For best results apply in late summer or fall.		
Brackenfern	2.3 – 3	0.75 – 1
Apply to fully expanded fronds which are at least 18 inches long.		
Bromegrass, smooth	1.5 – 2.3	0.75
Apply when most target plants have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained. In the fall, apply before plants have turned brown.		
Bursage, woolly-leaf	–	1.5
Canarygrass, reed	1.5 – 2.3	0.75
Apply when most target plants have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained. In the fall, apply before plants have turned brown.		
Cattail	2.3 – 3.75	0.75
Apply when target plants are actively growing and are at or beyond the early-to-full bloom stage of growth. Best results are achieved when application is made during the summer or fall months.		
Clover; red, white	2.3 – 3.75	1.5
Cogongrass	2.3 – 3.75	1.5
Apply when cogongrass is at least 18 inches tall and actively growing in late summer or fall. Due to uneven stages of growth and the dense nature of vegetation preventing good spray coverage, repeat treatments may be necessary to maintain control.		
Cordgrass	See Sect 8.1	2–8
Schedule applications in order to allow 6 hours before treated plants are covered by tidewater. When applying spray to wet with hand-held equipment, use a 2 to 8 percent solution of this product. Ensure complete coverage of clumps but do not spray to the point of run-off. Follow specific application instructions in Section 8.1 **Aquatic Sites**.		
Cutgrass, giant*	3	1
Repeat applications will be required to maintain such control, especially where vegetation is partially submerged in water. Allow for substantial regrowth to the 7- to 10-leaf stage prior to retreatment.		
Dallisgrass	2.3 – 3.75	1.5
Dandelion	2.3 – 3.75	1.5
Dock, curly	2.3 – 3.75	1.5
Dogbane, hemp	3	1.5
Apply when most target plants have reached the late bud-to-flower stage of growth. For best results, apply in late summer or fall.		
Fescue (except tall)	2.3 – 3.75	1.5
Fescue, tall	2.3	1
Apply when most target plants have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained.		
Guineagrass	2.3	0.75
Apply when most target plants have reached at least the 7-leaf stage of growth.		
Hemlock, poison	1.5 – 3	0.75 – 1.5
Also see Hollow Stem Injection section of this label.		
Horsenettle	2.3 – 3.75	1.5
Horseradish	3	1.5
Apply when most target plants have reached the late bud-to-flower stage of growth. For best results, apply in late summer or fall.		
Iceplant	1.5	1.5
Ivy; German, cape	1.5 – 3	0.75 – 1.5
Jerusalem artichoke	2.3 – 3.75	1.5
Johnsongrass	1.5 – 2.3	0.75
Apply when most target plants have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained. In the fall, apply before plants have turned brown.		
Kikuyugrass	1.5 – 2.3	0.75
Knapweed	3	1.5
Apply when most target plants have reached the late bud-to-flower stage of growth. For best results, apply in late summer or fall.		
Knotweed; Bohemian, Giant, Japanese (*Polygonum bohemicum, P. sachalinense and P. cuspidatum*) Stem Injection: See the Hollow Stem Injection section of this label. Cut Stem: Cut stems cleanly just below the 2nd or 3rd node above the ground. Immediately apply 0.36 fluid ounce (10 mLs) of a 50-percent solution of this product into the 'well' or remaining internode. Ensure that removed upper plant material is carefully gathered and discarded so that it will not contact soil and regenerate plants from sprouting buds. Use of a bio-barrier such as cardboard, plywood or plastic sheeting is recommended. The combined total for all treatments must not exceed 8 quarts per acre. At 10 mL of a 50-percent solution, approximately 1500 stems per acre may be treated.		

Lantana	–	0.75 – 1
Apply when most target plants are at or beyond the bloom stage of growth. Use the higher application rate for plants that have reached the woody stage of growth.		
Lespedeza	2.3 – 3.75	1.5
Loosestrife, purple	2	1 – 1.5
Treat when most target plants are at or beyond the bloom stage of growth. Best results are achieved when application is made during summer or fall months. Fall treatments must be applied before a killing frost.		
Lotus, American	2	0.75
Treat when most target plants are at or beyond the bloom stage of growth. Best results are achieved when application is made during summer or fall months. Fall treatments must be applied before a killing frost. Repeat treatment may be necessary to control regrowth from underground parts and seeds.		
Maidencane	3	0.75
Repeat treatments will be required, especially to vegetation partially submerged in water. Under these conditions, allow for regrowth to the 7- to 10-leaf stage prior to retreatment.		
Milkweed, common	2.3	1.5
Apply when most target plants have reached the late bud-to-flower stage of growth.		
Muhly, wirestem	1.5 – 2.3	0.75
Apply when most target plants are at least 8 inches in height (3 to 4-leaf stage of growth) and actively growing.		
Mullein, common	2.3 – 3.75	1.5
Napiergrass	2.3 – 3.75	1.5
Nightshade, silverleaf	2.3 – 3.75	1.5
Apply 3 to 3.75 quarts of this product per acre as a broadcast spray west of the Mississippi River and 2.3 to 3 quarts of this product per acre east of the Mississippi River. Apply when most target plants are at or beyond full bloom. Best results can be obtained when application is made after berries are formed. New leaf development indicates active growth. For best results apply in late summer or fall.		
Nutsedge; purple, yellow	2.3	0.75
Apply this product to control existing nutsedge plants and immature nutlets attached to treated plants. Apply when target plants are in flower or when new nutlets can be found at rhizome tips. Nutlets which have not germinated will not be controlled and may germinate following treatment. Repeat treatments will be required for long-term control.		
Orchardgrass	1.5 – 2.3	0.75
Apply when most target plants have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained. In the fall, apply before plants have turned brown.		
Pampasgrass	2.3 – 3.75	1.5
Para grass	3	0.75
Repeat treatments may be required. Allow for regrowth to the 7- to 10-leaf stage prior to retreatment.		
Pepperweed, perennial	3	1.5
Phragmites*	2 – 3.75	0.75 – 1.5
For partial control of phragmites in Florida and the counties of other states bordering the Gulf of Mexico, apply 3.75 quarts per acre as a broadcast spray or apply a 1.5-percent solution with hand-held equipment. In other areas of the U.S., apply 2 to 3 quarts per acre as a broadcast spray or apply a 0.75-percent solution with hand-held equipment for partial control. For best results, treat during late summer or fall months when plants are actively growing and in full bloom. Due to the dense nature of the vegetation, which may prevent good spray coverage and uneven stages of growth, repeat treatments may be necessary to maintain control. Visual control symptoms will be slow to develop.		
Quackgrass	1.5 – 2.3	0.75
Apply when most target plants are at least 8 inches in height (3 to 4-leaf stage of growth) and actively growing.		
Redvine*	1.5	1.5
Reed, giant	3 – 3.75	1.5
Best results are obtained when applications are made in late summer to fall. Also see Hollow Stem Injection section of this label.		
Ryegrass, perennial	1.5 – 2.3	0.75
Apply when most target plants have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained. In the fall, apply before plants have turned brown.		
Salvinia, giant	3 – 3.75	2
Apply as a 2.0% v/v spray-to-wet solution with 0.5 to 2.0% v/v of a nonionic surfactant containing at least 70% active ingredient. For broadcast applications, apply 3 to 3.75 quarts of this product with an aquatic approved surfactant system containing 0.1% v/v nonionic organosilicone and 0.25% v/v nonionic spreader sticker surfactant in 3 to 40 gallons per acre as a broadcast treatment. Allow at least 3 days after application before disturbing treated vegetation. This product does not control plants which are completely submerged or have a majority of their foliage under water.		
Smartweed, swamp	2.3 – 3.75	1.5
Spatterdock	3	0.75
Apply when most plants are in full bloom. For best results, apply during the summer or fall months.		
Spurge, leafy*	–	1.5
Starthistle, yellow	–	1.5
Sweetpotato, wild*	–	1.5
Apply when most target plants are at or beyond the bloom stage of growth. Repeat applications will be required. Allow the plant to reach the specified stage of growth before retreatment.		
Thistle, artichoke	1.5 – 2.3	2
Apply when target plants are at or beyond the bud stage of growth.		
Thistle, Canada	1.5 – 2.3	1.5
Apply when target plants are at or beyond the bud stage of growth. Also see Hollow Stem Injection section of this label.		
Timothy	1.5 – 2.3	1.5
Apply when most target plants have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained. In the fall, apply before plants have turned brown.		
Torpedograss*	3 – 3.75	0.75 – 1.5
Use the lower recommended rates under terrestrial conditions and the higher rates under partially submerged or a floating mat conditions. Repeat treatments will be required to maintain such control.		
Trumpetcreeper*	1.5 – 2.3	1.5
Tules, common	–	1.5
Apply to target plants at or beyond the seedhead stage of growth. After application, visual symptoms will be slow to appear and may not occur for 3 or more weeks.		
Vaseygrass	2.3 – 3.75	1.5
Velvetgrass	2.3 – 3.75	1.5
Waterhyacinth	2.5 – 3	0.75 – 1
Apply when target plants are at or beyond the early bloom stage of growth. After application, visual symptoms may require 3 or more weeks to appear with complete necrosis and decomposition usually occurring within 60 to 90 days. Use the higher recommended rates when more rapid visual effects are desired.		
Waterlettuce	–	0.75 – 1
Use higher recommended rates where infestations are heavy. Best results are obtained from mid-summer through winter applications. Spring applications may require retreatment.		
Waterprimrose	–	0.75
Apply to plants that are at or beyond the bloom stage of growth, but before fall color changes occur. Thorough coverage is necessary for best control.		
Wheatgrass, western	1.5 – 2.3	0.75
Apply when most target plants have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained. In the fall, apply before plants have turned brown.		

*Partial control

Other perennials listed on this label – Apply 2.3 to 3.75 quarts of this product per acre as a broadcast spray or as a 0.75- to 1.5-percent solution with hand-held equipment. Apply when target plants are actively growing and most have reached early head or early bud stage of growth.

12.3 Woody Brush and Trees

Apply this product after full leaf expansion, unless otherwise directed. Use the higher rate for larger plants and/or dense areas of growth. On vines, use the higher rate for plants that have reached the woody stage of growth. Best results are obtained when application is made in late summer or fall after fruit formation. Apply when plants are actively growing. Thorough coverage of foliage is necessary for best results. Avoid application to drought-stressed plants.

In arid areas, best results are obtained when applications are made in the spring to early summer when brush species are at high moisture content and are flowering.

Ensure thorough coverage when using spray-to-wet treatments using hand-held equipment.

When using hand-held equipment for low-volume directed-spray spot treatments, apply a 4- to 8-percent solution of this product.

Symptoms may not appear prior to frost or senescence with fall treatments.

Allow 7 or more days after application before tillage, mowing or removal. Repeat treatments may be necessary to control plants regenerating from underground parts or seed. Some autumn colors on undesirable deciduous species are acceptable provided no major leaf drop has occurred. Reduced performance may result if fall treatments are made following a frost.

Weed Species	Broadcast Rate (QT/A)	Hand-Held Spray-To-Wet % Solution
Alder	2.3 – 3	0.75 – 1.2
Ash*	1.5 – 3.75	0.75 – 1.5
Aspen, quaking	1.5 – 2.3	0.75 – 1.2
Bearclover (Bearmat)*	1.5 – 3.75	0.75 – 1.5
Beech*	1.5 – 3.75	0.75 – 1.5
Birch	1.5	0.75
Blackberry	2.3 – 3	0.75 – 1.2
Blackgum	1.5 – 3.75	0.75 – 1.5
Bracken	1.5 – 3.75	0.75 – 1.5
Broom; French, Scotch	1.5 – 3.75	1.2 – 1.5
Buckwheat, California*	1.5 – 3	0.75 – 1.5
Cascara*	1.5 – 3.75	0.75 – 1.5
Castorbean	1.5 – 3.75	1.5
Also see Hollow Stem Injection section of this label.		
Catsclaw*	–	1.2 – 1.5
For partial control, apply this product when at least 50 percent of the new leaves are fully developed.		

Ceanothus*	1.5 – 3.75	0.75 – 1.5
Chamise*	1.5 – 3.75	0.75
Cherry; bitter, black, pin	1.5 – 3.75	1– 1.5
Cottonwood, eastern	1.5 – 3.75	0.75 – 1.5
Coyote brush	2.3 – 3	1.2 – 1.5
For control, apply when at least 50 percent of the new leaves are fully developed.		
Cypress; swamp, bald	1.5 – 3.75	0.75 – 1.5
Deerweed	1.5 – 3.75	0.75 – 1.5
Dewberry	2.3 – 3	0.75 – 1.2
Dogwood*	3 – 3.75	1 – 2
Elderberry	1.5	0.75
Elm*	1.5 – 3.75	0.75 – 1.5
Eucalyptus, bluegum	–	1.5
For control of eucalyptus resprouts, apply this product with hand-held equipment when resprouts are 6- to 12-feet tall. Ensure complete coverage.		
Gallberry	1.5 – 3.75	0.75 – 1.5
Gorse*	1.5 – 3.75	0.75 – 1.5
Hackberry, western	1.5 – 3.75	0.75 – 1.5
Hasardia*	1.5 – 3	0.75 – 1.5
Hawthorn	1.5 – 2.3	0.75 – 1.2
Hazel	1.5	0.75
Hickory*	3 – 3.75	1 – 2
Honeysuckle	2.3 – 3	0.75 – 1.2
Hornbeam, American*	1.5 – 3.75	0.75 – 1.5
Huckleberry	1.5 – 3.75	0.75 – 1.5
Ivy, poison	3 – 3.75	1.5
Kudzu	3	1.5
Locust, black*	1.5 – 3	0.75 – 1.5
Madrone resprouts*	–	1.5
Magnolia, sweetbay	1.5 – 3.75	0.75 – 1.5
Manzanita*	1.5 – 3.75	0.75 – 1.5
Maple, red	1 – 3.75	0.75 – 1.2
For control, apply as a 0.75- to 1.2-percent solution with hand-held equipment when leaves are fully developed. For partial control, apply 1 to 3.75 quarts of this product per acre as a broadcast spray.		
Maple, sugar	–	0.75 – 1.2
For control, apply as a 0.75- to 1.2-percent solution with hand-held equipment when at least 50 percent of the new leaves are fully developed.		
Maple, vine*	1.5 – 3.75	0.75 – 1.5
Monkey flower*	1.5 – 3	0.75 – 1.5
Oak; black, white*	1.5 – 3	0.75 – 1.5
Oak; northern pin	1.5 – 3	0.75 – 1.2
For control, apply when at least 50 percent of the new leaves are fully developed.		
Oak, poison	3 – 3.75	1.5
Repeat applications may be required to maintain control. Fall treatments must be applied before leaves lose green color.		
Oak, post	2.3 – 3	0.75 – 1.2
Oak, red	–	0.75 – 1.2
For control, apply as a 0.75- to 1.2-percent solution with hand-held equipment when at least 50 percent of the new leaves are fully developed.		
Oak, scrub*	1.5 – 3	0.75 – 1.5
Oak, southern red	1.5 – 3.75	1 – 1.5
Orange, Osage	1.5 – 3.75	0.75 – 1.5
Peppertree, Brazilian (Florida holly)*	1.5 – 3.75	1.5
Persimmon*	1.5 – 3.75	0.75 – 1.5
Pine	1.5 – 3.75	0.75 – 1.5
Poplar, yellow*	1.5 – 3.75	0.75 – 1.5
Prunus	1.5 – 3.75	1– 1.5
Raspberry	2.3 – 3	0.75 – 1.2
Redbud, eastern	1.5 – 3.75	0.75 – 1.5
Redcedar, eastern	1.5 – 3.75	0.75 – 1.5
Rose, multiflora	1.5	0.75
Treatments should be made prior to leaf deterioration by leaf-feeding insects.		
Russian olive*	1.5 – 3.75	0.75 – 1.5
Sage, black	1.5 – 3	0.75
Sage, white*	1.5 – 3	0.75 – 1.5
Sagebrush, California	1.5 – 3	0.75
Salmonberry	1.5	0.75
Saltbush	–	1
Saltcedar	3 – 3.75	1 – 2
For partial control, apply a 1- to 2-percent solution of this product with hand-held equipment or 3 to 3.75 quarts per acre as a broadcast spray. For control, apply a 1- to 2-percent solution of this product mixed with 0.25-percent Arsenal with hand-held equipment. For control using broadcast applications, apply 1.5 quarts of this product in a tank-mix with 1 pint of Arsenal to plants less than 6 feet tall. To control saltcedar greater than 6 feet tall using broadcast applications, apply 3 quarts of this product in a tank-mix with 2 pints of Arsenal.		
Sassafras*	1.5 – 3.75	0.75 – 1.5
Sea Myrtle	–	1
Sourwood*	1.5 – 3.75	0.75 – 1.5
Sumac; laurel, poison, smooth, sugarbush, winged*	1.5 – 3	0.75 – 1.5
Sweetgum	1.5 – 2.3	0.75 – 1.5
Swordfern*	1.5 – 3.75	0.75 – 1.5
Tallowtree, Chinese	–	0.75
Tanoak resprouts*	–	1.5
Thimbleberry	1.5	0.75
Tobacco, tree*	1.5 – 3	0.75 – 1.5
Toyon*	–	1.5
Trumpetcreeper	1.5 – 2.3	0.75 – 1.2
Vine maple*	1.5 – 3.75	0.75 – 1.5
Virginia creeper	1.5 – 3.75	0.75 – 1.5
Waxmyrtle, southern*	1.5 – 3.75	1.5
Willow	2.3	0.75
Yerba Santa, California*	–	1.5

* Partial control

Other woody brush and trees listed in this label – For partial control, apply 1.5 to 3.75 quarts of this product per acre as a broadcast spray or as a 0.75- to 1.5-percent solution with hand-held equipment.

13.0 LIMIT OF WARRANTY AND LIABILITY

Monsanto Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes set forth in the Complete Directions for Use label booklet ("Directions") when used in accordance with those Directions under the conditions described therein. NO OTHER EXPRESS WARRANTY OR IMPLIED WARRANTY OF FITNESS FOR PARTICULAR PURPOSE OR MERCHANTABILITY IS MADE. This warranty is also subject to the conditions and limitations stated herein.

Buyer and all users shall promptly notify this Company of any claims whether based in contract, negligence, strict liability, other tort or otherwise.

To the fullest extent permitted by law, buyer and all users are responsible for all loss or damage from use or handling which results from conditions beyond the control of this Company, including, but not limited to, incompatibility with products other than those set forth in the Directions, application to or contact with desirable vegetation, unusual weather, weather conditions which are outside the range considered normal at the application site and for the time period when the product is applied, as well as weather conditions which are outside the application ranges set forth in the Directions, application in any manner not explicitly set forth in the Directions, moisture conditions outside the moisture range specified in the Directions, or the presence of products other than those set forth in the Directions in or on the soil, crop or treated vegetation.

This Company does not warrant any product reformulated or repackaged from this product except in accordance with this Company's stewardship requirements and with express written permission from this Company.

THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE LIMIT OF THE LIABILITY OF THIS COMPANY OR ANY OTHER SELLER FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT (INCLUDING CLAIMS BASED IN CONTRACT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE) SHALL BE THE PURCHASE PRICE PAID BY THE USER OR BUYER FOR THE QUANTITY OF THIS PRODUCT INVOLVED, OR, AT THE ELECTION OF THIS COMPANY OR ANY OTHER SELLER, THE REPLACEMENT OF SUCH QUANTITY, OR, IF NOT ACQUIRED BY PURCHASE, REPLACEMENT OF SUCH QUANTITY. TO THE FULLEST EXTENT PERMITTED BY LAW, IN NO EVENT SHALL THIS COMPANY OR ANY OTHER SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES.

Upon opening and using this product, buyer and all users are deemed to have accepted the terms of this LIMIT OF WARRANTY AND LIABILITY which may not be varied by any verbal or written agreement. If terms are not acceptable, return at once unopened.

Roundup Custom, Certainty, Outrider, Monsanto and Vine symbol are trademarks of Monsanto Technology LLC. All others are the property of their respective owners

No license granted under any non-U.S. patent(s).

EPA Reg. No. 524-343

In case of an emergency involving this product, or for medical assistance, Call Collect, day or night, (314) 694-4000.

MONSANTO

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St. Louis, Missouri, 63167 U.S.A.
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032712

ATENCIÓN:

Esta etiqueta de muestra se entrega únicamente para información general.

- Este producto pesticida puede no estar todavía disponible o aprobado para la venta o utilización en su localidad.
- Usted tiene la responsabilidad de cumplir todas las leyes federales, estatales y locales, así como todas las reglamentaciones relativas a la utilización de pesticidas.
- Antes de utilizar un pesticida, asegúrese de que esté aprobado en su estado o localidad.
- Su estado o localidad puede exigir precauciones adicionales e instrucciones para la utilización de este producto que no están incluidas aquí.
- Monsanto no garantiza el lo completo ni la certeza de esta etiqueta de la espécimen. La información encontró en esta etiqueta puede diferir de la información encontró en la etiqueta del producto. Usted debe tener consigo la etiqueta aprobada por la agencia EPA cuando utilice el producto y debe leer y respetar todas las instrucciones en la etiqueta.
- No debe basarse sobre las precauciones, las instrucciones de utilización y cualquier otra información en esta etiqueta para utilizar algún otro producto similar.
- Siempre siga las precauciones y las instrucciones para el uso en la etiqueta del pesticida que usted utiliza.

Roundup CUSTOM™

FOR AQUATIC & TERRESTRIAL USE

TRUEBLUE ADVANTAGE
PROVEN | RELIABLE | SUPPORTED

Instrucciones de Uso Completas

Roundup Custom™ para aplicaciones acuáticas y terrestres es un herbicida profesional completo de post emergencia y de amplia efectividad, para el control de malezas en zonas acuáticas, cultivos, lugares no cultivados, zonas industriales, céspedes, ornamentales, bosques, bordes de carretera y servidumbres de servicios públicos.

EPA Reg. No. 524-343 2012-2

GROUP	9	HERBICIDE

EVITE EL CONTACTO DEL HERBICIDA CON EL FOLLAJE, TALLOS VERDES, RAÍCES NO LEÑOSAS EXPUESTAS O FRUTOS EXPUESTOS DE LOS CULTIVOS, PLANTAS Y ÁRBOLES DESEABLES. EN CASO CONTRARIO ES PROBABLE QUE SUFRAN GRAVES DAÑOS O SEAN DESTRUIDOS TOTALMENTE.

Lea toda la etiqueta antes de utilizar este producto.

Use solo según las instrucciones de la etiqueta.

No todos los productos indicados en esta etiqueta han sido registrados para su uso en California. Verifique la situación de registro de cada producto en California antes de utilizarlo.

Antes de comprar o usar el producto, lea "LÍMITES EN LA GARANTÍA Y EN LA RESPONSABILIDAD" en la última sección de la etiqueta. Si las condiciones son inaceptables, devuelva el producto inmediatamente sin abrir el envase.

ESTE ES UN PRODUCTO PARA USARSE TAL Y COMO ESTÁ PREPARADO. MONSANTO NO LO HA DISEÑADO NI LO HA REGISTRADO PARA QUE SEA REFORMULADO. VEA LA ETIQUETA DEL ENVASE INDIVIDUAL PARA ENTERARSE DE LAS LIMITACIONES DE REEMPAQUE.

INFORMACIÓN SOBRE EL PRODUCTO

1.0 INGREDIENTES

INGREDIENTE ACTIVO:

*Glifosato, n-(fosfonometil) glicina, en la forma de su sal de isopropilamina	53.8%
OTROS INGREDIENTES:	46.2%
	100.0%

*Contiene 648 gramos por litro o 5.4 libras por galón americano del ingrediente activo glifosato, en forma de su sal de isopropilamina. Equivalente a 480 gramos por litro o 4.0 libras por galón americano del ácido, glifosato.

No se han otorgado licencias de uso bajo ninguna patente que no sea de los Estados Unidos de América.

2.0 NÚMEROS DE TELÉFONO IMPORTANTES

PARA INFORMACIÓN SOBRE EL PRODUCTO O AYUDA PARA UTILIZAR ESTE PRODUCTO, LLAME GRATIS AL, **1-800-332-3111.**
EN CASO DE **EMERGENCIA** CON RESPECTO A ESTE PRODUCTO O PARA SOLICITAR ASISTENCIA MÉDICA, LLAME CON CARGO REVERTIDO, LAS 24 HORAS, AL, **(314)-694-4000.**

3.0 DECLARACIONES PREVENTIVAS

3.1 Riesgos para seres humanos y animales domésticos

Manténgase Fuera del Alcance de los Niños.

¡PRECAUCIÓN!

ANIMALES DOMÉSTICOS: Se considera que este producto es relativamente no tóxico para perros y otros animales domésticos, sin embargo, la ingestión de este producto o de abundantes cantidades de vegetación rociada recientemente puede causar irritación gastrointestinal temporal (vómitos, diarrea, cólicos, etc.). Si observa estos síntomas, dé de beber al animal abundante cantidad de líquido para evitar su deshidratación. Llame a un veterinario si los síntomas persisten más de 24 horas.

Equipo de protección personal (PPE)

Los usuarios y personas que manipulan este producto deben usar: camisas de mangas largas y pantalones largos, además de zapatos y calcetines. Respete las instrucciones del fabricante para limpiar y mantener el equipo de protección personal (PPE). En caso de que no haya instrucciones, lave el equipo protector con detergente y agua caliente. Mantenga el PPE apartado del resto de la ropa, y lávelo por separado.
Declaraciones de control de ingeniería: Cuando las personas que manipulan el producto emplean sistemas cerrados, cabinas encerradas o avionetas de acuerdo con los requisitos de las Normas de Protección para Trabajadores (WPS) para pesticidas agrícolas [40 CFR 170.240 (d) (4-6)], los requisitos con respecto a los equipos de protección personal de esas personas pueden reducirse o modificarse como se especifica en esas normas.

Recomendaciones de seguridad para el usuario:
Los usuarios deben:
- Lavarse las manos antes de comer, beber, masticar cicle, usar tabaco o usar el baño.
- Quitarse la ropa contaminada y lavarla antes de volver a usarla.

3.2 Riesgos para el medio ambiente

No contamine el agua al lavar el equipo o al tirar el agua de lavado. El tratamiento de la maleza acuática puede causar disminución o pérdida de oxígeno debido a la descomposición de las plantas muertas. Esta pérdida de oxígeno puede sofocar a los peces.

En caso de DERRAME o PÉRDIDA, seque el producto y deseche en un relleno.

3.3 Riesgos Físicos o Químicos

Para mezclar, almacenar y aplicar la solución de rocío de este producto, se deben usar solamente envases de acero inoxidable, fibra de vidrio, plástico o envases de acero recubiertos internamente con plástico.

NO MEZCLE, ALMACENE O APLIQUE ESTE PRODUCTO O LAS SOLUCIONES DE ROCÍO DE ESTE PRODUCTO EN ENVASES DE ACERO GALVANIZADO O SIN REVESTIMIENTO (EXCEPTO ACERO INOXIDABLE) O EN TANQUES DE ROCÍO. Si se utiliza en estos envases o tanques, este producto o las soluciones de rocío de este producto reaccionan y producen gas hidrógeno que puede formar una mezcla de gases altamente inflamable. Esta mezcla de gases podría resultar inflamable o explotar y causar lesiones graves si está en contacto con fuego, chispas, sopletes para soldar, cigarrillos encendidos o cualquier otra fuente de ignición.

MODO DE EMPLEO

Se considera una violación a la ley federal usar este producto de una manera que no sea la indicada en la etiqueta. Este producto solo puede utilizarse de acuerdo con las instrucciones de modo de empleo que figuran en esta etiqueta, en etiquetas

complementarias separadas o fichas técnicas publicadas por Monsanto. Puede consultar las etiquetas adicionales en Internet en www.cdms.net, www.agrian.com o www.greenbook.net, pero puede que su uso no esté aprobado en todos los estados. También puede solicitarlas a su vendedor minorista autorizado de Monsanto o a su representante de Monsanto Company.

No aplique este producto de alguna manera que entre en contacto con los trabajadores u otras personas, ya sea directamente o por arrastre. Solamente las personas que manipulan este producto y usan protección personal podrán estar en el área durante su aplicación. Para verificar requisitos específicos de su tribu o estado, consulte con la agencia responsable de la regulación del uso de pesticidas.

Requisitos para uso agrícola

Utilice este producto solo de acuerdo con la etiqueta y con las Normas de Protección para Trabajadores, 40 CFR Parte 170. Estas normas contienen los requisitos para la protección de trabajadores agrícolas en granjas, bosques, viveros e invernaderos y para las personas que manipulan pesticidas agrícolas. Contienen los requisitos para capacitar, descontaminar, notificar y ofrecer asistencia de emergencia. También contienen instrucciones específicas y excepciones relativas a las afirmaciones en esta etiqueta sobre equipos de protección personal (PPE) y los intervalos de acceso restringido. Los requisitos en esta caja se refieren solo a las aplicaciones de este producto cubiertas por las Normas de Protección para Trabajadores.

No entre ni permita la entrada de personal a las áreas tratadas durante el intervalo de entrada restringida (REI) de 4 horas.

Los equipos de protección personal (PPE) requeridos para el acceso anticipado a zonas tratadas que se permite en las Normas de Protección para Trabajadores y que significan contacto con material tratado, como plantas, tierra o agua, son: overoles, zapatos, calcetines y guantes resistentes a sustancias químicas confeccionados con cualquier tipo de material impermeable.

Requisitos para uso no agrícola

Los requisitos en esta caja se refieren a las aplicaciones de este producto que NO cubren las Normas de Protección para Trabajadores para pesticidas agrícolas (40 CFR, Parte 170). Las regulaciones del WPS se aplican cuando el producto se usa para obtener productos agrícolas en granjas, bosques, viveros e invernaderos.

Mantenga a las personas y a los animales domésticos fuera del área tratada hasta que la solución rociada se haya secado.

4.0 ALMACENAMIENTO Y ELIMINACIÓN

El almacenamiento y la eliminación adecuados de los pesticidas son fundamentales para evitar la exposición de las personas y el medio ambiente como consecuencia de pérdidas y derrames del producto, excedentes o desechos y actos de vandalismo. No permita que este producto contamine el agua, ni los alimentos para personas ni animales, ni las semillas, por medio del almacenamiento o la eliminación.

ALMACENAMIENTO DEL PESTICIDA: GUARDE A UNA TEMPERATURA SUPERIOR A LOS 5°F (-15°C) PARA EVITAR LA CRISTALIZACIÓN. Los cristales se depositarán en el fondo. Si se cristaliza, colóquelo en una habitación cálida a 68°F (20°C) por varios días para volver a disolver y haga rodar o agite el envase, o bien haga recircular en envases tipo mini-bulk para mezclar bien antes de usarlo. Guarde los pesticidas lejos de los alimentos para personas, los alimentos para mascotas, los alimentos para animales, las semillas, los fertilizantes y los materiales de uso veterinario. Mantenga el envase bien cerrado para evitar derrames y contaminación.

ELIMINACIÓN DEL PESTICIDA: Para evitar desechos, utilice todo el material contenido en este envase, incluido los residuos del enjuague, aplicándolo según las indicaciones de la etiqueta. Si no se pueden evitar los desechos, ofrezca el producto restante a un centro de eliminación de desechos o a un programa de desecho de pesticidas. Estos programas suelen ser manejados por los gobiernos estatales o locales o por la industria. Toda eliminación debe seguir los reglamentos y procedimientos federales, estatales y locales que apliquen.

MANEJO Y ELIMINACIÓN DEL ENVASE: Consulte la etiqueta del envase para las instrucciones de manejo y eliminación del envase, así como las limitaciones para rellenarlo.

5.0 INFORMACIÓN SOBRE EL PRODUCTO

Descripción del producto: Este producto es un herbicida sistémico de aplicación post emergencia foliar, sin actividad residual en el suelo. Controla un amplio espectro de malezas anuales, malezas perennes, matorrales leñosos y árboles. Está formulado como un líquido soluble en agua y se puede aplicar utilizando equipos convencionales después de su dilución y mezclado con agua o con otros medios de transporte según las instrucciones de la etiqueta.

Aparición de los síntomas: Este producto se mueve dentro de la planta desde el punto de aplicación sobre el follaje hasta las raíces. Los efectos visibles incluyen que la planta se marchite y se vuelva amarilla gradualmente, hasta que su parte exterior se pone completamente marrón; mientras tanto, las partes de la planta que están bajo tierra se deterioran completamente. Los efectos visibles en la mayoría de las malezas anuales se pueden apreciar de 2 a 4 días después de la aplicación, pero en la mayoría de las malezas perennes es posible que no se observen hasta después de 7 días o más. El frío extremo o el cielo muy nublado después de la aplicación pueden retardar la actividad del producto y hacer que el efecto visual se demore.

Etapas de malezas: Resulta más fácil controlar las malezas anuales cuando son pequeñas. La mayoría de las malezas perennes se controla mejor cuando el tratamiento se realiza en las últimas etapas de crecimiento antes de la madurez. Vea en las secciones TIPOS DE MALEZAS CONTROLADAS de esta etiqueta las proporciones específicas para cada tipo de maleza.

Aplique siempre la mayor proporción de producto dentro del rango indicado cuando las malezas son muy densas o cuando crecen en áreas no tocadas (no cultivadas). Puede haber una disminución de los resultados cuando se traten malezas afectadas por enfermedades o dañadas por los insectos, malezas cubiertas con mucho polvo o malezas en malas condiciones de crecimiento.

Modo de acción en las plantas: El ingrediente activo de este producto inhibe una enzima en las plantas y microorganismos que es esencial para la formación de aminoácidos específicos.

Prácticas culturales: Se podrá observar una reducción en el efecto si se aplica el producto a malezas anuales o perennes que hayan sido segadas, que hayan servido de alimento para animales o hayan sido cortadas, y que no hubiesen crecido nuevamente hasta el nivel recomendado para el tratamiento.

Resistencia a la lluvia: Una lluvia intensa poco tiempo después de su aplicación puede lavar este producto del follaje y puede requerirse una nueva aplicación para el control adecuado de las malezas.

Cobertura del rocío: Para obtener mejores resultados, la cobertura del rocío debe ser completa y uniforme. No rocíe el follaje hasta el punto de escurrimiento.

No actividad en el suelo: Las malezas deben haber emergido en el momento de la aplicación para poder ser controladas por este producto. Las malezas que germinen de semillas después de la aplicación no serán controladas. Las plantas no emergidas con rizomas o raíces subterráneas de malezas perennes no conectadas no se verán afectadas por el herbicida y continuarán creciendo.

Proporciones de aplicación máximas: Las proporciones de aplicación o uso máximas recomendadas en toda esta etiqueta se indican en unidades de volumen (onzas líquidas o cuartos de galón) de este producto por acre. Sin embargo, las proporciones máximas permitidas se aplican a este producto combinado con todos y cada uno de los otros herbicidas que contienen el ingrediente activo glifosato, ya sea que se apliquen por separado o como mezclas de tanque, sobre la base de un total de gramos o libras de glifosato (equivalentes ácidos) por acre. Si se aplica más de un producto que contiene glifosato en el mismo terreno el mismo año, debe asegurarse de que el total de glifosato empleado (equivalentes de gramos o libras de ácido) no exceda el máximo permitido. El total combinado de todos los tratamientos no debe exceder 8 cuartos de galón de este producto (8 libras de ácido glifosato) por acre por año. Consulte en la sección **INGREDIENTES** de esta etiqueta la información necesaria sobre el producto.

ATENCIÓN

EVITE EL CONTACTO DEL HERBICIDA CON EL FOLLAJE, TALLOS VERDES, RAÍCES NO LEÑOSAS EXPUESTAS O FRUTOS EXPUESTOS DE LOS CULTIVOS, PLANTAS Y ÁRBOLES DESEABLES. EN CASO CONTRARIO ES PROBABLE QUE SUFRAN GRAVES DAÑOS O SEAN DESTRUIDOS TOTALMENTE.

EVITE EL ARRASTRE. TENGA MUCHO CUIDADO CUANDO APLIQUE ESTE PRODUCTO PARA EVITAR DAÑOS A PLANTAS Y CULTIVOS DESEABLES.

No permita que la solución herbicida se vaporice, gotee, arrastre o salpique sobre la vegetación deseable ya que incluso cantidades ínfimas de este producto pueden causar daños graves o destruir el cultivo, plantas u otras áreas que no se desean tratar. Las probabilidades de daño causado por el uso de este producto aumentan cuando hay viento con ráfagas, cuando la velocidad del viento aumenta, cuando la dirección del viento cambia constantemente o cuando hay otras condiciones meteorológicas que favorecen el arrastre por rocío. Al rociar, evite las combinaciones de presión y tipo de boquillas que resulten en salpicaduras o partículas finas (niebla) que es probable que se dispersen. EVITE APLICAR A UNA VELOCIDAD O PRESIÓN EXCESIVA.

NOTA: El uso de este producto de cualquier manera contraria a las indicaciones contenidas en esta etiqueta, puede resultar en lesiones a personas, animales o cultivos o pueden ocurrir otras consecuencias no deseadas.

5.1 Manejo de resistencia de malezas

GROUP	9	HERBICIDE

El glifosato, ingrediente activo en este producto, es un herbicida del Grupo 9 basado en el sistema de clasificación de efecto de Weed Science Society (La Asociación de la Ciencia de la Maleza) de los Estados Unidos. Todas las poblaciones de malezas pueden contener plantas naturalmente resistentes a los herbicidas del Grupo 9. Las especies de malezas resistentes a los herbicidas del Grupo 9 pueden tratarse con buenos resultados utilizando otro herbicida de un Grupo diferente o adoptando otras prácticas de cultivo o mecánicas.

Para reducir al mínimo la incidencia de biotipos resistentes al glifosato, respete las siguientes recomendaciones generales con respecto al manejo de malezas:

- Haga un reconocimiento del sitio de la aplicación antes y después de haber aplicado herbicidas.
- Controle las malezas cuanto antes, cuando sean todavía relativamente pequeñas.
- Incorpore otros herbicidas y prácticas de cultivo o mecánicas como parte de su sistema de control de malezas cuando sea adecuado.
- Utilice la proporción indicada en la etiqueta para las malezas más difíciles de controlar en el sitio. Evite las mezclas de tanque con otros herbicidas que reducen la eficacia de este producto (por antagonismo) o las recomendaciones de mezclas de tanque que alientan la utilización de cantidades de este producto inferiores a las recomendaciones de esta etiqueta.
- Controle las malezas omitidas e impida que echen semilla.
- Limpie los equipos antes de trasladarse de un sitio a otro para reducir al mínimo la propagación de semillas de malezas.
- Utilice semillas comerciales nuevas con la menor cantidad posible de semillas de malezas.
- Informe todo incidente por falta de rendimiento reiterado de este producto en una maleza determinada al representante de Monsanto, vendedor minorista de su localidad o agente de extensión del condado.

5.2 Manejo para biotipos resistentes al glifosato

NOTA: Es fundamental realizar las pruebas adecuadas para confirmar la resistencia de la maleza al glifosato. Póngase en contacto con su representante de Monsanto para determinar si se confirmó la resistencia de algún biotipo de maleza en particular en su región. Las recomendaciones de control para biotipos confirmados como resistentes al glifosato se dan a conocer con la publicación de etiquetas o fichas técnicas complementarias para este producto y puede solicitarlas al vendedor minorista o a su representante de Monsanto.

Debido a que no es posible determinar la existencia de nuevas malezas resistentes al glifosato hasta que se haya utilizado el producto y se cuente con la confirmación científica correspondiente, Monsanto Company no será responsable de ninguna pérdida que pudiera tener lugar en el caso de que este producto no lograra controlar de forma eficaz los biotipos de malezas resistentes al glifosato.

Siga las siguientes prácticas correctas de manejo de malezas para reducir la propagación de biotipos resistentes al glifosato confirmados:

- Si en su zona existe naturalmente un biotipo resistente, para lograr su control puede mezclar este producto en un tanque o aplicarlo secuencialmente con un herbicida debidamente aprobado con efecto diferente.
- También se pueden utilizar prácticas de control culturales y mecánicas según corresponda.
- Haga un reconocimiento de los lugares tratados después de las aplicaciones de herbicida y controle las omisiones de biotipos resistentes antes de que echen semilla.
- Limpie minuciosamente los equipos antes de abandonar los lugares que se saben que contienen biotipos resistentes.

6.0 MEZCLA

Para mezclar, almacenar y aplicar la solución de rocío de este producto, se deben usar solamente envases de acero inoxidable, fibra de vidrio, plástico o envases de acero recubiertos internamente con plástico.

NO MEZCLE, ALMACENE O APLIQUE ESTE PRODUCTO O LAS SOLUCIONES DE ROCÍO DE ESTE PRODUCTO EN ENVASES DE ACERO GALVANIZADO O SIN REVESTIMIENTO (EXCEPTO ACERO INOXIDABLE) O EN TANQUES DE ROCÍO.

Proceda con precaución para evitar el retorno del líquido a la fuente de transporte. Utilice aparatos aprobados contra el retorno en lugares donde lo exijan las normas locales o estatales.

Limpie las piezas del rociador inmediatamente después de usar este producto lavándolas bien con agua.

NOTA: EL RENDIMIENTO DEL PRODUCTO PODRÍA REDUCIRSE SI SE UTILIZA AGUA CON SEDIMENTOS DE TIERRA COMO SUSTANCIA PORTADORA O AGUA CON BARRO VISIBLE O AGUA DE ESTANQUES O ACEQUIAS QUE NO ESTÉ CLARA.

6.1 Mezcla con agua

Este producto se mezcla fácilmente con agua. Mezcle las soluciones de rocío de este producto de la siguiente manera: Ponga la cantidad correcta de agua limpia en el tanque en el cual se va a preparar la mezcla. Agregue la cantidad recomendada de este producto cuando ya está cerca de completarse el llenado con agua y mezcle con cuidado (bien). Durante la mezcla y aplicación, se puede formar espuma en la solución de rocío. Para prevenir o minimizar la formación de espuma, evite el uso de agitadores mecánicos, cierre las tuberías de retorno y de paso en la parte posterior del tanque y, en caso de que sea necesario, utilice un agente aprobado anti espuma o que elimine la espuma.

6.2 Mezclas de tanque

Este producto no proporciona control de malezas residuales. Este producto puede mezclarse en tanques con otros herbicidas para proporcionar control residual contra malezas, un espectro más amplio de control de malezas o un modo de acción alternativo. Siempre lea y siga las instrucciones de la etiqueta para todos los productos en la mezcla de tanque.

Cuando utilice este producto mezclado en tanque con otros, consulte las etiquetas de cada producto para los sitios y proporciones de aplicación aprobados. Lea y siga cuidadosamente las indicaciones y toda la información en las etiquetas de todos los herbicidas utilizados. Use conforme a las declaraciones preventivas más restrictivas de cada producto en la mezcla. Para la mezcla en tanque, puede utilizarse cualquier proporción de este producto que se encuentre dentro del rango indicado en la etiqueta.

Cuando esta etiqueta indique una mezcla de tanque con un ingrediente activo genérico como diurón, 2,4-D o dicamba, el usuario será responsable de asegurarse de que la etiqueta del producto de mezcla permita la aplicación específica.

El comprador y todos los usuarios son responsables por todas las pérdidas o daños en relación con el uso o el manejo de mezclas de este producto con herbicidas u otros materiales que no se recomiendan expresamente en esta etiqueta. La mezcla de este producto con herbicidas u otros materiales no recomendados en esta etiqueta puede dar como resultado una reducción en su rendimiento.

Este producto brinda control de las malezas emergidas indicadas en esta etiqueta. Cuando se aplican como mezcla de tanque, los herbicidas siguientes proporcionan control pre emergencia y/o post emergencia de las malezas indicadas en las etiquetas de los productos individuales.

Este producto puede ser mezclado en el tanque con los productos siguientes. Cualquier proporción de este producto que se encuentre dentro del rango recomendado en la etiqueta se puede utilizar en una mezcla de tanque con estos productos. El usuario será responsable de asegurarse de que el producto específico esté aprobado para el área de uso deseada. Consulte las etiquetas de estos productos para informarse sobre las áreas de uso y las proporciones de aplicación aprobadas. Lea y siga cuidadosamente las indicaciones y toda la información en las etiquetas de todos los herbicidas utilizados. Use conforme a las declaraciones preventivas más restrictivas de cada producto en la mezcla.

Productos de mezcla de tanque

Arsenal
Banvel
2,4-D
Garlon 3A
Garlon 4
diuron
diuron + 2,4-D
diuron + Garlon 3A
diuron + Garlon 4
Hyvar X
Hyvar X + 2,4-D
Hyvar X + Garlon 3A
Hyvar X + Garlon 4
Krovar I DF
Krovar I DF + 2,4-D
Krovar I DF + Garlon 3A
Krovar I DF + Garlon 4
Oust XP
Oust XP + 2,4-D
Oust XP + Garlon 3A
Oust XP + Garlon 4
Ronstar
Spike 80W
Spike 80W + 2,4-D
Spike 80W + Garlon 3A
Spike 80W + Garlon 4
Surflan

Cuando se usa en combinación según las recomendaciones de Monsanto Company, de ninguna manera la responsabilidad de Monsanto abarcará cualquier daño, pérdida o lesión que no sea causado directa y exclusivamente por la inclusión del producto de Monsanto en dicha aplicación combinada.

6.3 Procedimiento de mezcla de tanque

Cuando prepare mezclas de tanque, lea y siga cuidadosamente las instrucciones de la etiqueta, las declaraciones preventivas y toda la información contenida en las etiquetas de todos los productos utilizados. Agregue el producto al tanque de mezcla según las instrucciones de la etiqueta. Agite continuamente y agregue la cantidad recomendada de este producto.

Continúe agitando bien todo el tiempo durante el proceso de mezclado. Asegúrese de que los productos de la mezcla de tanque estén bien mezclados con la solución de rocío antes de agregar este producto.

Mezcle solo la cantidad de solución de rocío que puede usar el mismo día. El control de malezas puede ser inferior si las mezclas de tanque se dejan reposar toda la noche.

Continúe agitando bien todo el tiempo hasta que termine de rociar todo el contenido del tanque. Si se deja asentar la mezcla para rociar, agite bien para que la mezcla vuelva a estar en suspensión antes de continuar con el rocío.

A fin de minimizar la formación de espuma, mantenga las tuberías de retorno lo más cerca del fondo del tanque. La malla de la rejilla en la boquilla o en los coladores de las mangueras no debe ser de menos de 50 hilos.

Siempre determine con anticipación la compatibilidad de todos los productos de la mezcla de tanque indicados con el agua como sustancia portadora, mezclando antes pequeñas cantidades proporcionales. Asegúrese de que la mezcla de tanque específica esté aprobada para su aplicación en el área deseada.

6.4 Mezcla de soluciones en porcentaje

Prepare el volumen deseado de solución de rocío mezclando en agua la cantidad indicada de este producto, como se indica en la siguiente tabla:

Solución de rocío

Volumen	Cantidad de Roundup Custom para uso acuático y terrestre					
Deseado	0.5%	0.75%	1%	1.5%	4%	8%
1 gal	2/3 oz	1 oz	1.3 oz	2 oz	5 oz	10 oz
25 gal	1 pt	1.5 pt	1 qt	1.5 qt	4 qt	2 gal
100 gal	2 qt	3 qt	1 gal	1.5 gal	4 gal	8 gal

2 cucharadas soperas = 1 onza líquida

Cuando se usen rociadores tipo mochila, o para bombeo, se recomienda que la cantidad indicada en la etiqueta de este producto se mezcle con agua en un envase grande. Llene el rociador con la solución de la mezcla.

6.5 Surfactante

Este producto requiere el uso de un surfactante no iónico a menos que se especifique lo contrario. Al usar este producto, a menos que se especifique lo contrario, mezcle 2 o más cuartos de galón de un surfactante no iónico por cada 100 galones de solución de rocío. Aumentar la proporción de surfactante puede mejorar el rendimiento. Algunos ejemplos de cuándo usar una proporción mayor de surfactante incluyen, pero no se limitan a: matorrales leñosos difíciles de controlar, árboles y enredaderas, volúmenes de mareas altas, condiciones ambientales adversas, malezas difíciles de controlar, malezas bajo estrés, surfactantes con menos de un 70 por ciento de ingrediente activo, mezclas de tanque, etc.

Siempre lea y siga las instrucciones de la etiqueta del fabricante del surfactante para obtener los mejores resultados. Cumpla cuidadosamente con todas las declaraciones preventivas y toda la información adicional que aparezca en la etiqueta del surfactante.

6.6 Colorantes o tinturas

A este producto se le pueden agregar colorantes o tinturas para marcar, que sean aprobados para uso agrícola. A bajas concentraciones o diluciones, los colorantes o tinturas usados en las soluciones de rocío de este producto pueden reducir su rendimiento. Utilice los colorantes o las tinturas según las instrucciones del fabricante.

6.7 Aditivos de reducción de arrastre

Se pueden utilizar aditivos para el control del arrastre en todos los tipos de equipo, a excepción de aplicadores con enjugador y barras de esponja. Cuando se use un aditivo para el control del arrastre, lea y cumpla cuidadosamente con las declaraciones preventivas y toda la información adicional que aparezca en la etiqueta del aditivo. El uso de aditivos para el control del arrastre puede afectar la cobertura del rocío, lo que puede dar como resultado una reducción en el rendimiento.

7.0 EQUIPOS Y TÉCNICAS PARA LA APLICACIÓN

No use ningún sistema de irrigación para aplicar este producto.

APLIQUE ESTAS SOLUCIONES DE ROCÍO UTILIZANDO EQUIPOS DEBIDAMENTE MANTENIDOS Y CALIBRADOS QUE SEAN CAPACES DE ROCIAR EL VOLUMEN DESEADO.

MANEJO DEL ARRASTRE DEL ROCÍO

EVITE EL ARRASTRE. TENGA MUCHO CUIDADO CUANDO APLIQUE ESTE PRODUCTO PARA EVITAR DAÑOS A PLANTAS Y CULTIVOS DESEABLES.
No permita que la solución herbicida se vaporice, gotee, arrastre o salpique sobre la vegetación deseable ya que incluso cantidades ínfimas de este producto pueden causar daños graves o destruir el cultivo, plantas u otras áreas que no se desean tratar.
Es responsabilidad del aplicador evitar el arrastre por rocío en el lugar de aplicación. La interacción de varios factores relacionados con el clima y el equipo determina la posibilidad de arrastre por rocío. El aplicador y/o el cultivador son responsables de considerar todos estos factores al tomar decisiones.

7.1 Equipos aéreos

NO APLIQUE ESTE PRODUCTO CON EQUIPOS AÉREOS EXCEPTO BAJO LAS CONDICIONES QUE SE ESPECIFICAN EN ESTA ETIQUETA.

EN CASO DE APLICACIÓN AÉREA EN ARKANSAS Y CALIFORNIA, O EN CONDADOS ESPECÍFICOS DE ESOS ESTADOS, CONSULTE EN LA ETIQUETA COMPLEMENTARIA FEDERAL LAS INSTRUCCIONES, RESTRICCIONES Y REQUISITOS ESPECÍFICOS PARA APLICACIONES AÉREAS EN ESE ESTADO O CONDADO.

Este producto, al ser mezclado en tanques con dicamba, no se puede aplicar por aire en el estado de California. Solo se pueden utilizar formulaciones de 2,4-D amina para la aplicación aérea en California.

Use las proporciones recomendadas de este producto en 3 a 25 galones de agua por acre.

PARA EVITAR DAÑAR LA VEGETACIÓN DESEABLE ADYACENTE, SE DEBEN MANTENER ZONAS DE TRANSICIÓN ADECUADAS.

Evite la aplicación directa en masas de agua. Pueden usarse aditivos para el control del arrastre. Al utilizar un aditivo para controlar el arrastre, lea y cumpla meticulosamente con las declaraciones preventivas y toda la demás información que aparece en la etiqueta del aditivo.

Asegúrese de que la aplicación sea uniforme. A fin de evitar que queden áreas sin tratar, que la aplicación no sea uniforme o que las aplicaciones se traslapen, se deben usar marcadores adecuados.

Mantenimiento de aviones

EL CONTACTO PROLONGADO DE ESTE PRODUCTO CON PARTES DE ACERO QUE NO ESTE RECUBIERTO CON ALGUN TIPO DE PROTECCIÓN, PUEDE CAUSAR CORROSIÓN Y POSIBLEMENTE QUE LAS PARTES FALLEN. Es posible prevenir la corrosión recubriendo las partes con pintura orgánica, que cumpla con las especificaciones aeroespaciales MIL-C-38413. Al final de cada día de trabajo, para evitar la corrosión de las partes expuestas, lave muy bien el avión a fin de remover los residuos de este producto que se acumulan durante el rocío o por derramamientos. El tren de aterrizaje es extremadamente susceptible.

MANEJO DEL ARRASTRE DEL ROCÍO AEREO

Deben seguirse los siguientes requisitos de manejo del arrastre para evitar el movimiento de éste fuera del objetivo en aplicaciones aéreas a campos de cultivo agrícola. Estos requisitos no incluyen las aplicaciones forestales ni los usos en salud pública.

1. La distancia de la boquilla más externa en el brazo no debe exceder 3/4 del largo de la envergadura o rotor.
2. Las boquillas deben siempre apuntar hacia atrás, paralelas a la corriente de aire, nunca hacia abajo más de 45 grados. En los estados con reglamentos más estrictos, éstos deben observarse.

Importancia del tamaño de las gotas

La forma más eficaz de reducir la posibilidad de arrastre es la aplicación de gotitas grandes. La mejor estrategia de manejo del arrastre es la aplicación de las gotitas más grandes que provean suficiente cobertura y control. La aplicación de gotitas más grandes reduce la posibilidad de arrastre, pero no la evitará si las aplicaciones se realizan inadecuadamente o bajo condiciones ambientales desfavorables (vea las secciones de Viento, Temperatura y humedad, e Inversiones de temperatura en esta etiqueta).

Control del tamaño de las gotas

Volumen: Use boquillas de velocidad de flujo alta para aplicar el mayor volumen de rocío práctico. Las boquillas con mayores velocidades de flujo producen gotitas más grandes.

Presión: Use las presiones de rocío más bajas recomendadas para la boquilla. La presión más alta reduce el tamaño de la gotita y no mejora la penetración de la superficie. Cuando sean necesarias velocidades de flujo mayores, use boquillas con velocidad de flujo mayor en lugar de aumentar la presión.

Cantidad de boquillas: Utilice la cantidad mínima de boquillas que brinden una cobertura uniforme.

Orientación de las boquillas: Si orienta las boquillas de modo que liberen el rocío hacia atrás, en sentido paralelo a la circulación del aire, producirán gotas más grandes que si las orienta de otro modo. Cuanto más desviadas estén del plano horizontal, tanto más pequeñas serán las gotas y tanto mayor el potencial de arrastre.

Tipo de boquilla: Utilice un tipo de boquilla diseñado para la aplicación deseada. Con la mayoría de los tipos de boquillas, cuanto menor sea el ángulo de rocío tanto mayor serán las gotas. Considere el uso de boquillas de poco arrastre. Las boquillas de caudal directo orientadas directamente hacia atrás producen gotas más grandes que otros tipos de boquillas.

Longitud del brazo: En algunos esquemas de uso, la reducción de la longitud efectiva del brazo a menos de 3/4 de la envergadura o de la longitud del rotor puede reducir el arrastre aún más sin reducir el ancho de la franja.

Altura de la aplicación: Las aplicaciones no deben realizarse a una altura mayor que 10 pies por encima de la copa de las plantas más grandes, a menos que se requiera mayor altura por razones de seguridad del aeroplano. Realizar las aplicaciones a la menor altura que sea segura reduce la exposición de las gotitas a la evaporación y el viento.

Ajuste de franja

Cuando las aplicaciones se lleven a cabo con viento lateral, la franja de aspersión se desplazará a favor del viento. Por ello, en los extremos con o contra el viento del campo, el aplicador debe compensar este desplazamiento ajustando la trayectoria del aeroplano contraria al viento. La distancia de ajuste de la franja debe aumentar, cuando aumenta la posibilidad de arrastre (mayor viento, gotitas más pequeñas, etc.).

Viento

El potencial de arrastre es menor cuando la velocidad del viento es de 2 a 10 millas por hora. Sin embargo, muchos factores, incluyendo el tamaño de las gotitas y el tipo de equipo determinan la posibilidad de arrastre a una velocidad determinada. Se debe evitar la aplicación a menos de 2 millas por hora debido a los cambios de dirección del viento y la posibilidad de inversión. NOTA: El terreno local puede influir en los patrones de viento. Las personas que aplican el producto deben estar familiarizadas con los modelos locales de vientos y saber cómo afectan el arrastre.

Temperatura y humedad

Cuando se realizan aplicaciones con humedad relativa baja, fije el equipo para que produzca gotitas más grandes para compensar por la evaporación. La evaporación de gotitas es más grave cuando las condiciones son calurosas y secas.

Inversiones de temperatura

No deben realizarse aplicaciones durante una inversión de temperatura debido a que la posibilidad de arrastre es alta. Las inversiones de temperatura restringen la mezcla de aire vertical, lo que causa que pequeñas gotitas suspendidas permanezcan en una nube concentrada. Esta nube puede moverse en direcciones no predecibles debido a los vientos variables leves que son comunes durante las inversiones. Las inversiones de temperatura están caracterizadas por temperaturas en aumento con altitud y son comunes en las noches con cobertura de nubes limitada y poco o ningún viento. Comienzan a formarse cuando se mete el sol y a menudo continúan en la mañana. Su presencia puede indicarse por neblina en el suelo; sin embargo, si la neblina no está presente, las inversiones también pueden identificarse por el movimiento del humo desde una fuente del suelo o por el generador de humo de un aeroplano. El humo en capas que se mueve lateralmente en una nube concentrada (bajo condiciones de poco viento) indica una inversión, mientras que el humo que se mueve hacia arriba y se disipa rápidamente indica buena mezcla de aire vertical.

Áreas sensibles

Este producto solo se debe aplicar cuando la posibilidad de arrastre hacia zonas adyacentes susceptibles (como por ejemplo, áreas residenciales, masas de agua, hábitat conocido de especies amenazadas o en peligro de extinción, cultivos que no sean el objetivo) sea mínima (como por ejemplo, cuando el viento sople lejos de las áreas susceptibles).

7.2 Equipo de aplicación al voleo terrestre

Para aplicaciones al voleo terrestre, a menos que se indique lo contrario en esta etiqueta, en etiquetas complementarias separadas o en las Fichas Técnicas publicadas por Monsanto, use este producto en una proporción de 1.5 a 3 pintas por acre para malezas anuales, de 3 a 7.5 pintas para malezas perennes y de 3 a 7.5 pintas por acre para matorrales leñosos y árboles. Cuando se usa de acuerdo con las instrucciones de la etiqueta, este producto brinda control total o parcial de las malezas herbáceas, matorrales leñosos y árboles mencionados en la sección **TIPOS DE MALEZAS CONTROLADAS** de esta etiqueta.

Use las proporciones indicadas en la etiqueta de este producto con 3 a 40 galones de agua por acre para aplicaciones al voleo, a menos que se especifique de otra manera en esta etiqueta, en etiquetas complementarias separadas o en las Fichas Técnicas publicadas por Monsanto. A medida que la densidad de las malezas aumenta, el volumen de rocío se debe aumentar también para conseguir una cobertura completa, pero siempre dentro de los límites recomendados. A fin de evitar una niebla muy fina, seleccione la boquilla cuidadosamente. Para obtener mejores resultados con equipo a

nivel del terreno, use boquillas tipo abanico plano. Asegúrese de que las gotas del rocío se distribuyan uniformemente.

7.3 Equipo de mano

Aplique al follaje de la vegetación a ser controlada. En aplicaciones de rocío para mojar, la cobertura del rocío debe ser completa y uniforme. No rocíe hasta el punto de escurrimiento. Utilizar sólo rociadores gruesos.

Para el control de las malezas enumeradas en la sección de **Malezas anuales** de la sección **TIPOS DE MALEZAS CONTROLADAS**, aplique una solución al 0.5 por ciento de este producto a las malezas de menos de 6 pulgadas de altura o largo de los tallos. Para malezas anuales de más de 6 pulgadas de altura utilice una solución al 1 por ciento, a menos que se especifique de otro modo. Haga la aplicación antes de la formación de semillas para el pasto, o la formación de brotes para las malezas de hoja ancha.

Para obtener los mejores resultados, utilice una solución al 1.5 por ciento en plantas perennes más difíciles de controlar, enredaderas leñosas, arbustos y árboles. Para obtener mejores resultados, realice aplicaciones en plantas perennes después de la emergencia de las semillas en pastos o la formación de brotes en las malezas de hoja ancha, matorrales leñosos y árboles.

En aplicaciones de rocío dirigido de bajo volumen, use una solución del 4 al 8 por ciento de este producto para el control total o parcial de malezas anuales, malezas perennes o matorrales leñosos y árboles. La cobertura del rocío debe ser uniforme y hacer contacto con al menos el 50 al 75 por ciento del follaje. Es importante lograr la cobertura de la mitad superior de la planta para lograr los mejores resultados. Si se utiliza una boquilla de caudal directo, comience la aplicación en la parte superior de la vegetación que sea el objetivo, y rocíe de arriba hacia abajo con un movimiento de zigzag lateral. Para boquillas cónicas y tipo abanico plano, y con sopladores de vaporización manuales, aplique la niebla sobre el follaje de la vegetación que sea el objetivo. Para asegurar una cobertura de rocío adecuada, rocíe ambos lados de los matorrales leñosos y de los árboles grandes o altos cuando el follaje es espeso y denso o cuando hay varios rebrotes. Para obtener resultados óptimos, aplique este producto a árboles y matorrales leñosos en crecimiento activo después de la expansión completa de las hojas y antes de que éstas adquieran color otoñal y se caigan.

Salvo que se especifique lo contrario, use las proporciones indicadas en la tabla siguiente para diversos métodos de aplicación foliar usando equipo de mano de alto volumen, tipo mochila y similares. Cuando se usa de acuerdo con las instrucciones de la etiqueta, este producto brinda control total o parcial de las malezas herbáceas, matorrales leñosos y árboles mencionados en la sección **TIPOS DE MALEZAS CONTROLADAS** de esta etiqueta.

PROPORCIONES DE APLICACIÓN

APLICACIÓN		VOLUMEN DE ROCÍO Galones/Acre
ROCÍO PARA MOJAR		
Pistola de mano o mochila	0.5 a 1.5% por volumen	rocío para mojar*
ROCÍO DIRIGIDO DE BAJO VOLUMEN		
Mochila	4 a 8% por volumen	15 a 25**
Alto volumen modificado	1.5 a 3% por volumen	40 a 60**

* En aplicaciones de rocío para mojar, la cobertura del rocío debe ser completa y uniforme. No rocíe hasta el punto de escurrimiento.

**Las aplicaciones con mochila de rocío dirigido de bajo volumen funcionan mejor para tratar malezas y matorrales de menos de 10 pies de altura. Para malezas y matorrales más altos, las pistolas de mano de alto volumen se pueden modificar reduciendo el tamaño de la boquilla y la presión del rocío para producir un rocío dirigido de bajo volumen.

7.4 Equipo selectivo

Este producto puede ser diluido con agua, mezclado bien y aplicado usando rociadores de recirculación, aplicadores con pantalla, rociadores con capucha, aplicadores con enjugador o barras de esponja, sobre las malezas indicadas que crecen en cualquier zona acuática o lugar no cultivado indicado en esta etiqueta.

Los rociadores de recirculación dirigen la solución de rocío hacia los tipos de malezas que crecen sobre vegetación deseable, mientras que la solución de rocío que no ha sido interceptada por las malezas se recoge y retorna al tanque para volverla a usar.

EVITE EL CONTACTO DE ESTE HERBICIDA CON LA VEGETACIÓN DESEABLE, YA QUE ES PROBABLE QUE OCURRA DAÑO GRAVE O MUERTE DE LA VEGETACIÓN.

El equipo de aplicación que se utilice por encima de la vegetación deseable debe ajustarse de manera que el chorro de rocío o punto de contacto del enjugador esté al menos 2 pulgadas por encima de la vegetación deseable. Es probable que las gotas, niebla, espuma o salpicaduras de la solución de herbicida sobre la vegetación deseable provoquen decoloración, atrofia o destrucción.

Se pueden obtener mejores resultados cuando se expone una mayor cantidad de la maleza a la solución de herbicida. Las malezas sin contacto con la solución de herbicida no serán afectadas. Esto puede ocurrir en lugares donde las malezas están muy concentradas, cuando la infestación es grave o donde la altura de las malezas es variada, lo que no permite que todas sean tocadas por el herbicida. En estos casos puede ser necesario repetir el tratamiento.

Aplicadores con pantalla y con capucha

Los aplicadores con pantalla o con capucha aplican la solución de herbicida directamente sobre las malezas, al mismo tiempo que protegen la vegetación deseable, para que no sea tocada por el herbicida. Use boquillas que aseguren una cobertura uniforme en toda el área tratada. En los rociadores con pantalla, mantenga las pantallas debidamente colocadas a fin de proteger la vegetación deseada. DEBE TENER SUMO CUIDADO PARA EVITAR EL CONTACTO DE ESTE HERBICIDA CON LA VEGETACIÓN DESEABLE.

Aplicadores con enjugador y barras de esponja

Los aplicadores con enjugador son dispositivos que pasan físicamente este producto directamente a la maleza.

El equipo debe ser diseñado, mantenido y operado de manera que la solución de herbicida no haga contacto con la vegetación deseable. Opere este equipo a velocidades inferiores a las 5 millas por hora. En áreas donde la infestación de malezas es grave, se puede mejorar la eficacia reduciendo la velocidad, así se asegura que el enjugador esté siempre adecuadamente saturado. Se obtienen mejores resultados si hacen 2 aplicaciones en direcciones opuestas.

Evite las filtraciones o el goteo en la vegetación deseable. Ajuste la altura de los aplicadores a fin de asegurar un contacto adecuado con las malezas. Mantenga limpias las superficies de enjugado. Tenga en cuenta que, en terreno en declive, la solución de herbicida puede cambiar de lugar, goteando en el extremo inferior y secando las mechas en el extremo superior del aplicador con enjugador.

No use aplicadores con enjugador cuando las malezas estén mojadas.

Mezcle solamente la cantidad de solución que se usará durante el período de un día, debido a que el uso de soluciones de días anteriores puede reducir la eficacia. Inmediatamente después de usar este producto, lave bien las partes del aplicador usando bastante agua.

Se recomienda surfactante no iónico en una proporción del 10 por ciento por volumen de la solución total de herbicida para todas las aplicaciones con enjugador.

Para aplicadores de cordón o de mecha de esponja — Pueden emplearse soluciones que oscilen entre 33 al 75 por ciento de este producto en agua.

Para aplicadores de panel — Pueden emplearse soluciones que oscilen entre 33 al 100 por ciento de este producto en agua en aplicadores con enjugador de papel.

7.5 Sistemas por inyección

Este producto puede usarse con sistemas de rocío por inyección, ya sean aéreos o a nivel del terreno. Puede usarse como concentrado líquido o diluido antes de la inyección en el chorro de rocío. No mezcle este producto con concentraciones de otros productos sin diluir cuando use los sistemas por inyección, a menos que se recomiende de manera específica.

7.6 Equipo de aplicación por goteo controlado (CDA)

La proporción de este producto aplicada por acre con el equipo de aplicación por goteo controlado (CDA) no debe ser menos que la cantidad indicada en esta etiqueta cuando se aplica con un equipo al voleo convencional. Cuando se usa el equipo aplicador por goteo controlado montado en un vehículo, use de 2 a 15 galones de agua por acre.

Para controlar malezas anuales con aplicadores por goteo controlado de mano — Aplique una solución de este producto al 15 por ciento (19.25 oz de producto por galón) a razón de 2 onzas líquidas por minuto y una velocidad de caminata de 1.5 millas por hora (1 cuarto de galón por acre). Para controlar malezas perennes, aplique una solución de este producto de 15 a 30 por ciento a razón de 2 onzas líquidas por minuto y una velocidad de caminata de 0.75 milla por hora (2 a 4 cuartos de galón por acre).

Los equipos de CDA producen un patrón de rocío que es difícil de ver. Se debe tener especial cuidado para evitar que el rocío o el arrastre entre en contacto con el follaje o cualquier otra parte verde de la vegetación deseable, ya que en caso contrario, es probable que ésta sea dañada o destruida.

8.0 RECOMENDACIONES SEGÚN ÁREAS Y USO

Este producto se puede usar para controlar las malezas, los matorrales leñosos y árboles en zonas acuáticas, lugares no cultivados y cultivados mencionados en esta etiqueta.

Los lugares no cultivados incluyen aeropuertos, complejos de viviendas, centros comerciales, acequias, acequias secas, canales secos, cercas, bosques, campos de golf, áreas de restauración y manejo de hábitats, terrenos industriales, depósitos de madera, zonas de manufactura, solares municipales, zonas naturales, complejos de oficinas, áreas públicas, parques, áreas de estacionamiento, pasturas, zonas con tanques de petróleo e instalaciones de bombeo, vías de ferrocarril, tierras de pastoreo, áreas recreativas, áreas residenciales, bordes de carreteras, escuelas, áreas de almacenamiento, subestaciones, derechos de paso de servicios públicos, zonas de servicios públicos, zonas de almacenes y zonas de manejo de vida silvestre.

Cultivos incluye cítricos, caña de azúcar, césped, tepes y barbecho vegetal.

A menos que se especifique de otra manera en esta etiqueta, en etiquetas complementarias separadas o en las Fichas Técnicas publicadas por Monsanto, pueden realizarse aplicaciones para controlar cualquier maleza indicada en las tablas de proporciones de **Malezas anuales, Malezas perennes, Matorrales leñosos** y **árboles**. Consulte también la sección sobre **Equipo selectivo**.

8.1 Zonas acuáticas

Este producto se puede aplicar a malezas emergidas en todas las masas de agua fresca o salobre, que pueden ser fluyentes, no fluyentes o intermedias. Esto incluye lagos, ríos, arroyos, estanques, estuarios, diques de arroz, filtraciones, acequias de irrigación y drenaje, canales, embalses, instalaciones de tratamiento de aguas residuales, zonas de restauración y manejo de hábitats de vida silvestre.

Si hay zonas acuáticas en el área y éstas son parte del tratamiento deseado, lea y siga estas instrucciones:

Este producto no proporciona control de plantas completamente sumergidas o que tengan la mayor parte de su follaje bajo agua.

No hay restricciones sobre el uso de agua tratada con propósitos domésticos, de irrigación o recreación.

Consulte su agencia local de caza y pesca y las autoridades de control de aguas antes de aplicar el producto en aguas públicas. Pueden requerirse permisos para tratar estas aguas.

NOTA: No aplique este producto **directamente al agua** dentro de 0.5 millas aguas arriba de una entrada activa de agua potable en agua fluyente (ej., río, arroyo, etc.) o dentro de 0.5 millas aguas arriba de una entrada de agua potable en una masa de agua estancada como un lago, estanque o embalse. Para hacer aplicaciones acuáticas alrededor y dentro de 0.5 millas de las entradas activas de agua potable, hay que cerrar la entrada de agua por un período mínimo de 48 horas después de la aplicación. La entrada de agua puede abrirse antes de las 48 horas si el nivel de glifosato en el agua de entrada es menos de 0.7 partes por millón según se determine por análisis de laboratorio. Estas aplicaciones acuáticas SOLAMENTE pueden hacerse si existen fuentes de aguas alternas o estanques de retención que permitan el cierre de una entrada activa de agua potable por un período mínimo de 48 horas después de la aplicación. Esta restricción **NO** aplica al rocío excesivo intermitente e involuntario de agua en aplicaciones terrestres.

Para aplicaciones después de interrumpir el suministro de agua o en acequias secas, espere 7 días o más después del tratamiento antes de restaurar el agua para obtener un control máximo de las malezas. Aplique este producto 1 día después de interrumpir el suministro de agua para asegurar la aplicación en las malezas con crecimiento activo.

Puede ser necesario repetir las aplicaciones en las masas flotantes de vegetación. Evite que la lluvia o la estela de barcos fumigadores o recreativos laven el follaje tratado hasta después de 6 horas de la aplicación. No repita la aplicación antes de 24 horas de la aplicación inicial.

La aplicación a masas de agua en movimiento deberá hacerse mientras se viaja corriente arriba para evitar la concentración de este herbicida en el agua. Al hacer aplicaciones en las riberas, no traslape más de 1 pie en aguas abiertas. No rocíe en masas de agua donde no existan malezas. No se puede exceder la proporción máxima de aplicación de 7.5 pintas por acre en una aplicación al voleo sobre agua, con las siguientes excepciones, donde se puede aplicar cualquier cantidad indicada en la etiqueta:

- Cruces de arroyos en servidumbres de servicios públicos.
- Si las aplicaciones se limitan a menos del 20 por ciento del área total de agua tratada.

Cuando las infestaciones emergidas requieren tratamiento de la superficie total del agua embalsada, hacer las aplicaciones por franjas puede evitar la disminución de oxígeno debido a la descomposición de la vegetación. La disminución de oxígeno puede causar la muerte de los peces.

Para controlar el cordgrass (*espartina*)

La presencia de desechos y cieno en la superficie de las plantas de cordgrass (espartina) reducirá el rendimiento del producto. Puede ser necesario lavar las plantas que sean el objetivo antes de la aplicación para mejorar la absorción del herbicida. Donde el cordgrass haya sido cortado o segado antes de la aplicación, permita que vuelva a crecer bastante antes de aplicar para asegurar una intercepción y absorción adecuadas de la solución herbicida. La lluvia antes de transcurridas 2 horas o la inmersión antes de transcurridas 4 horas de la aplicación pueden reducir la eficacia.

Antes de la aplicación, inspeccione las zonas a tratar para determinar si existen bancos de mariscos dentro de la zona de tratamiento deseado. Espere hasta la recolección de los mariscos para hacer la aplicación o no recolecte los mariscos hasta pasados 14 días después de la aplicación.

Agregue de 1 a 2 cuartos de galón o más de surfactante no iónico u otro adyuvante para usar en zonas acuáticas y que sea compatible con este producto, por 100 galones de solución de rocío para aplicaciones al voleo (terrestres o aéreas) y cuando use equipo de aplicación con sensores ópticos.

No use ningún sistema de irrigación para aplicar este producto.

APLICACIÓN

En condiciones ideales de aplicación, esto es, cuando no haya desechos ni cieno en la superficie de las plantas, se pueda lograr una buena cobertura de rocío, las plantas que sean el objetivo estén en crecimiento activo y se usen los volúmenes de aplicación y las proporciones recomendadas en la etiqueta, permita un tiempo de secado de por lo menos 4 horas antes de que la marea cubra las plantas. Si no se cumple alguna de estas condiciones, programe las aplicaciones para permitir un tiempo de secado de por lo menos 5 horas antes de que la marea cubra las plantas. No lo aplique cuando la velocidad del viento en el lugar de la aplicación exceda las 10 millas por hora.

Aplicación al voleo (Terrestre): Aplique de 2 a 8 cuartos de galón de este herbicida en 5 a 100 galones de solución de rocío por acre. Para obtener los mejores resultados, se requiere cubrir por completo las concentraciones de cordgrass.

Aplicación al voleo (Terrestre/Equipo de aplicación con sensor óptico): Aplique de 2 a 8 cuartos de galón de este producto en 5 a 100 galones de solución de rocío por acre usando equipo diseñado y calibrado para solución de rocío solo cuando existan plantas de cordgrass y se detecten con los sensores ópticos. Para obtener los mejores resultados, se requiere cubrir por completo las concentraciones de cordgrass.

Mochila de mano o equipo de alto volumen: Aplique una solución de 5 a 8 por ciento de este producto. Asegúrese de obtener una cobertura completa de las concentraciones de cordgrass. No rocíe hasta el punto de escurrimiento.

Aplicación al voleo (Aérea): Aplique de 2 a 8 cuartos de galón de este herbicida en 5 a 10 galones de solución de rocío por acre. Mantenga una zona de transición de por lo menos 50 pies entre los bancos comerciales de mariscos y las zonas tratadas. La posibilidad de arrastre del rocío depende de factores relacionados con el clima y con el equipo. Las personas que aplican el producto deben estar familiarizadas con los modelos locales de vientos, observar y registrar la temperatura y la velocidad del viento antes de la aplicación y periódicamente durante la misma. Programe la aplicación para permitir por lo menos 5 horas antes de que la marea cubra las plantas tratadas.

Para aplicación foliar y al voleo en knotweed (polígono) japonés

Para controlar el knotweed (*polígono*) japonés (*Polygonum cuspidatum*), este producto puede aplicarse como una solución de rocío para mojar al 2.0% v/v con 0.5 a 2.0% v/v de un surfactante no iónico que contenga por lo menos 70% de ingrediente activo. Asegúrese de lograr una cobertura completa cuando efectúe tratamientos de rocío para mojar mediante un equipo de mano.

Para aplicaciones al voleo, aplique 3 cuartos de galón de este producto con un sistema surfactante acuático aprobado que contenga 0.1% v/v de organosilicona no iónica y 0.25% v/v de surfactante no iónico adhesivo dispersante en 3 a 40 galones por acre como aplicación al voleo.

Deje pasar por lo menos 3 días antes de remover la vegetación tratada. Este producto no proporciona control de plantas completamente sumergidas o que tengan la mayor parte de su follaje bajo agua.

Para aplicación foliar y al voleo en Oriental bittersweet

Para controlar el Oriental bittersweet (*Celastrus orbiculatus*), este producto puede aplicarse como una solución de rocío para mojar al 2.0% v/v con 0.5 a 2.0% v/v de un surfactante no iónico que contenga por lo menos 70% de ingrediente activo. Asegúrese de lograr una cobertura completa cuando efectúe tratamientos de rocío para mojar mediante un equipo de mano.

Para aplicaciones al voleo, aplique 2.25 cuartos de galón de este producto con un sistema surfactante acuático aprobado que contenga 0.1% v/v de organosilicona no iónica y 0.25% v/v de surfactante no iónico adhesivo dispersante en 3 a 40 galones por acre como aplicación al voleo.

Deje pasar por lo menos 3 días antes de remover la vegetación tratada. Este producto no proporciona control de plantas completamente sumergidas o que tengan la mayor parte de su follaje bajo agua.

Mezclas de tanque

Se pueden usar mezclas de tanque de este producto más 2,4-D amina para aumentar el espectro de vegetación controlada en zonas acuáticas. Use de 1.5 a 2 pintas de este producto más 1 a 2 cuartos de galón de 2,4-D amina (4 libras de ingrediente activo por galón, aprobado para zonas acuáticas) para controlar las malezas anuales. Use de 3 a 7.5 pintas de este producto más 2 a 4 cuartos de galón de 2,4-D amina (4 libras de ingrediente activo por galón, aprobado para zonas acuáticas) para controlar total o parcialmente las malezas perennes, matorrales leñosos y árboles.

Cuando haga mezclas de tanque, lea y siga cuidadosamente las instrucciones de la etiqueta, las declaraciones preventivas y toda la información contenida en las etiquetas de todos los productos utilizados. Use conforme a las precauciones más restrictivas de cada producto en la mezcla. Mezcle en el orden siguiente: Llene de agua hasta la mitad el tanque rociador, agregue Roundup Custom para uso acuático y terrestre, luego 2,4-D amina y finalmente el surfactante. Termine de llenar con agua el tanque rociador hasta el volumen final.

NOTA: NO MEZCLE LOS CONCENTRADOS DE ROUNDUP CUSTOM PARA USO ACUÁTICO Y TERRESTRE Y 2,4-D AMINA SIN AGUA COMO SUSTANCIA PORTADORA. NO MEZCLE LOS CONCENTRADOS DE ROUNDUP CUSTOM PARA USO ACUÁTICO Y TERRESTRE Y 2,4-D AMINA EN EL EQUIPO ROCIADOR TIPO INYECTOR DE RETORNO.

8.2 Tocones cortados

El tratamiento de tocones cortados puede hacerse en cualquier área que se indique en esta etiqueta. Este producto controla muchas especies de matorrales leñosos y árboles. Aplique este producto utilizando el equipo apropiado para asegurar la cobertura total del cámbium. Corte los árboles o sus brotes cerca de la superficie del suelo. Aplique una solución de este producto de 50 a 100 por ciento a la superficie recientemente cortada **inmediatamente después** del corte. La demora en la aplicación puede causar un rendimiento inferior. Para obtener los mejores resultados, las aplicaciones deben realizarse durante los períodos de crecimiento activo y de expansión completa de las hojas.

Para controlar el (Árbol del cielo) *Ailanthus altissima*, haga una aplicación sobre tocones cortados de acuerdo con las instrucciones en esta sección usando una mezcla de rocío de 50% de Roundup Custom para uso acuático y terrestre y 10% de Arsenal.

NO HAGA LAS APLICACIONES SOBRE TOCONES CORTADOS CUANDO LAS RAICES DE LOS MATORRALES LEÑOSOS O ÁRBOLES DESEABLES PUEDEN ESTAR INJERTADAS A LAS RAICES DE LOS TOCONES CORTADOS. Algunos retoños, tallos o árboles pueden compartir el mismo sistema de raíces. Los árboles adyacentes de edad, altura y espaciado similares pueden tener raíces compartidas. Ya sean injertados o compartidos, es probable que se dañen tallos/árboles no tratados cuando se tratan uno o más árboles que comparten raíces entre sí.

8.3 Zonas de liberación herbácea y de coníferas

Este producto se puede usar para liberación de coníferas como rocío al voleo para control total o parcial o supresión de malezas herbáceas y árboles de madera dura indicados en la sección **TIPOS DE MALEZAS CONTROLADAS** de esta etiqueta. Úselo solamente en áreas donde se han establecido coníferas por más de un año, a menos que se indique lo contrario abajo. Este producto se puede aplicar como rocío directo o usando equipo

selectivo en lugares de coníferas y árboles de madera dura para forestación, incluyendo plantaciones de árboles de Navidad y viveros dedicados a la silvicultura.

Utilice un surfactante no iónico que esté indicado para aplicaciones desde arriba en liberación de coníferas. Consulte las dosis y otras declaraciones preventivas en la etiqueta del fabricante del surfactante. Si utiliza este producto sin un surfactante se reducirá el rendimiento del herbicida.

LA APLICACIÓN SE DEBE REALIZAR DESPUÉS DE LA FORMACIÓN DE LOS BROTES FINALES DE LAS CONIFERAS EN OTOÑO O ANTES DE COMENZAR LA HINCHAZÓN DE LOS BROTES EN PRIMAVERA.

Puede ocurrir daño a las coníferas tratadas para liberación, particularmente donde se superponen los patrones de rocío o se aplican las dosis más altas. El daño puede agravarse si se hacen las aplicaciones cuando las coníferas están en crecimiento activo, o cuando están en condiciones de estrés por sequía, inundaciones, siembra incorrecta, insectos, enfermedades o daño por animales.

Para liberación de las siguientes especies de coníferas fuera del sudeste de los Estados Unidos:

Douglas Fir, Abeto (Fir), Hemlock, Pinos*, Secuoya (Redwood) de California, Spruce

* Incluye todas las especies, con excepción de los pinos Loblolly, de hoja larga, de hoja corta o Slash.

Utilice de 1.5 a 3 pintas de este producto por acre como rocío al voleo.

Para liberación de Douglas Fir y especies de pino y spruce (abeto falso) al finalizar la primera temporada de crecimiento (excepto en California), este producto se puede usar en las proporciones más bajas indicadas de 1.5 a 2.5 pintas por acre. Antes de aplicar, asegúrese de que las coníferas se hayan endurecido bien. Antes de usarlo, asegúrese de que se haya probado bien el uso seguro del surfactante no iónico en el Douglas Fir.

Para liberación del Spruce (*especies de abeto falso*) en Maine, Michigan, Minnesota, New Hampshire y Wisconsin, se pueden usar hasta 4.5 pintas por acre de este producto para el control de especies de árboles y matorrales leñosos difíciles de controlar, y se debe aplicar después de la formación de los brotes finales de las coníferas en el otoño.

No se recomienda el uso de un surfactante para la liberación de especies de Hemlock o de Secuoyas de California. Si se usa un surfactante en grupos mezclados de coníferas se puede causar daño a estas especies.

Para liberación de las siguientes especies de coníferas en el sudeste de los Estados Unidos:

Pino Loblolly, pino Slash, pino blanco del este, pino de Virginia, pino de hoja corta, pino de hoja larga

Aplique de 2.25 a 3.75 pintas de este producto por acre como rocío al voleo durante finales del verano o comienzos de otoño después que los pinos se hayan endurecido.

Si realiza aplicaciones a finales de la primera temporada de crecimiento, use 1.5 pintas por acre de este producto.

MEZCLAS DE TANQUE: Este producto se puede mezclar en tanque con los siguientes productos para liberación herbácea y de coníferas. Cuando prepare mezclas de tanque, lea y siga cuidadosamente las instrucciones de la etiqueta, las declaraciones preventivas y toda la información contenida en las etiquetas de todos los productos utilizados. Utilice conforme con las declaraciones preventivas más restrictivas de cada producto en la mezcla.

Cuando se aplica según las instrucciones, este producto más los herbicidas residuales indicados brindan control post emergencia de las malezas anuales y control o supresión de las malezas perennes indicadas en esta etiqueta, y control residual de las malezas indicadas en la etiqueta del herbicida residual. Úselo solamente en las especies de coníferas indicadas en la etiqueta de ambos productos para rocío desde arriba.

atrazine
Arsenal Applicator Concentrate
Oust XP

Finales de verano y otoño, después de la formación de brotes latentes

Para la liberación de pino jack, pino blanco y spruce blanco, aplique de 1.5 a 3 pintas de este producto, más de 1 a 3 onzas de Oust XP por acre. Para pino blanco, prepare una mezcla de tanque con 1 a 1.5 onzas de Oust XP por acre.

Para liberación de coníferas de Douglas fir, utilice de 1.5 a 2.25 pintas de este producto, más de 2 a 6 onzas de concentrado para aplicadores Arsenal por acre. Para liberación de coníferas de balsam fir (abeto de Navidad) y red spruce, utilice 3 pintas de este producto, más de 1 a 2.5 onzas de concentrado para aplicadores Arsenal por acre.

Liberación herbácea

Para liberación herbácea en primavera y principios de verano de pino loblolly, pino de Virginia y pino de hoja larga, aplique de 12 a 18 onzas líquidas de este producto con 2 a 4 onzas de Oust XP.

Para liberación de Douglas fir a comienzos de primavera, antes de la hinchazón de los brotes, aplique 1.5 pintas de este producto, más 4 libras del ingrediente activo de atrazine por acre. Deje pasar una temporada de crecimiento completa antes de la aplicación. No agregue surfactantes a este tratamiento.

8.4 Preparación del lugar para forestación

Este producto puede ser utilizado para controlar total o parcialmente matorrales leñosos, árboles y malezas herbáceas en forestaciones, y preparar o crear claros para la vida silvestre en estos lugares y para mantener los caminos de las explotaciones forestales.

Este producto puede ser utilizado para preparar el lugar antes de plantar cualquier especie de árbol, como árboles de Navidad, eucaliptos, cultivos de árboles híbridos y viveros dedicados a la silvicultura.

Para aplicaciones usando diferentes tipos de equipos, consulte la tabla de PROPORCIONES DE APLICACIÓN en la sección **EQUIPO DE MANO** de esta etiqueta.

MEZCLAS DE TANQUE: Se pueden usar mezclas de tanque de este producto para aumentar el espectro de vegetación controlada en la preparación del lugar para forestación. Cuando prepare mezclas de tanque, lea y siga cuidadosamente las instrucciones de la etiqueta, las declaraciones preventivas y toda la información contenida en las etiquetas de todos los productos utilizados. Use conforme a las precauciones más restrictivas de cada producto en la mezcla.

NOTA: Para la preparación del lugar para forestación, asegúrese de que el producto para mezclar en tanque esté aprobado antes de plantar las especies deseadas. Respete las restricciones del intervalo de plantación.

Todas las proporciones recomendadas de este producto se pueden utilizar en una mezcla de tanque con los siguientes productos para la preparación de sitios de forestación.

Arsenal Applicators Concentrate	Garlon 3A
Chopper	Garlon 4
Chopper GEN2	Oust XP
Escort	

Para el control de malezas herbáceas, use las proporciones de mezcla de tanque más bajas. Para controlar grupos densos o difíciles de matorrales leñosos y árboles, utilice las proporciones de mayor concentración recomendadas en mezcla de tanque.

A menos que se especifique de otra manera en esta etiqueta, en etiquetas complementarias separadas o fichas técnicas publicadas por Monsanto, no aplique este producto como rocío desde arriba para liberación herbácea y de coníferas para forestación.

8.5 Áreas no cultivadas y áreas industriales

Aplique en áreas como aeropuertos, complejos de viviendas, centros comerciales, acequias, acequias secas, canales secos, cercas, bosques, campos de golf, terrenos industriales, depósitos de madera, zonas de manufactura, complejos de oficinas, parques, áreas de estacionamiento, zonas con tanques de petróleo e instalaciones de bombeo, vías de ferrocarril, áreas recreativas, áreas residenciales, bordes de carreteras, granjas de semillas de césped o tepes, escuelas, áreas de almacenamiento, subestaciones, zonas de servicios públicos, zonas de almacenes y zonas de manejo de vida silvestre.

Control general de malezas, recortado de bordes y suelo limpio de malezas

Este producto se puede usar en lugares no cultivados. Puede aplicarse con cualquiera de los equipos descritos en esta etiqueta. Este producto puede usarse para el recortado de bordes alrededor de objetos, para tratamiento localizado de vegetación no deseable y para eliminar las malezas no deseables que crecen en lechos de arbustos establecidos y plantaciones ornamentales. Este producto puede usarse antes de plantar un área con plantas ornamentales, flores, césped (tepes o semillas), o antes de colocar asfalto o de comenzar un proyecto de construcción.

Repita las aplicaciones de este producto según emerjan las malezas para mantener el suelo vacío.

MEZCLAS DE TANQUE: Este producto puede ser mezclado en el tanque con los productos siguientes.

Arsenal	Garlon 3A	Ronstar 50WP
atrazine*	Garlon 4	simazine*
Barricade 65WG	Goal 2XL	Surflan AS
Certainty®	Krovar I DF	Surflan WDG
Crossbow L	Landmark II	Telar DF
dicamba*	Landmark II MP	Transline
diuron*	Outrider®	Velpar DF
Endurance	Oust XP	Velpar L
Escort XP	Plateau	2,4-D*
Gallery 75DF	Poast	

*El usuario es responsable de asegurarse de que las mezclas de tanque con productos que contienen este ingrediente activo genérico pueden realizarse siempre y cuando dichos productos estén aprobados para su aplicación.

No aplique mezclas con dicamba por aire en California. Solo se pueden utilizar formulaciones de 2,4-D amina para la aplicación aérea en California.

Mezclas de tanque para control de matorrales

MEZCLAS DE TANQUE: Se pueden usar mezclas de tanque de este producto para aumentar el espectro de control para malezas herbáceas, matorrales leñosos y árboles. Cuando prepare mezclas de tanque, lea y siga cuidadosamente las instrucciones de la etiqueta, las declaraciones preventivas y toda la información contenida en las etiquetas de todos los productos utilizados. Use conforme a las declaraciones preventivas más restrictivas de cada producto en la mezcla. Para la mezcla de tanque, puede utilizarse cualquier cantidad de este producto que se encuentre dentro del rango indicado en la etiqueta.

Para el control de malezas herbáceas, use las proporciones dosis más bajas de mezcla de tanque. Para controlar grupos densos o difíciles de matorrales leñosos y árboles, utilice las proporciones más altas recomendadas.

NOTA: Para el tratamiento de recorte lateral, este producto puede utilizase solo o en una mezcla de tanque con Garlon 4.

Arsenal	Garlon 3A
Escort XP	Garlon 4

Segado químico – Perennes

Este producto inhibe los pastos perennes indicados en esta sección y sirve como sustituto de la siega. Utilice 6 onzas líquidas de este producto por acre para el tratamiento de festuca alta, festuca fina, orchardgrass, quackgrass o reed canarygrass. Utilice 5 onzas líquidas de este producto por acre para el tratamiento del Kentucky bluegrass. Aplique los tratamientos en 10 a 40 galones de solución de rocío por acre. Aplique después que los pastos hayan alcanzado el 75 por ciento del color verde en primavera o de 7 a 10 días después de cortado cuando haya suficiente recrecimiento para proporcionar una altura deseable para regular el crecimiento.

Use solo en lugares donde se puede tolerar cierto daño o decoloración temporal en pastos perennes.

Segado químico – Plantas anuales

Para suprimir el crecimiento de algunos pastos anuales, tales como ryegrass, cebada silvestre y avena silvestre que crecen en céspedes agrestes al borde de las carreteras u otras áreas industriales, aplique de 3 a 4 onzas líquidas de este producto en 10 a 40 galones de solución de rocío por acre. Las aplicaciones se deben realizar cuando los pastos anuales crezcan activamente y antes de que las cabezuelas se encuentren en la etapa de bota del desarrollo. Los tratamientos pueden perjudicar los pastos deseables.

Césped latente (durmiente)

Use este producto para controlar o suprimir muchas malezas anuales de invierno y festuca alta para la liberación eficaz de céspedes de bermudagrass y bahiagrass durmientes. Trate solamente cuando el césped esté durmiente y antes de reverdecer en la primavera.

Aplique de 6 a 48 onzas líquidas de este producto por acre. Aplique las proporciones recomendadas en 10 a 40 galones de agua por acre. Úselo solamente en áreas donde el bermudagrass o bahiagrass son deseables y en las que puede tolerarse un poco de daño o decoloración.

Los tratamientos en exceso de 12 onzas líquidas por acre, pueden dañar o retrasar el reverdecer en las áreas donde se hace mucho mantenimiento, como campos de golf y jardines. NO aplique mezclas de tanque de este producto más Oust XP u Outrider en áreas de césped donde se hace mucho mantenimiento. Para otros usos, vea la sección **BORDES DE LAS CARRETERAS** de esta etiqueta, que ofrece las proporciones para tratamientos de bermudagrass y bahiagrass latentes.

Bermudagrass de crecimiento activo

Este producto puede usarse para controlar total o parcialmente muchas malezas anuales y perennes para liberación eficaz de bermudagrass en crecimiento activo. NO aplique más de 12 onzas líquidas de este producto por acre en áreas de céspedes de alto mantenimiento. NO aplique mezclas de tanque de este producto más Oust XP u Outrider en áreas de césped donde se hace mucho mantenimiento. Para otros usos, vea la sección **BORDES DE LAS CARRETERAS** de esta etiqueta, que ofrece las proporciones para tratamientos de bermudagrass de crecimiento activo. Utilícelo solo en áreas donde puede tolerarse algún daño temporal o descoloración.

Renovación del césped, producción de semillas o tepes

Este producto controla la mayoría de la vegetación existente antes de la renovación del césped o de establecer céspedes cultivados para semilla o tepes. Para un control máximo de la vegetación existente, demore la siembra o cobertura de césped a fin de determinar si las partes de la planta que quedaron bajo tierra vuelven a crecer. Cuando sea necesario repetir el tratamiento, permita que las plantas se desarrollen lo suficiente antes de volver a tratar. Para controlar más eficientemente los pastos de estación cálida, como bermudagrass, se debe aplicar este producto en el verano o en el otoño. En lugares donde la vegetación existente esté creciendo y el césped esté bajo un programa de siega, aplique este producto después de omitir por lo menos un corte del césped para permitir un crecimiento suficiente a fin de que el rocío sea interceptado por las plantas.
No remueva la tierra ni las partes de la planta que estén bajo tierra antes del tratamiento. La labranza o las técnicas de renovación como corte vertical, perforación o rebanado deben esperar 7 días después de la aplicación a fin de permitir la absorción adecuada en las partes de la planta que estén bajo tierra.
Pueden sembrarse los céspedes deseados siguiendo los procedimientos anteriormente mencionados.
Puede utilizarse equipo de mano para el tratamiento en sitio de vegetación no deseada que crezca en el césped existente. Puede utilizarse equipo al voleo o de mano para controlar los restos de tepes u otra vegetación no deseada después de cosechar el tepe. No utilice el césped que se cultiva para la producción de semillas o tepes para alimentar animales durante 8 semanas después de la aplicación.

8.6 Manejo del hábitat

Restauración y mantenimiento de hábitats

Utilice este producto para controlar la vegetación exótica y otro tipo de vegetación no deseada en zonas naturales y donde se realiza manejo del hábitat, incluyendo zonas de estuarios y riberas, tierras de pastoreo y refugios para la vida silvestre. Pueden hacerse aplicaciones para permitir la recuperación de las especies de plantas nativas, antes de plantar dichas especies nativas deseables, y para otros requisitos similares de control de la vegetación de amplia efectividad. A fin de eliminar selectivamente ciertas plantas indeseables, se pueden hacer aplicaciones localizadas para controlar y mejorar el hábitat.

Parcelas para alimento de la vida silvestre

Este producto se puede utilizar como tratamiento a fin de preparar el lugar antes de sembrar parcelas para alimento de la vida silvestre. Después de aplicar este producto se puede sembrar cualquier especie de alimento para la vida silvestre o se puede permitir la repoblación de la zona con especies nativas. Si debe labrar para preparar un semillero, deje transcurrir 7 días de la aplicación antes de hacerlo a fin de permitir la absorción adecuada en las partes de la planta que estén bajo tierra.

8.7 Inyección de tallos huecos

Aplique este producto a través de dispositivos de inyección manuales para administrar las cantidades recomendables de este producto a las plantas con tallo hueco identificadas que crecen en cualquiera de los lugares acuáticos o no cultivados especificados en esta etiqueta. Para el control de las siguientes plantas de tallo hueco, utilice según las instrucciones más abajo:

Castorbean (*Ricinus communis*)
Inyecte 4 ml por planta de este producto en la parte inferior del tallo principal.

Hemlock, Poison (*Conium maculatum*)
Inyecte una caña de una hoja por planta 10 a 12 pulgadas por encima de la corona de la raíz con 5 ml de una solución al 5% v/v de este producto.

Hogweed, Giant (*Heracleum mantegazzianum*)
Inyecte una caña de una hoja por planta 12 pulgadas por encima de la corona de la raíz con 5 ml de una solución al 5% v/v de este producto.

Horsetail, Field (*Equisetum arvense*)
Inyecte un segmento por encima de la corona de la raíz con 0.5 ml de este producto por tallo. Use una jeringa pequeña que pueda medir esa dosis.

Iris, Yellow Flag (*Iris Pseudocorus*)
Use una tijera de podar para cortar los tallos de las flores de 8 a 9 pulgadas por encima de la corona de la raíz. Utilice una aguja hueca que se introduce en el centro del tallo y luego se extrae lentamente a medida que inyecta 0.5 ml de este producto en cada tallo.

Knotweed, Bohemian (*Polygonum bohemicum*), **Knotweed, Giant** (*Polygonum sachalinense*), and **Knotweed, Japanese** (*Polygonum cuspidatum*)
Inyecte 5 ml por tallo de este producto en el segundo o tercer entrenudo.

Reed, Common (*Phragmites australis*)
Inyecte 5 ml por tallo de una solución al 50% de este producto en el segundo o tercer internudo o en tallos recién cortados.

Reed, Giant (*Arundo donax*)
Inyecte 6 ml por tallo de este producto en el segundo o tercer entrenudo.

Thistle, Canada (*Cirsium arvense*)
Use una tijera de podar para cortar de 8 a 9 de las plantas más altas en la etapa de brotación. Utilice una aguja hueca que se introduce en el centro del tallo y luego se extrae lentamente a medida que inyecta 0.5 ml de este producto en cada tallo.

NOTA: Basándose en la dosis máxima de uso anual de glifosato para estas áreas no cultivadas, el total combinado para todas las aplicaciones no debe exceder los 8 cuartos de galón de este producto por acre. A razón de 5 ml por tallo, 8 cuartos de galón deben tratar aproximadamente 1500 tallos.

8.8 Inyección y chorro (matorrales leñosos y árboles)

Este producto puede aplicarse por inyección o chorro para el control total o parcial de matorrales leñosos y árboles. Aplique este producto usando equipo adecuado, que debe ser capaz de penetrar en el tejido viviente. Aplique el equivalente a 1 ml de este producto por cada 2 ó 3 pulgadas de diámetro del tronco a la altura del pecho (DBH en inglés). La mejor forma de hacerlo es aplicando una solución a una concentración del 50 al 100 por ciento de este producto, con un chorro continuo alrededor del árbol o en cortes espaciados uniformemente alrededor del árbol y por debajo del nivel de las ramas. A medida que el diámetro del árbol aumenta, se obtienen mejores resultados con el chorro continuo alrededor del árbol o en cortes espaciados muy cerca entre sí alrededor del árbol. Evite las aplicaciones que permiten el escurrimiento de material cuando se chorrea alrededor del árbol o sobre los cortes en árboles que tienen la facilidad de exudar savia de los cortes. En especies de este tipo, haga los cortes de manera oblicua a fin de producir el efecto de copa y use el producto a una concentración del 100 por ciento. Para obtener mejores resultados, la aplicación debe tener lugar durante períodos de crecimiento activo y después de la expansión completa de las hojas.

8.9 Plantas ornamentales, viveros y árboles de Navidad

Post-dirigido y recortado de bordes

Este producto se puede utilizar como un rocío post-dirigido alrededor de especies ornamentales leñosas establecidas, como arborvitae, azalea, boj, manzano silvestre, eucalipto, evónimo, abeto, douglas fir, jojoba, acebo (hollies), lilo, magnolio, arce, roble, álamo, alheña, pino, spruce y tejo. Este producto también se puede utilizar para

recortado de bordes alrededor de árboles, edificios, aceras y carreteras, plantas en macetas y otros objetos de viveros.

Las plantas deseables se pueden proteger de la solución de rocío usando pantallas o cubriéndolas con cartón o con algún otro material impermeable. ESTE PRODUCTO NO SE RECOMIENDA PARA ROCIARSE DESDE ARRIBA SOBRE PLANTAS ORNAMENTALES Y ÁRBOLES DE NAVIDAD. Se debe tener mucho cuidado para que el rocío, arrastre o niebla de este producto no hagan contacto con el follaje o la corteza de las especies ornamentales establecidas.

Preparación del terreno

Este producto puede usarse antes de plantar cualquier tipo de planta ornamental, de vivero o árboles de Navidad.

Aplicaciones con enjugador

Este producto se puede usar mediante aplicadores de mecha de esponja u otro tipo de aplicadores con enjugador adecuados, para controlar total o parcialmente la vegetación indeseable alrededor de eucaliptos o álamos establecidos. Consulte la sección **Equipo selectivo** de esta etiqueta para obtener mayor información sobre el uso adecuado de los aplicadores con enjugador.

Invernaderos/cobertizos

Este producto se puede usar para controlar las malezas que estén creciendo en o alrededor de los invernaderos y cobertizos. No debe haber vegetación deseable durante la aplicación y los equipos de ventilación deben estar apagados.

8.10 Parques, áreas recreativas y residenciales

Todas las instrucciones de la sección **Áreas no cultivadas y Áreas industriales** son válidas para los parques y áreas recreativas.

Este producto se puede usar en parques, áreas recreativas y residenciales. Puede aplicarse con cualquiera de los equipos descritos en esta etiqueta para recortado de bordes alrededor de árboles, cercas y caminos, alrededor de edificios, aceras y otros objetos en estos lugares. Este producto puede usarse para tratamiento localizado de vegetación no deseable o para eliminar las malezas no deseables que crecen en lechos de arbustos establecidos y plantaciones ornamentales. Este producto puede usarse antes de sembrar un área con plantas ornamentales, flores, césped (tepes o semillas), o antes de colocar asfalto o de comenzar un proyecto de construcción.

8.11 Vías de ferrocarril

Todas las instrucciones de la sección **Áreas no cultivadas y Áreas industriales** son válidas para las vías de ferrocarril.

Suelo vacío, balastos y bordes, cruces y tratamiento localizado

Este producto puede usarse para mantener el suelo limpio de malezas en balastos y bordes de las vías de ferrocarril. Repita las aplicaciones de este producto según emerjan las malezas para mantener el suelo vacío. Este producto puede usarse para controlar las malezas altas y mejorar la línea visual en los cruces de ferrocarril y reducir la necesidad de segar a lo largo de las servidumbres de vía. Para aplicaciones en los cruces, pueden usarse hasta 80 galones de solución de rocío por acre.

MEZCLAS DE TANQUE: Este producto se puede mezclar en un tanque con los siguientes productos para tratamientos en balasto, bordes, tratamiento cruzado y suelo limpio, siempre que éstos estén aprobados para el área de uso deseada.

Arsenal	Hyvar X-L	Spike 80DF
atrazine*	Krovar I DF	Telar DF
dicamba*	Oust XP	Transline
Escort XP	Outrider	Velpar DF
Garlon 3A	Sahara DG	Velpar L
Garlon 4	simazine*	2,4-D*
Hyvar X		

*Pueden realizarse mezclas de tanque con productos que contengan este ingrediente activo siempre y cuando dichos productos estén aprobados para su aplicación. El usuario es responsable de garantizar que en la etiqueta del producto utilizado en la mezcla estén permitidas las aplicaciones específicas cuando se realicen mezclas de tanque con un ingrediente activo genérico.

Control de matorrales

Este producto se puede usar para controlar matorrales leñosos y árboles en las servidumbres de vías de ferrocarril. Aplique de 3 a 8 cuartos de galón de este producto por acre para aplicaciones diseminadas, usando boquillas tipo brazo o sin brazo. Pueden usarse hasta 80 galones de solución de rocío por acre. Aplique una solución de 0.75 a 1.5 por ciento de este producto cuando haga aplicaciones de rocío para mojar del alto volumen. Aplique una solución de 4 a 8 por ciento de este producto cuando haga aplicaciones de rocío dirigido de bajo volumen para tratamientos localizados.

MEZCLAS DE TANQUE: Este producto se puede mezclar en un tanque con los siguientes productos para un mejor control de matorrales leñosos y árboles, siempre y cuando estos productos estén aprobados para el área de uso deseada.

Arsenal	Krenite	Transline
Escort XP	Telar DF	Vanquish
Garlon 3A	Tordon K	Velpar DF
Garlon 4	Tordon 22K	Velpar L

Puede obtener instrucciones adicionales en la sección **Áreas no cultivadas y Áreas industriales** bajo Mezclas de tanque para control de matorrales.

Mantenimiento de Bermudagrass

Este producto puede usarse para controlar total o parcialmente muchas malezas anuales y perennes para el mantenimiento eficaz de bermudagrass en crecimiento activo. Aplique de 12 a 36 onzas líquidas de este producto en un máximo de 80 galones de solución de rocío por acre. Para tratar malezas anuales que tengan menos de 6 pulgadas de altura (o el largo de los tallos), use las proporciones más bajas. Use la proporción más alta a medida que las malezas aumenten de tamaño o cuando estén cerca de la floración o de la formación de semillas. Estas proporciones también controlan parcialmente las siguientes especies perennes:

Bahiagrass	Fescue, tall	Trumpetcreeper
Bluestem, silver	Johnsongrass	Vaseygrass

MEZCLAS DE TANQUE: Este producto puede ser mezclado con Oust XP. Si se mezcla en tanques, no use más de 12 a 36 onzas líquidas de este producto con 1 a 2 onzas de Oust XP por acre. Para tratar malezas anuales listadas en este etiqueta y en las etiqueta de Oust XP, que tengan menos de 6 pulgadas de altura (o el largo de los tallos), use las proporciones más bajas de cada producto. Use la proporción más alta a medida que las malezas anuales aumenten de tamaño o cuando estén cerca de la floración o de la formación de semillas. Estas proporciones también controlan parcialmente las siguientes malezas perennes:

Bahiagrass	Dock, curly	Trumpetcreeper
Blackberry	Dogfennel	Vaseygrass
Bluestem, silver	Fescue, tall	Vervain, blue
Broomsedge	Johnsongrass	
Dallisgrass	Poorjoe	
Dewberry	Raspberry	

Úselo solamente en bermudagrass que esté bien establecido. Como resultado del tratamiento, el bermudagrass puede sufrir deterioro, pero volverá a crecer si se riega. No se recomienda repetir el tratamiento en la misma estación, ya que esto puede ocasionar daños graves al bermudagrass.

8.12 Bordes de carreteras

Todas las instrucciones de la sección **Áreas no cultivadas y Áreas industriales** son válidas para los bordes de las carreteras.

Tratamiento de bordes

Aplique este producto en los bordes de las carreteras como rociadores con brazos, rociadores con brazos y pantallas, boquillas concentradas de alto volumen, equipo de mano y equipos similares.

Barandas y otros obstáculos para la siega

Este producto puede ser usado para controlar las malezas que crecen debajo de las barandas y alrededor de la señalización y otros objetos en los bordes de las carreteras.

Tratamiento localizado

Este producto puede ser usado como tratamiento localizado para controlar la vegetación no deseada que crece a lo largo de los bordes de las carreteras.

MEZCLAS DE TANQUE: Este producto puede mezclarse en tanque con los siguientes productos para tratamientos de bordes, barandas, localizados y de suelo limpio siempre y cuando dichos productos estén aprobados para su uso en dichos sitios. Consulte las etiquetas de este producto y siga cuidadosamente las declaraciones preventivas y toda la información en las etiquetas de todos los herbicidas utilizados. Use conforme a las declaraciones preventivas más restrictivas de cada producto en la mezcla.

atrazine*	Landmark MP	Sahara DG
Crossbow L	Landmark XP	simazine*
dicamba*	Oust XP	Surflan AS
diuron*	Outrider	Surflan WDG
Escort XP	pendimethalin*	Telar DF
Endurance	Plateau	Velpar DF
Gallery 75 DF	Plateau DG	Velpar L
Krovar I DF	Poast	2,4-D*
Landmark II MP	Ronstar 50 WSP	

* Pueden realizarse mezclas en tanque con productos que contienen este ingrediente activo genérico siempre y cuando dichos productos estén aprobados para su aplicación. El usuario es responsable de asegurarse que la mezcla de productos permite la aplicación específica.

Liberación de Bermudagrass y Bahiagrass

Aplicaciones cuando estén latentes (durmientes)

Este producto puede usarse para controlar total o parcialmente muchas malezas anuales de invierno y festuca alta para el mantenimiento eficaz de bermudagrass y bahiagrass latentes. Trate solamente cuando el césped esté durmiente y antes de reverdecer en la primavera. Este producto puede mezclarse en tanque con el herbicida Outrider u Oust XP para el control residual. Las mezclas de tanque de este producto con Oust XP pueden retrasar el reverdecer.

Para obtener mejores resultados con malezas anuales de invierno, haga el tratamiento cuando las plantas estén en una etapa temprana de crecimiento (menos de 6 pulgadas de altura) después de que la mayoría haya germinado. Para obtener mejores resultados con festuca alta, haga el tratamiento cuando la festuca esté en o después de su etapa de 4 a 6 hojas.

Aplique de 6 a 48 onzas líquidas de este producto en una mezcla de tanque con 0.75 a 1.33 onzas de herbicida Outrider por acre. Lea y siga todas las instrucciones de la etiqueta del herbicida Outrider.

MEZCLAS DE TANQUE: Aplique de 6 a 48 onzas líquidas de este producto por acre, solo o en mezcla de tanque con 0.25 a 1 onza de Oust XP por acre. Aplique las dosis recomendadas en la etiqueta en 10 a 40 galones de agua por acre. Úselo solamente en áreas donde el bermudagrass o bahiagrass son deseables y en las que puede tolerarse un poco de daño o decoloración. Para evitar que el reverdecer se retrase y para minimizar el daño, no agregue más de 1 onza de Oust XP por acre sobre bermudagrass y no más de 0.5 onzas de Oust XP por acre sobre bahiagrass, y evite el tratamiento cuando estos pastos se encuentren en estado semilatente.

Bermudagrass de crecimiento activo

Este producto puede usarse para controlar total o parcialmente muchas malezas anuales y perennes para liberación eficaz de bermudagrass en crecimiento activo. Aplique de 12 a 36 onzas líquidas de este producto en 10 a 40 galones de solución de rocío por acre. Para tratar malezas anuales que tengan menos de 6 pulgadas de altura (o el largo de los tallos), use las proporciones más bajas. Use la proporción más alta a medida que las malezas aumenten de tamaño o cuando estén cerca de la floración o de la formación de semillas. Estas proporciones también controlan parcialmente las siguientes especies perennes:

Bahiagrass	Fescue, tall	Trumpetcreeper
Bluestem, silver	Johnsongrass	Vaseygrass

MEZCLAS DE TANQUE: Este producto puede ser mezclado en tanque con el Outrider para el control total o parcial de Johnsongrass y otras malezas indicadas en la etiqueta del Outrider. Use de 6 a 24 onzas líquidas de este producto con 0.75 a 1.33 onzas de Outrider. Utilice las proporciones más altas de ambos productos para el control de malezas perennes o anuales que tengan una altura superior a 6 pulgadas.

Este producto puede ser mezclado con Oust XP. Si se mezcla en tanques, no use más de 12 a 24 onzas líquidas de este producto con 1 a 2 onzas de Oust XP por acre. Para tratar malezas anuales listadas en este etiqueta y en las etiqueta de Oust XP, que tengan menos de 6 pulgadas de altura (o el largo de los tallos), use las proporciones más bajas de cada producto. Use la proporción más alta a medida que las malezas anuales aumenten de tamaño o cuando estén cerca de la floración o de la formación de semillas. Estas proporciones también controlan parcialmente las siguientes malezas perennes:

Bahiagrass	Dock, curly	Poorjoe
Bluestem, silver	Dogfennel	Trumpetcreeper
Broomsedge	Fescue, tall	Vaseygrass
Dallisgrass	Johnsongrass	Vervain, blue

Úselo solamente en bermudagrass que esté bien establecido. Como resultado del tratamiento, el bermudagrass puede sufrir deterioro, pero volverá a crecer si se riega. No se recomienda repetir el tratamiento de mezcla de tanque en la misma estación, ya que esto puede ocasionar daños graves al bermudagrass.

Bahiagrass de crecimiento activo

Para suprimir el crecimiento vegetativo e inhibir la formación de semillas de bahiagrass durante aproximadamente 45 días, aplique 4 onzas líquidas de este producto en 10 a 40 galones de agua por acre. Aplique de 1 a 2 semanas después de reverdecer completo o después de cortar a una altura uniforme de 3 a 4 pulgadas. Esta aplicación debe realizarse antes de la emergencia de las semillas.

Para suprimir hasta por 120 días, aplique 3 onzas líquidas de este producto por acre, y a continuación una aplicación de 2 a 3 onzas líquidas por acre unos 45 días más tarde. No haga más de 2 aplicaciones al año.

Este producto se puede utilizar para el control total o parcial de Johnsongrass y otras malezas indicadas en la etiqueta de Outrider, en bahiagrass en crecimiento activo. Use de 1.5 a 3.5 onzas líquidas de este producto con 0.75 a 1.33 onzas de Outrider. Utilice las proporciones más altas de ambos productos para el control de malezas perennes o anuales que tengan una altura superior a 6 pulgadas. Utilice solo en bahiagrass bien establecido.

Se puede utilizar la mezcla de tanque de este producto con Oust XP. Aplique 4 onzas líquidas de este producto con 1/4 onzas de Oust XP por acre, 1 a 2 semanas después de la primera siega de la primavera. Haga solamente una aplicación al año.

8.13 Sitios de servicios públicos

Este producto puede ser utilizado a lo largo de servidumbres de paso de energía eléctrica, conductos y teléfonos y en otros lugares asociados con estas servidumbres de paso, como subestaciones, bordes de carreteras, vías de ferrocarril o servidumbres de paso similares para servicios públicos. Úselo para preparar o establecer zonas de reserva de vida silvestre dentro de estos sitios, mantener los caminos de acceso y para el recorte lateral a lo largo de las servidumbres de paso.

MEZCLAS DE TANQUE: Se pueden usar mezclas de tanque de este producto para aumentar el espectro de control para malezas herbáceas, matorrales leñosos y árboles. Para la mezcla de tanque puede utilizarse cualquier cantidad de este producto que se encuentre dentro del rango indicado en la etiqueta.

Para el control de malezas herbáceas, use las proporciones más bajas de mezcla en tanque. Para controlar grupos densos o difíciles de matorrales leñosos y árboles, utilice las proporciones más altas recomendadas.

NOTA: Para el tratamiento de recorte lateral, este producto puede utilizase solo o en una mezcla de tanque con Garlon 4.

Arsenal	Krenite	Surflan AS
atrazine*	Krovar I DF	Surflan WDG
dicamba*	Oust XP	Telar DF
diuron*	Outrider	Transline
Endurance	pendimethalin*	Vanquish
Escort XP	Plateau	Velpar DF
Garlon 3A**	Sahara DG	Velpar L
Garlon 4	simazine*	2,4-D*

* Pueden realizarse mezclas de tanque con productos que contienen este ingrediente activo genérico siempre y cuando dichos productos estén aprobados para su aplicación. El usuario es responsable de asegurarse que la mezcla de productos permita la aplicación específica.

** Asegúrese de mezclar bien el Garlon 3A con agua según las instrucciones antes de agregar este producto. Para evitar problemas de incompatibilidad de rocío, agite la mezcla del rocío en el momento que agregue este producto.

Suelo limpio y recortado de bordes

Este producto puede ser utilizado en áreas de servicios públicos y subestaciones para el mantenimiento del suelo limpio, el recortado de bordes alrededor de objetos, y el tratamiento localizado de vegetación no deseable, así como para eliminar las malezas no deseables que crecen en lechos de arbustos establecidos o plantaciones ornamentales. Este producto puede utilizarse antes de sembrar un área de servicios públicos con plantas ornamentales, flores y césped (panes de césped o semillas) o antes de comenzar un proyecto de construcción.

Repita las aplicaciones de este producto según emerjan las malezas para mantener el suelo vacío.

MEZCLAS DE TANQUE: Mezcle en tanque con los siguientes productos. Consulte las etiquetas de cada producto para los sitios y proporciones de aplicación aprobados. Lea y siga cuidadosamente las declaraciones preventivas toda la información en las etiquetas de todos los herbicidas utilizados. Use conforme a las declaraciones preventivas más restrictivas de cada producto en la mezcla.

Arsenal	Garlon 3A	Poast
atrazine*	Garlon 4	Ronstar 50WP
Barricade 65WG	Goal 2XL	simazine*
Certainty	Krovar I DF	Surflan AS
Crossbow L	Landmark II MP	Surflan WDG
dicamba *	Landmark II	Telar DF
diuron*	Outrider	Transline
Endurance	Oust XP	Velpar DF
Escort XP	pendimethalin*	Velpar L
Gallery 75DF	Plateau	2,4-D*

*Pueden realizarse mezclas de tanque con productos que contienen este ingrediente activo genérico siempre y cuando dichos productos estén aprobados para su aplicación. El usuario es responsable de asegurarse que la mezcla de productos permita la aplicación específica.

9.0 PASTURAS Y TIERRAS DE PASTOREO

9.1 Pasturas

CULTIVOS CLASIFICADOS: Bahiagrass, Bermudagrass, Bluegrass, Brome, Fescue, Guineagrass, Kikuyugrass, Orchardgrass, Pangola grass, Ryegrass, Timothy, Wheatgrass.

Antes de sembrar, pre emergencia, renovación de pasturas

Este producto se puede aplicar antes de la siembra o emergencia de pastos para forraje. Además, este producto se puede utilizar para controlar especies de pasturas perennes indicadas en esta etiqueta antes de resembrar.

Si las proporciones de aplicación totales equivalen a 4.5 pintas por acre o menos, no se requiere período de espera entre el tratamiento y la utilización como alimento o pastoreo del ganado. Si la proporción es mayor de 4.5 pintas por acre, retire el ganado doméstico antes de aplicar y espere 8 semanas después de haber efectuado la aplicación para utilizar como pastura o para cosechar.

Tratamiento localizado, aplicaciones de enjugado por encima

Se puede aplicar este producto como tratamiento localizado o con aplicadores con enjugador en pasturas. Se pueden hacer aplicaciones en la misma área con intervalos de 30 días.

Para tratamientos localizados o métodos de aplicación de enjugado en los que se utilicen dosis de 4.5 pintas por acre o menos, se puede tratar todo el campo o una parte. Cuando se realicen tratamientos localizados o con aplicadores con enjugador utilizando dosis superiores a los 4.5 pintas por acre, no se podrá tratar más de 10 por ciento del total de la pastura cada vez. Para lograr el mejor rendimiento, retire el ganado doméstico antes de la aplicación y espere 7 días después de la aplicación antes de permitir el pastoreo del ganado o cosechar.

Control de malezas post emergencia (Tratamientos al voleo)

Este producto se puede aplicar en pasturas para suprimir el crecimiento competitivo y la producción de semillas de malezas anuales y vegetación no deseable. Para aplicaciones selectivas con equipo de rocío al voleo, aplique 9 a 12 onzas líquidas de este producto por acre al comenzar la primavera antes de que los pastos perennes deseables comiencen la actividad e inicien el crecimiento vegetativo. Se pueden efectuar aplicaciones al finalizar el otoño después de que los pastos perennes lleguen al período de inactividad.

Se producirá cierta atrofia de los pastos perennes si las aplicaciones al voleo se realizan cuando las plantas están activas. No se necesita período de espera entre la aplicación

y el pastoreo o para cosechar como alimento. El uso de proporciones mayores causará reducciones en el grupo de plantas. No aplique más de 4.5 pintas por acre por año en pastos de pastura, excepto en casos de renovaciones. Si debe resembrar debido a una severa reducción en el grupo de plantas, espere 30 días después de la aplicación para sembrar cualquier cultivo que no esté indicado en esta etiqueta.

9.2 Tierras de pastoreo

Este producto controla o inhibe muchas malezas anuales que crecen en tierras de pastoreo de pastos perennes de estaciones fría y cálida.

Para controlar satisfactoriamente e impedir la invasión de malezas de pastos anuales en tierras de pastoreo resulta imprescindible prevenir la producción de semillas de malezas. La repetición de aplicaciones en años subsiguientes debería eliminar la mayor parte de las semillas viables.

Se deberá demorar la utilización de las superficies tratadas como pastura para alentar el crecimiento de las plantas perennes deseables. Se alentará una transición satisfactoria si se permite la floración y el resembrado de las plantas perennes deseables en la zona tratada.

Aplique de 9 a 12 onzas líquidas de este producto por acre para controlar o inhibir muchas malezas, incluidas downy brome, cheatgrass, rye (centeno) para cereal y jointed goatgrass en tierras de pastoreo. Aplique cuando la mayoría de las plantas de brome se encuentren en la etapa de floración temprana y antes de que las plantas, incluidas las cabezuelas, cambien de color. Si permite el crecimiento secundario de malezas en la primavera después de las lluvias reducirá aún más la reserva de semillas y alentará la conversión del pasto perenne en lugares con malezas. Se recomienda realizar una aplicación en otoño en aquellas zonas donde la humedad en primavera es habitualmente limitada y la germinación de otoño permite el crecimiento de malezas.

En el caso de plantas de medusahead, aplique 12 onzas líquidas de este producto por acre en la etapa de 3 hojas. La demora de la aplicación después de esta etapa causará un control inferior o inaceptable. El quemado controlado puede ser útil para eliminar la capa seca superficial producida por tallos de gramíneas en descomposición lenta antes de la aplicación. Permita que las plantas broten nuevamente antes de rociar después de haber quemado. Puede ser necesario repetir las aplicaciones en años subsiguientes para eliminar el banco de semillas antes de restablecer los pastos perennes deseables en tierras de pastoreo dominadas por medusahead.

Se podría producir una ligera decoloración de los pastos deseables pero éstos reverdecerán y volverán a crecer en tierra húmeda a medida que desaparezcan los efectos de este producto. No utilice sulfato de amonio cuando rocíe pastos de tierras de pastoreo con este producto. No se requiere período de espera entre el tratamiento y la utilización como alimento o pastura para el ganado.

10.0 APLICACIONES EN CULTIVOS

10.1 CÍTRICOS

Para usarse en Florida y Texas en Calamondin, Chironja, Cidro (citron), Híbridos Cítricos, Toronja, Kumquat, Limón, Lima, Mandarina (tangerine), Naranjas (todas), Pummelo, Mandarina Satsuma, Tangelo (ugli), Tangor.

Este producto se puede aplicar como rocío al voleo antes de sembrar (preparación del lugar), en medios de hileras (entre árboles, arbustos o enredaderas), franjas (en las hileras de árboles, arbustos o enredaderas), rociadores con pantalla, aplicaciones con enjugadores, rocío dirigido o tratamiento localizado.

Se pueden realizar aplicaciones con equipo con brazos, aplicadores por goteo controlado (CDA), rociadores con pantalla, bastones de mano y de alto volumen, lanzas, pistolas para huertos o con aplicadores de enjugadores, excepto como se indique.

Las siguientes instrucciones son específicas para Florida y Texas.

Para quemar o controlar las malezas indicadas abajo, aplique las proporciones recomendadas de este producto en 3 a 30 galones de agua por acre. Cuando la maleza tiene follaje denso, utilice de 10 a 30 galones de agua por acre.

Para goatweed, aplique de 3 a 4.5 pintas de este producto por acre. Aplique en 20 a 30 galones de agua por acre cuando las plantas están en crecimiento activo. Use 3 pintas por acre cuando las plantas tengan menos de 8 pulgadas de altura, y 4.5 pintas por acre cuando las plantas tengan más de 8 pulgadas de altura. Si la goatweed tiene más de 8 pulgadas de altura, agregar Krovar I o Karmex puede mejorar el control. Consulte las etiquetas de los productos individuales para información específica sobre cultivos, dosis, restricciones geográficas y declaraciones preventivas.

Malezas perennes:

S = Supresión B = Quema PC = Control parcial C = Control

ROUNDUP CUSTOM PARA USO ACUÁTICO Y TERRESTRE PROPORCIÓN POR ACRE

ESPECIES DE MALEZAS	1.5 PT	3 PT	4.5 PT	7.5 PT
Bermudagrass	B	--	PC	C
Guineagrass				
Texas y Florida Ridge	B	C	C	C
Florida Flatwoods	--	B	C	C
Paragrass	B	C	C	C
Torpedograss	S	--	PC	C

Permita como mínimo 1 día entre la última aplicación y la cosecha de cultivos cítricos. Para huertos de cidro (citron), aplique solamente como rocíos dirigidos.

10.2 Caña de azúcar

Este producto puede aplicarse en barbecho, antes de sembrar, pre emergencia o al momento de sembrar usando rociadores con capucha, rociadores con pantalla o aplicación con enjugador en medios de hileras, como tratamiento después de la cosecha, como tratamiento localizado o tratamiento foliar para regular el crecimiento de las plantas.

Antes de sembrar, pre emergencia, al momento de sembrar

Aplique este producto en o alrededor de los cultivos de caña de azúcar o en los campos antes de la emergencia de las cañas. No aplique a la vegetación en o alrededor de acequias, canales o estanques que contengan agua para riego.

Tratamiento localizado

Aplique este producto como tratamiento localizado en caña de azúcar. Para el control de la caña de azúcar espontánea o enferma, prepare una solución de 0.75 por ciento de este producto en agua y rocíe hasta mojar el follaje de la vegetación a controlar. La caña de azúcar espontánea o enferma debe tener por lo menos 7 hojas nuevas. Evite el contacto del rocío con las plantas de caña sanas porque puede causar daños graves o destruirlas. No utilice el follaje de la caña de azúcar tratada para alimentar animales después de la aplicación.

Tratamientos de barbecho

Este producto se puede utilizar como sustituto de labranza en campos en barbecho entre cultivos de caña de azúcar. Este producto también puede utilizarse para eliminar el último rastrojo de retoños de caña. Para quitar los últimos rastrojos de retoños de caña aplique de 6 a 7.5 pintas de este producto por acre en 10 a 40 galones de agua por acre a los nuevos brotes de al menos 7 nuevas hojas. Para labrar, deje transcurrir un lapso de 7 o más días después de la aplicación. Puede usar equipo de aplicación aérea. Pueden hacerse aplicaciones de hasta 4.5 pintas por acre con aplicación aérea en zonas en barbecho cuando hay suficiente zona de transición para evitar lesiones debido al arrastre a cultivos adyacentes. Se pueden emplear mezclas de tanque con 2,4-D y dicamba.

Rociadores con capucha

Aplique este producto usando rociadores con capucha para controlar las malezas entre las hileras de caña de azúcar. Consulte la sección **EQUIPOS Y TÉCNICAS PARA LA APLICACIÓN** de esta etiqueta para obtener instrucciones de uso adicionales.

No permita el contacto de las malezas tratadas con el cultivo. Las gotas, la niebla, la espuma o las salpicaduras de la solución de herbicida que se depositan en la vegetación deseable pueden causar decoloración, atrofia o destrucción. Este daño es responsabilidad exclusiva de la persona encargada de la aplicación del producto.

Tratamiento foliar para regular el crecimiento de las plantas

No siembre en cultivos subsiguientes aparte de los siguientes durante 30 días después de la aplicación: Maíz (todos), soya, sorgo (millo), algodón, alfalfa, frijoles (todos), pasto para forraje, papas (irlandesas, dulces), trigo.

Cuando se aplica según las instrucciones en las condiciones descritas, este producto acelerará la maduración y extenderá el período de nivel alto de sacarosa en la caña de azúcar. Es eficaz en la caña de azúcar tanto de bajo tonelaje como de gran tonelaje. Como resultado de la desecación de la hoja, se puede esperar mejor quema de los desechos. De 2 a 3 semanas después de la aplicación, este producto puede causar que las hojas pasen de un ligero color amarillento a marrón pronunciado y se sequen, y los entrenudos superiores se acorten; puede morir el eje. La mayor parte del aumento de sacarosa se concentra en los nódulos superiores del tallo de la caña tratada. Para recuperar la mayor cantidad de azúcar donde se practica el descopado, durante la cosecha, pode en la base de la cuarta hoja. Antes de la aplicación, consulte con la autoridad de caña de azúcar en su estado o con su representante local de Monsanto acerca del grado de respuesta de sacarosa anticipado de la variedad de caña de azúcar a tratar.

Vea lo siguiente para las proporciones y los tiempos de aplicación en el estado donde se harán las aplicaciones. **NOTA:** Al tratar caña de azúcar bajo condiciones de maduración adversas, o cuando trate variedades menos receptivas, utilice la proporción más elevada dentro del rango recomendado.

FLORIDA—Aplique de 6 a 14 onzas líquidas de este producto por acre de 3 a 5 semanas antes de la cosecha de la ÚLTIMA CAÑA SOCA SOLAMENTE.

HAWAII—Aplique de 10 a 24 onzas líquidas de este producto por acre de 4 a 10 semanas antes de la cosecha.

LOUISIANA—Aplique de 4 a 14 onzas líquidas de este producto por acre de 3 a 7 semanas antes de la cosecha de CAÑA SOCA SOLAMENTE.

PUERTO RICO—Aplique 6 onzas líquidas de este producto por acre de 3 a 5 semanas antes de la cosecha de CAÑA SOCA SOLAMENTE.

TEXAS—Aplique de 6 a 14 onzas líquidas de este producto por acre de 3 a 5 semanas antes de la cosecha de CAÑA SOCA SOLAMENTE.

La aplicación de este producto puede iniciar el desarrollo de los ojos en los retoños. Este producto no puede aumentar el contenido de sacarosa de la caña de azúcar en condiciones de buena maduración natural. No aplique a la caña de azúcar que se cosechará para la semilla. No utilice el forraje de la caña de azúcar tratada para alimentar animales después de la aplicación.

10.3 Tratamientos de barbecho químico

Aplique este producto durante intervalos de barbecho que preceden a la siembra, antes de sembrar o trasplantar, al momento de sembrar o pre emergencia de los cultivos vegetales.

Al aplicar este producto antes de trasplantar o de la siembra directa de cultivos vegetales en mantillo plástico, hay que asegurarse de eliminar los residuos de este producto del

plástico antes de sembrar para evitar daños al cultivo. Los residuos se pueden eliminar con una sola aplicación de agua de 0.5 pulgadas, ya sea por lluvia o con un sistema de riego por aspersión. Asegúrese de que el agua del enjuague salga del mantillo plástico y no entre en los agujeros para trasplantar. Las aplicaciones realizadas en la emergencia provocarán daños o serán fatales para las plántulas emergidas.

Evite el contacto de este herbicida con follaje, brotes verdes o tallos, cortezas, raíces expuestas (incluidas las que emergen del mantillo plástico) o frutos de cultivos, ya que podría ocasionar daños severos o destrucción de los cultivos. Las aplicaciones después de la cosecha o en barbecho deberán realizarse por lo menos 30 días antes de sembrar cualquier cultivo que no se mencione en la etiqueta.

10.4 Producción de panes de césped o panes de césped comercial

Antes de sembrar, pre emergencia, al momento de sembrar, renovación, preparación del lugar

Este producto controla la mayoría de la vegetación existente antes de la renovación del césped o de establecer céspedes cultivados para semilla o tepes. Realice las aplicaciones antes, durante o después de sembrar o para renovación. Para lograr máximo control de la vegetación existente, demore la siembra para determinar si se produce algún crecimiento de partes de plantas subterráneas que no fueron alcanzadas por el tratamiento. En lugares donde la vegetación existente esté creciendo y el césped esté bajo un programa de siega, aplique este producto después de omitir por lo menos un corte del césped para permitir un crecimiento suficiente a fin de que el rocío sea interceptado por las plantas. Cuando sea necesario repetir el tratamiento, permita que las plantas se desarrollen lo suficiente antes de volver a tratar. Para pastos de estación cálida, como bermudagrass, las aplicaciones en verano u otoño brindan el mejor control. Se pueden utilizar equipos al voleo para controlar restos de tepes o de otra vegetación no deseada después de cosechar los tepes.

No remueva la tierra ni las partes de la planta que estén bajo tierra antes del tratamiento. La labranza o las técnicas de renovación como corte vertical, perforación o rebanado deben esperar 7 días después de la aplicación a fin de permitir la absorción adecuada en las partes de la planta que estén bajo tierra. Si las dosis de aplicación ascienden a 72 onzas líquidas por acre o menos, no se requiere un período de espera entre el tratamiento y la alimentación o pastoreo del ganado. Si la proporción es mayor de 4.5 pintas por acre, retire el ganado doméstico antes de aplicar y espere 8 semanas después de haber efectuado la aplicación para utilizar como pastura o para cosechar. Para todos los cultivos no indicados en esta etiqueta, las aplicaciones se deben realizar al menos 30 días antes de sembrar. Las aplicaciones deben efectuarse antes de la emergencia del cultivo para evitar daños.

Rociadores con pantalla

Aplique de 1.5 a 4.5 pintas de este producto en 10 a 20 galones de agua por acre para controlar las malezas entre las hileras de semilla para pasto. La siembra uniforme en hileras rectas facilita las aplicaciones con rociador con pantalla. Se obtienen mejores resultados cuando el cultivo de semilla de pasto es suficientemente pequeño como para pasar con facilidad por las pantallas de protección. Para instrucciones adicionales, vea **Aplicadores con pantalla y con capucha** en la sección **Equipo selectivo.**

Cualquier tipo de contacto de este producto con vegetación que no se desea incluir en el tratamiento podría causar daño. Este daño es responsabilidad exclusiva de la persona encargada de la aplicación del producto.

Aplicaciones con enjugador por la parte superior

Los aplicadores se deben ajustar de manera que el punto de contacto del enjugador esté al menos 2 pulgadas por encima de la vegetación deseable. Las malezas deben tener al menos 6 pulgadas de altura más que la vegetación deseable. Se pueden obtener mejores resultados cuando se expone una mayor cantidad de la maleza a la solución de herbicida. Las malezas sin contacto con la solución de herbicida no serán afectadas. Esto puede ocurrir en lugares donde las malezas están muy concentradas, cuando la infestación es grave o donde la altura de las malezas es variada, lo que no permite que todas entren en contacto con el herbicida. En estas instancias, tal vez sea necesario repetir el tratamiento. Para instrucciones adicionales, vea **Aplicadores con enjugador** en la sección **Equipo selectivo**.

El contacto de la solución de herbicida con vegetación deseable puede provocar daño o destrucción.

Tratamiento localizado

Aplique este producto como una solución al 1 por ciento antes del despunte de los pastos cultivados para semilla. Los cultivos que reciban el rocío en el área tratada morirán. Intente evitar el arrastre o rocío fuera del área que no sea el objetivo por la misma razón. Se pueden utilizar equipos de mano para controlar restos de tepes o de otra vegetación no deseada después de cosechar los tepes.

Creación de hileras en ryegrass anual

Utilice de 12 a 24 onzas líquidas de este producto por acre. Use proporciones superiores cuando el ryegrass tiene una altura de más de 6 pulgadas. Se obtienen mejores resultados cuando las aplicaciones se realizan antes de que las plantas de ryegrass alcancen 6 pulgadas de alto.

Configure las alturas de las boquillas de modo que permita el espacio deseado entre hileras y al mismo tiempo evite que gotas, rocíos finos o arrastre del rocío entre en contacto con las plantas de ryegrass no tratado. Se recomienda utilizar boquillas de baja presión o boquillas de goteo diseñadas para concentrar la aplicación en una franja estrecha.

El cultivador asume toda la responsabilidad por la pérdida de cultivos a causa de la aplicación indebida de este producto.

11.0 APLICACIONES ALREDEDOR DEL ESTABLECIMIENTO

11.1 Control general de malezas y recortes y bordes

Este producto se puede utilizar para controlar malezas anuales, perennes y matorrales leñosos que se encuentran en todo el establecimiento, incluidos cimientos de edificaciones, en y a lo largo de cercas, en acequias y canales secos, a lo largo de bordes de acequias, caminos de la granja, barreras de protección, antes de sembrar ornamentos paisajistas y en zonas donde se guardan equipos.

Este producto se puede mezclar en tanque con los siguientes productos, siempre y cuando el producto específico utilizado esté registrado para el uso en estos lugares no cultivados. Consulte las etiquetas de estos productos para informarse sobre las áreas de uso y las dosis de aplicación aprobadas. Para malezas anuales, utilice 1.5 pintas de este producto por acre cuando las malezas tienen menos de 6 pulgadas de altura, 2.25 pintas por acre cuando las malezas tienen 6 a 12 pulgadas de altura y 3 pintas por acre cuando las malezas tienen más de 12 pulgadas de altura. Para las malezas perennes, aplique de 3 a 7.5 pintas por acre en estas mezclas de tanque. Para mezclas de tanque con estos productos con rociadores de mochila, pistolas de mano y otras aplicaciones de rocío para mojar de alto volumen, vea las proporciones específicas en la sección **MALEZAS ANUALES** para equipo de mano o de alto volumen de esta etiqueta.

Arsenal	Krovar I DF	Ronstar 50 WP
Banvel/Clarity	Oust XP	Sahara
Barricade 65WG	Pendulum 3.3 EC	simazine
diuron	Pendulum WDG	Surflan
Endurance	Plateau	Telar
Escort	Princep DF	Vanquish
Karmex DF	Princep Liquid	2,4-D

Este producto más las mezclas de tanque de dicamba no se pueden aplicar por rocío aéreo en California.

11.2 Invernaderos/Cobertizos

Este producto se puede usar para controlar las malezas que estén creciendo en o alrededor de los invernaderos y cobertizos. No debe haber vegetación deseable durante la aplicación y los equipos de ventilación deben estar apagados.

11.3 Segado Químico

Este producto inhibe los pastos perennes indicados en esta sección para servir como sustituto de la siega. Utilice 4.5 onzas líquidas de este producto por acre para el tratamiento de Kentucky bluegrass. Utilice 6 onzas líquidas de este producto por acre para el tratamiento de festuca alta, festuca fina, orchardgrass, quackgrass o reed canarygrass. Aplique 12 onzas líquidas por acre de este producto para el tratamiento de bermudagrass. Aplique 48 onzas líquidas de este producto por acre para el tratamiento de torpedograss o paragrass. Aplique los tratamientos en 10 a 20 galones de solución de rocío por acre. Se puede efectuar una aplicación de segado químico junto a acequias de la granja y en otros lugares del establecimiento.

Use solo en los lugares donde se puede tolerar cierto daño o decoloración temporal en pastos perennes.

12.0 TIPOS DE MALEZAS CONTROLADAS

Use siempre la proporción más alta de este producto por acre, dentro de las proporciones, cuando las malezas son densas o cuando crecen en un área no tocada (no cultivada).

Puede haber un resultado inferior cuando se traten malezas cubiertas con mucho polvo. Para las malezas que han sido segadas, pastadas o cortadas, permita que vuelvan a crecer antes del tratamiento.

Consulte las secciones siguientes para conocer las proporciones recomendadas para el control de malezas anuales y perennes, matorrales leñosos y árboles. Para las malezas perennes, matorrales leñosos y árboles difíciles de controlar, donde las plantas crecen en condiciones de estrés, o donde la infestación es densa, use de 4.5 a 8 cuartos de galón por acre de este producto para obtener mejores resultados.

12.1 Malezas anuales

Aplique a pastos anuales en crecimiento y malezas de hoja ancha.

Deje pasar por lo menos 3 días antes de remover la vegetación tratada. Después de este período las malezas se pueden cortar, labrar o quemar. Vea los usos recomendados y las instrucciones específicas de aplicación en **MODO DE EMPLEO, INFORMACIÓN SOBRE EL PRODUCTO, INSTRUCCIONES de MEZCLA y APLICACIÓN.**

Use 1.5 pintas por acre si las malezas tienen menos de 6 pulgadas de altura o largo de los tallos y 1 a 4 cuartos de galón por acre si las malezas tienen más de 6 pulgadas de altura o largo de los tallos o cuando las malezas crecen en condiciones de estrés.

Para aplicaciones de rocío para mojar, aplique una solución de 0.5 por ciento de este producto a las malezas que tengan menos de 6 pulgadas de altura o largo de los tallos. Haga la aplicación antes de

la formación de semillas para el pasto, o la formación de brotes para las malezas de hoja ancha. Para las malezas anuales que tienen más de 6 pulgadas de altura o las malezas más pequeñas que crecen en condiciones de estrés, use una solución de 0.75 a 1.5 por ciento. Use la dosis más alta para las especies difíciles de controlar o las malezas de más de 24 pulgadas de altura.

ESPECIES DE MALEZAS

Anoda, spurred
Balsamapple**
Barley*
Barley, little*
Barnyardgrass*
Bassia, fivehook
Bittercress*
Bluegrass, annual*
Bluegrass, bulbous*
Brome, downy*
Brome, Japanese*
Broomsedge
Buttercup*
Castorbean
Cheatgrass*
Cheeseweed (Malva parviflora)
Chervil*
Chickweed*
Geranium, Carolina
Goatgrass, jointed*
Goosegrass
Groundsel, common*
Henbit
Horseweed/Marestail(Conyza canadensis)
Itchgrass*
Johnsongrass, seedling
Junglerice
Knotweed
Kochia
Lamb's-quarters*
Lettuce, prickly*
Mannagrass, eastern*
Mayweed
Medusahead*
Morningglory (Ipomoea spp)
Mustard, blue*
Mustard, tansy*
Mustard, tumble*
Mustard, wild*
Nightshade, black*
Oats
Panicum, browntop*
Panicum, fall*
Panicum, Texas*
Pennycress, field*
Pepperweed, Virginia*
Pigweed*
Puncturevine
Purslane, common
Pusley, Florida
Ragweed, common*
Cocklebur*
Copperleaf, hophornbeam
Copperleaf, Virginia
Coreopsis, plains/tickseed*
Corn*
Crabgrass*
Cupgrass, woolly*
Dwarfdandelion*
Eclipta*
Falsedandelion*
Falseflax, smallseed*
Fiddleneck
Filaree
Fleabane, annual*
Fleabane, hairy *(Conyza bonariensis)**
Fleabane, rough*
Foxtail*
Foxtail, Carolina*
Ragweed, giant
Rice, red
Rocket, London*
Rocket, Yellow
Rye*
Ryegrass*
Sandbur, field*
Sesbania, hemp
Shattercane*
Shepherd's-purse*
Sicklepod
Signalgrass, broadleaf*
Smartweed, ladysthumb*
Smartweed, Pennsylvania*
Sorghum, grain (milo)*
Sowthistle, annual
Spanishneedles***
Speedwell, Corn*
Speedwell, purslane*
Sprangletop*
Spurge, annual
Spurge, prostrate*
Spurge, spotted*
Spurry, umbrella*
Starthistle, yellow
Stinkgrass*
Sunflower*
Teaweed / Prickly sida
Thistle, Russian
Velvetleaf
Wheat*
Wild oats*
Witchgrass*

*Cuando use equipos de aplicación al voleo en el terreno (aplicaciones aéreas o rociadores con brazos que usen boquillas tipo abanico plano), estas especies serán controladas total o parcialmente usando 12 onzas líquidas de este producto por acre. Las aplicaciones deben hacerse usando de 3 a 10 galones de volumen de la sustancia portadora por acre. Use boquillas que garanticen una cobertura completa del follaje y aplique el tratamiento cuando las malezas estén en su etapa temprana de crecimiento.

** Aplique con equipo de mano solamente.

*** Aplique 3 pintas de este producto por acre.

12.2 Malezas perennes

Se obtienen mejores resultados cuando las malezas perennes son tratadas después de alcanzar la etapa reproductiva de su crecimiento (formación de las semillas para pastos y formación de brotes para malezas de hoja ancha). En las plantas sin flores, los mejores resultados se obtienen cuando las plantas alcanzan la madurez. En muchas situaciones, es necesario realizar tratamientos antes de esas etapas. En esas condiciones, use la dosis de aplicación más alta dentro del rango.

- Aplique cuando las plantas que sean el objetivo estén en crecimiento activo. No aplique cuando las plantas estén en condiciones de estrés por sequía.
- Asegúrese de lograr una cobertura completa cuando efectúe tratamientos de rocío para mojar mediante un equipo de mano.
- Cuando se utilice equipo manual para tratamientos puntuales localizados de bajo volumen, aplique una solución de 4 al 8 por ciento de este producto.
- Para labrar o segar, deje transcurrir un lapso de 7 días o más después de haber aplicado el producto. Si las malezas han sido labradas o segadas, no aplique el tratamiento hasta que el crecimiento alcance las etapas especificadas.
- El tratamiento otoñal debe aplicarse antes de una helada agresiva.
- Tal vez sea necesario repetir los tratamientos para controlar malezas que se regeneran de partes subterráneas o semillas.

Especies de malezas	Proporción (cuartos por acre)	% de solución de mano
Alfalfa*	0.7	1.5
Alligatorweed*	3	1.3
Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración. Será necesario repetir las aplicaciones para mantener el control.		
Anise (fennel)	1.5 – 3	1 – 1.5
Bahiagrass	2.3 – 3.75	1.5
Beachgrass, European *(Ammophila arenaria)*	–	3.5
Aplique una solución al 8 por ciento de este producto, más de 0.5 a 1.5 por ciento de un surfactante no iónico en una base de rocío para mojar de bajo volumen. Se obtienen mejores resultados si las aplicaciones se realizan cuando la planta beachgrass europea está en crecimiento activo alcanzando las etapas de desarrollo de bota a despunte completo. Realice las aplicaciones antes de que pierda más del 50% del color verde de las hojas en el otoño. Puede ser necesario repetir las aplicaciones para tratar los rezagos. Observe las zonas tratadas antes de volver a sembrar vegetación deseable. Para el control selectivo de beachgrass europea mediante aplicación con enjugador, aplique una solución al 33.3 por ciento de este producto, más de 1 a 2.5 por ciento de un surfactante no iónico durante el crecimiento activo. Evite el contacto de la solución herbicida con la vegetación deseable. Se puede mejorar el rendimiento enjugando las plantas en direcciones opuestas. El mejor rendimiento se obtiene procurando el máximo contacto del equipo de enjugado con las hojas individuales.		
Bentgrass*	1	1.5
Bermudagrass	4	1.5
Aplique a las plantas que sean el objetivo cuando aparezcan las cabezuelas.		
Bermudagrass, de agua (knotgrass)	1	1.5
Bindweed, de campo	2.3 – 3.75	1.5
Aplique de 3 a 3.75 cuartos de galón de este producto por acre como rocío al voleo al oeste del Río Mississippi y de 2.3 a 3 cuartos de galón de este producto por acre al este del Río Mississippi. Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. El desarrollo de nuevas hojas indica crecimiento activo. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.		
Bluegrass, Kentucky	1.5 – 2.3	0.75
Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.		
Blueweed, Texas	2.3 – 3.75	1.5
Aplique de 3 a 3.75 cuartos de galón de este producto por acre como rocío al voleo al oeste del Río Mississippi y de 2.3 a 3 cuartos de galón de este producto por acre al este del Río Mississippi. Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. El desarrollo de nuevas hojas indica crecimiento activo. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.		
Brackenfern	2.3 – 3	0.75 – 1
Aplique a las frondas completamente extendidas que tengan por lo menos 18 pulgadas de longitud.		
Bromegrass, smooth	1.5 – 2.3	0.75
Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.		
Bursage, woolly-leaf	–	1.5
Canarygrass, reed	1.5 – 2.3	0.75
Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.		
Cattail	2.3 – 3.75	0.75
Aplique cuando las plantas que sean el objetivo estén en crecimiento activo y en la etapa de floración temprana a completa. Se obtienen mejores resultados cuando la aplicación se realiza durante los meses de verano u otoño.		
Clover; (trébol); rojo, blanco	2.3 – 3.75	1.5
Cogongrass	2.3 – 3.75	1.5
Aplique cuando el cogongrass tenga por lo menos 18 pulgadas de altura y esté en crecimiento activo a finales de verano o en otoño. Debido a la naturaleza densa de la vegetación que puede impedir la correcta cobertura del rocío, o a las etapas de crecimiento irregulares, pueden ser necesarios varios tratamientos para lograr el control.		
Cordgrass	Vea Sección 8.1	2–8
Programe las aplicaciones para permitir por lo menos 6 horas antes de que la marea cubra las plantas tratadas. Al aplicar rocío para mojar con equipo de mano, use una solución de 2 a 8 por ciento de este producto. Asegúrese de cubrir completamente las concentraciones de plantas, pero no rocíe hasta el punto de escurrimiento. Siga las instrucciones específicas en la Sección 8.1 **Zonas acuáticas**.		
Cutgrass, giant*	3	1
Será necesario repetir las aplicaciones para mantener el control, particularmente donde la vegetación esté parcialmente sumergida en agua. Permita un recrecimiento sustancial hasta la etapa de 7 a 10 hojas antes de repetir la aplicación.		
Dallisgrass	2.3 – 3.75	1.5

Dandelion	2.3 – 3.75	1.5
Dock, curly	2.3 – 3.75	1.5
Dogbane, hemp	3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.

Fescue (excepto alta)	2.3 – 3.75	1.5
Fescue, alta	2.3	1

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado.

Guineagrass	2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de crecimiento de por lo menos 7 hojas.

Hemlock, poison	1.5 – 3	0.75 – 1.5

Vea también la sección Inyección de tallos huecos de esta etiqueta.

Horsenettle	2.3 – 3.75	1.5
Horseradish	3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.

Iceplant	1.5	1.5
Ivy; German, cape	1.5 – 3	0.75 – 1.5
Jerusalem artichoke	2.3 – 3.75	1.5
Johnsongrass	1.5 – 2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.

Kikuyugrass	1.5 – 2.3	0.75
Knapweed	3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.

Knotweed; Bohemian, Giant, Japanese (*Polygonum bohemicum, P. sachalinense and P. cuspidatum*)
Inyección de tallos: Vea la sección Inyección de tallos huecos de esta etiqueta.
Corte de tallos: Corte los tallos limpiamente justo debajo del segundo o tercer nódulo sobre la tierra. Aplique inmediatamente 0.36 onzas líquidas (10 ml) de una solución al 50 por ciento de este producto en el "pozo" o entrenudo restante. Asegúrese de que el material eliminado de la parte superior de la planta se recoja y deseche con cuidado para evitar que tenga contacto con el suelo y regenere plantas de los brotes. Se recomienda el uso de una barrera biológica como cartón, plywood o una lámina de plástico. El total combinado para todos los tratamientos no debe exceder 8 cuartos de galón por acre. A razón de 10 ml de una solución al 50%, puede cubrir aproximadamente 1500 tallos por acre.

Lantana	–	0.75 – 1

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. Utilice dosis más altas para plantas que han alcanzado la etapa de crecimiento leñoso.

Lespedeza	2.3 – 3.75	1.5
Loosestrife, purple	2	1 – 1.5

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. Se obtienen mejores resultados cuando la aplicación se realiza durante los meses de verano u otoño. El tratamiento otoñal debe aplicarse antes de una helada agresiva.

Lotus, American	2	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. Se obtienen mejores resultados cuando la aplicación se realiza durante los meses de verano u otoño. El tratamiento otoñal debe aplicarse antes de una helada agresiva. Puede ser necesario repetir el tratamiento para controlar plantas que se regeneran de partes subterráneas y semillas.

Maidencane	3	0.75

Será necesario repetir las aplicaciones, particularmente a la vegetación parcialmente sumergida en agua. En estas condiciones, permita el recrecimiento hasta la etapa de 7 a 10 hojas antes de repetir la aplicación.

Milkweed, common	2.3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración.

Muhly, wirestem	1.5 – 2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo tengan por lo menos 8 pulgadas de altura (etapa de crecimiento de 3 a 4 hojas) y estén creciendo activamente.

Mullein, common	2.3 – 3.75	1.5
Napiergrass	2.3 – 3.75	1.5
Nightshade, silverleaf	2.3 – 3.75	1.5

Aplique de 3 a 3.75 cuartos de galón de este producto por acre como rocío al voleo al oeste del Río Mississippi y de 2.3 a 3 cuartos de galón de este producto por acre al este del Río Mississippi. Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. Se pueden obtener resultados óptimos si se aplica después de formadas las bayas. El desarrollo de nuevas hojas indica crecimiento activo. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.

Nutsedge; purple, yellow	2.3	0.75

Aplique este producto para controlar las plantas existentes de nutsedge y nutlets inmaduros adjuntos a las plantas tratadas. Aplique cuando las plantas que sean el objetivo estén en floración o cuando se puedan ver nuevas nueces pequeñas en las puntas de los rizomas. No se podrán controlar las nueces que todavía no germinaron y estas podrán germinar después del tratamiento. Puede ser necesario repetir las aplicaciones para mantener el control a largo plazo.

Orchardgrass	1.5 – 2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.

Pampasgrass	2.3 – 3.75	1.5
Para grass	3	0.75

Puede ser necesario repetir las aplicaciones. Permita el recrecimiento hasta la etapa de 7 a 10 hojas antes de repetir la aplicación.

Pepperweed, perennial	3	1.5
Phragmites*	2 – 3.75	0.75 – 1.5

Para el control parcial de phragmites en Florida y los condados de otros estados que bordean el Golfo de México, aplique 3.75 cuartos de galón por acre como rocío al voleo o aplique una solución al 1.5 por ciento con equipo de mano. Para el control parcial en otras áreas de los EE.UU., aplique de 2 a 3 cuartos de galón por acre como rocío al voleo o aplique una solución al 0.75 por ciento con equipo de mano. Para obtener los mejores resultados, realice el tratamiento al final del verano o en el otoño, cuando las plantas están creciendo activamente y en floración completa. Debido a la naturaleza densa de la vegetación que puede impedir la correcta cobertura del rocío, o a las etapas de crecimiento irregulares, pueden ser necesarios varios tratamientos para lograr el control. Los efectos visuales del control pueden demorar.

Quackgrass	1.5 – 2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo tengan por lo menos 8 pulgadas de altura (etapa de crecimiento de 3 a 4 hojas) y estén creciendo activamente.

Redvine*	1.5	1.5
Reed, giant	3 – 3.75	1.5

Se obtienen mejores resultados cuando las aplicaciones se realizan entre el final del verano y el otoño. Vea también la sección Inyección de tallos huecos de esta etiqueta.

Ryegrass, perennial	1.5 – 2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.

Salvinia, giant	3 – 3.75	2

Aplique como una solución de rocío para mojar al 2.0% v/v con 0.5 a 2.0% v/v de surfactante no iónico que contenga por lo menos 70% de ingrediente activo. Para aplicaciones al voleo, aplique de 3 a 3.75 cuartos de galón de este producto con un sistema surfactante acuático aprobado que contenga 0.1% v/v de organosilicona no iónica y 0.25% v/v de surfactante no iónico adhesivo dispersante en 3 a 40 galones por acre como aplicación al voleo. Deje pasar por lo menos 3 días antes de remover la vegetación tratada. Este producto no proporciona control de plantas completamente sumergidas o que tengan la mayor parte de su follaje bajo agua.

Smartweed, swamp	2.3 – 3.75	1.5
Spatterdock	3	0.75

Aplique cuando la mayoría de las plantas estén en floración completa. Para obtener resultados óptimos, aplique durante los meses de verano u otoño.

Spurge, leafy*	–	1.5
Starthistle, yellow	–	1.5
Sweetpotato, wild*	–	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. Será necesario repetir las aplicaciones. Permita que la planta alcance la etapa de crecimiento específica antes de repetir la aplicación.

Thistle, artichoke	1.5 – 2.3	2

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de brotación o después de ella.

Thistle, Canada	1.5 – 2.3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de brotación o después de ella. Vea también la sección Inyección de tallos huecos de esta etiqueta.

Timothy	1.5 – 2.3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.

Torpedograss*	3 – 3.75	0.75 – 1.5

Use las proporciones más bajas recomendadas en condiciones terrestres y las proporciones más altas en condiciones de inmersión parcial o masa flotante. Será necesario repetir las aplicaciones para mantener el control.

Trumpetcreeper*	1.5 – 2.3	1.5
Tules, common	–	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de brotación o después de ella. Después de la aplicación, el efecto visual tardará en aparecer y puede que no ocurra por 3 semanas o más.

Vaseygrass	2.3 – 3.75	1.5
Velvetgrass	2.3 – 3.75	1.5
Waterhyacinth	2.5 – 3	0.75 – 1

Aplique cuando las plantas que sean el objetivo se encuentren en la etapa de brotación o después de ella. Después de la aplicación, puede ser que los efectos visuales tarden 3 semanas o más en aparecer, y generalmente ocurre la necrosis completa y descomposición dentro de 60 a 90 días. Use las proporciones más altas recomendadas cuando se deseen efectos visuales más rápidos.

Waterlettuce	–	0.75 – 1

Use las proporciones más altas recomendadas donde la infestación de malezas sea grave. Se obtienen mejores resultados si se aplica de mediados de verano a invierno. Si se aplica en primavera puede ser necesario repetir las aplicaciones.

Waterprimrose	–	0.75

Aplique cuando las plantas se encuentren en la etapa de brotación o después de ella, pero antes del cambio de color del otoño. Para lograr el control óptimo es necesaria una completa cobertura.		
Wheatgrass, western	1.5 – 2.3	0.75
Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.		

*Control parcial

Otras plantas perennes indicadas en esta etiqueta – Aplique de 2.3 a 3.75 cuartos de galón de este producto por acre como rocío al voleo o como solución de 0.75 a 1.5 por ciento con equipo de mano. Aplique cuando las plantas que sean el objetivo estén creciendo activamente y deben haber alcanzado la etapa de crecimiento temprano de cabeza o brote temprano.

12.3 Matorrales leñosos y árboles

Aplique este producto después de la expansión completa de las hojas, a menos que se indique lo contrario. Utilice una proporción mayor para plantas más grandes y/o zonas de crecimiento más densas. En enredaderas, utilice la proporción máxima para plantas que han alcanzado la etapa de crecimiento leñoso. Se obtienen mejores resultados cuando la aplicación se realiza a finales del verano o en otoño, después de la formación de frutos. Aplique cuando las plantas estén en crecimiento activo. Para lograr el mejor control es necesario una completa cobertura. Evite aplicar a plantas afectadas por la sequía.

En zonas áridas, se obtienen los mejores resultados cuando las aplicaciones se realizan entre primavera y comienzos de verano, cuando las especies de matorrales tienen gran contenido de humedad y están en floración.

Asegúrese de lograr una cobertura completa cuando realice tratamientos de rocío para mojar con un equipo de mano.

Cuando use equipos de mano para tratamientos localizados con rocío dirigido de bajo volumen, aplique una solución del 4 al 8 por ciento de este producto.

Es posible que los síntomas no aparezcan antes de las heladas o del envejecimiento con tratamientos de otoño.

Para labrar, segar o eliminar, deje transcurrir un lapso de 7 días o más después de haber aplicado el producto. Tal vez sea necesario repetir el tratamiento para controlar plantas que se regeneran de partes subterráneas o semillas. Se aceptan algunos colores otoñales en especies de hoja caduca no deseables siempre y cuando no se haya producido una importante caída de las hojas. El rendimiento será inferior si se realizan tratamientos en otoño, después de una helada.

Especies de malezas	Proporción por difusión (cuarto de galón por acre)	% Solución Rocío para mojar a mano
Alder	2.3 – 3	0.75 – 1.2
Ash*	1.5 – 3.75	0.75 – 1.5
Aspen, quaking	1.5 – 2.3	0.75 – 1.2
Bearclover (Bearmat)*	1.5 – 3.75	0.75 – 1.5
Beech*	1.5 – 3.75	0.75 – 1.5
Birch	1.5	0.75
Blackberry	2.3 – 3	0.75 – 1.2
Blackgum	1.5 – 3.75	0.75 – 1.5
Bracken	1.5 – 3.75	0.75 – 1.5
Broom; French, Scotch	1.5 – 3.75	1.2 – 1.5
Buckwheat, California*	1.5 – 3	0.75 – 1.5
Cascara*	1.5 – 3.75	0.75 – 1.5
Castorbean	1.5 – 3.75	1.5
Vea también la sección Inyección de tallos huecos de esta etiqueta.		
Catsclaw*	–	1.2 – 1.5
Para control parcial, aplique este producto cuando por lo menos el 50 por ciento de las hojas nuevas estén completamente desarrolladas.		
Ceanothus*	1.5 – 3.75	0.75 – 1.5
Chamise*	1.5 – 3.75	0.75
Cherry; bitter, black, pin	1.5 – 3.75	1– 1.5
Cottonwood, eastern	1.5 – 3.75	0.75 – 1.5
Coyote brush	2.3 – 3	1.2 – 1.5
Para control, aplique este producto cuando por lo menos el 50 por ciento de las hojas nuevas estén completamente desarrolladas.		
Cypress; swamp, bald	1.5 – 3.75	0.75 – 1.5
Deerweed	1.5 – 3.75	0.75 – 1.5
Dewberry	2.3 – 3	0.75 – 1.2
Dogwood*	3 – 3.75	1 – 2
Elderberry	1.5	0.75
Elm*	1.5 – 3.75	0.75 – 1.5
Eucalyptus, bluegum	–	1.5
Para control de los rebrotes de eucalipto, aplique este producto con equipo de mano cuando los brotes tengan una altura de 6 a 12 pies. Asegúrese de conseguir una cobertura completa.		
Gallberry	1.5 – 3.75	0.75 – 1.5
Gorse*	1.5 – 3.75	0.75 – 1.5
Hackberry, western	1.5 – 3.75	0.75 – 1.5
Hasardia*	1.5 – 3	0.75 – 1.5
Hawthorn	1.5 – 2.3	0.75 – 1.2
Hazel	1.5	0.75
Hickory*	3 – 3.75	1 – 2
Honeysuckle	2.3 – 3	0.75 – 1.2
Hornbeam, American*	1.5 – 3.75	0.75 – 1.5
Huckleberry	1.5 – 3.75	0.75 – 1.5
Ivy, poison	3 – 3.75	1.5
Kudzu	3	1.5
Locust, black*	1.5 – 3	0.75 – 1.5
Madrone resprouts*	–	1.5
Magnolia, sweetbay	1.5 – 3.75	0.75 – 1.5
Manzanita*	1.5 – 3.75	0.75 – 1.5
Maple, red	1 – 3.75	0.75 – 1.2
Para control, aplique una solución de 0.75 a 1.2 por ciento con equipo de mano cuando las hojas estén completamente desarrolladas. Para control parcial, aplique de 1 a 3.75 cuartos de galón de este producto por acre como rocío al voleo.		
Maple, sugar	–	0.75 – 1.2
Para control, aplique una solución de 0.75 a 1.2 por ciento con equipo de mano cuando por lo menos el 50 por ciento de las hojas nuevas estén completamente desarrolladas.		
Maple, vine*	1.5 – 3.75	0.75 – 1.5
Monkey flower*	1.5 – 3	0.75 – 1.5
Oak; black, white*	1.5 – 3	0.75 – 1.5
Oak; northern pin	1.5 – 3	0.75 – 1.2
Para control, aplique este producto cuando por lo menos el 50 por ciento de las hojas nuevas estén completamente desarrolladas.		
Oak, poison	3 – 3.75	1.5
Puede requerirse repetir las aplicaciones para mantener el control. Los tratamientos otoñales deben aplicarse antes de que las hojas pierdan su color verde.		
Oak, post	2.3 – 3	0.75 – 1.2
Oak, red	–	0.75 – 1.2
Para control, aplique una solución de 0.75 a 1.2 por ciento con equipo de mano cuando por lo menos el 50 por ciento de las hojas nuevas estén completamente desarrolladas.		
Oak, scrub*	1.5 – 3	0.75 – 1.5
Oak, southern red	1.5 – 3.75	1 – 1.5
Orange, Osage	1.5 – 3.75	0.75 – 1.5
Peppertree, Brazilian (Florida holly)*	1.5 – 3.75	1.5
Persimmon*	1.5 – 3.75	0.75 – 1.5
Pine	1.5 – 3.75	0.75 – 1.5
Poplar, yellow*	1.5 – 3.75	0.75 – 1.5
Prunus	1.5 – 3.75	1– 1.5
Raspberry	2.3 – 3	0.75 – 1.2
Redbud, eastern	1.5 – 3.75	0.75 – 1.5
Redcedar, eastern	1.5 – 3.75	0.75 – 1.5
Rose, multiflora	1.5	0.75
Debe aplicarse antes de que las hojas se deterioren por los insectos que se alimentan de hojas.		
Russian olive*	1.5 – 3.75	0.75 – 1.5
Sage, black	1.5 – 3	0.75
Sage, white*	1.5 – 3	0.75 – 1.5
Sagebrush, California	1.5 – 3	0.75
Salmonberry	1.5	0.75
Saltbush	–	1
Saltcedar	3 – 3.75	1 – 2
Para control parcial, aplique una solución de 1 a 2 por ciento de este producto con equipo de mano o de 3 a 3.75 cuartos de galón por acre como rocío al voleo. Para control, aplique una solución de 1 a 2 por ciento de este producto mezclado con 0.25 por ciento de Arsenal con equipo de mano. Para control usando aplicaciones al voleo, aplique 1.5 cuartos de galón de este producto en una mezcla de tanque con 1 pinta de Arsenal a las plantas de con menos de 6 pies de altura. Para control del saltcedar mayor de 6 pies de altura usando aplicaciones al voleo, aplique 3 cuartos de galón de este producto en una mezcla de tanque con 2 pintas de Arsenal.		
Sassafras*	1.5 – 3.75	0.75 – 1.5
Sea Myrtle	–	1
Sourwood*	1.5 – 3.75	0.75 – 1.5
Sumac; laurel, poison, smooth, sugarbush, winged*	1.5 – 3	0.75 – 1.5
Sweetgum	1.5 – 2.3	0.75 – 1.5
Swordfern*	1.5 – 3.75	0.75 – 1.5
Tallowtree, Chinese	–	0.75
Tanoak resprouts*	–	1.5
Thimbleberry	1.5	0.75
Tobacco, tree*	1.5 – 3	0.75 – 1.5
Toyon*	–	1.5
Trumpetcreeper	1.5 – 2.3	0.75 – 1.2
Vine maple*	1.5 – 3.75	0.75 – 1.5
Virginia creeper	1.5 – 3.75	0.75 – 1.5
Waxmyrtle, southern*	1.5 – 3.75	1.5
Willow	2.3	0.75
Yerba Santa, California*	–	1.5

* Control parcial

Otros matorrales leñosos y árboles indicados en esta etiqueta – Para control parcial, aplique de 1.5 a 3.75 cuartos de galón de este producto por acre como rocío al voleo o como solución de 0.75 a 1.5 por ciento con equipo de mano.

13.0 LÍMITES EN LA GARANTÍA Y EN LA RESPONSABILIDAD

Monsanto Company garantiza que este producto concuerda con la descripción química de la etiqueta y es razonablemente adecuado para los propósitos descritos en el folleto titulado Instrucciones de Uso Completas ("Instrucciones") cuando se usa de acuerdo con dichas Instrucciones y las condiciones que allí se detallan. NO SE HACE NINGUNA OTRA GARANTÍA EXPRESA O IMPLÍCITA ACERCA DE LA IDONEIDAD PARA UN USO PARTICULAR O COMERCIABILIDAD. Esta garantía está sujeta también a las condiciones y limitaciones que aquí se indican.

El comprador y todos los usuarios deberán reportar con prontitud a esta compañía acerca de cualquier reclamo que se base en un contrato, negligencia, estricta responsabilidad, u otros actos ilícitos.

Hasta el grado máximo permitido por la ley, el comprador y todos los usuarios son responsables por todas las pérdidas o daños que resultasen por el uso o manejo en condiciones que estén más allá del control de esta Compañía, incluyendo pero no limitándose a: incompatibilidad con productos que no sean los señalados en las Instrucciones, aplicación o contacto con vegetación que no se quiera destruir, condiciones climáticas inusuales, condiciones climáticas que estén fuera de los límites que se consideran normales en el lugar de la aplicación y para el período de tiempo en el cual se aplica, así como condiciones climáticas que estén fuera de los límites indicados en las Instrucciones, aplicaciones que no estén explícitamente aconsejadas en las Instrucciones, condiciones de humedad que estén fuera de los límites establecidos en las Instrucciones, o la presencia de productos en la tierra o sobre ella, en las plantas o en la vegetación que se está tratando, diferentes a los indicados en las Instrucciones.

Esta Compañía no garantiza ninguno de los productos reformulados o reempacados de este producto, excepto de acuerdo a los requisitos de la administración de esta Compañía y con el permiso escrito expreso de esta Compañía.

LA ÚNICA Y EXCLUSIVA COMPENSACIÓN AL USUARIO O COMPRADOR Y EL LÍMITE DE RESPONSABILIDAD DE ESTA COMPAÑÍA O DE CUALQUIER OTRO VENDEDOR POR CUALQUIER PÉRDIDA O POR TODAS LAS PÉRDIDAS, PERJUICIOS O DAÑOS QUE RESULTASEN DEL USO O MANEJO DE ESTE PRODUCTO (INCLUYENDO RECLAMOS QUE SE BASEN EN UN CONTRATO, NEGLIGENCIA, ESTRICTA RESPONSABILIDAD Y OTROS ACTOS ILÍCITOS) SERÁ EL PRECIO PAGADO POR EL USUARIO O EL COMPRADOR POR LA CANTIDAD INVOLUCRADA DE ESTE PRODUCTO, O A ELECCIÓN DE ESTA COMPAÑÍA O DE OTRO VENDEDOR, EL REEMPLAZO DE DICHA CANTIDAD, O SI NO SE OBTUVO MEDIANTE COMPRA, EL REEMPLAZO DE DICHA CANTIDAD DEL PRODUCTO. HASTA EL GRADO MÁXIMO PERMITIDO POR LA LEY, EN NINGUN CASO ESTA COMPAÑÍA U OTRO VENDEDOR SERÁN RESPONSABLES POR DAÑOS INCIDENTALES, CONSECUENTES O ESPECIALES.

En el momento de abrir y usar el producto, se asume que el comprador y todos los usuarios han aceptado las condiciones de los LÍMITES EN LA GARANTÍA Y EN LA RESPONSABILIDAD que no pueden variar por medio de ningún acuerdo verbal o escrito. Si las condiciones son inaceptables, devuelva el producto inmediatamente sin abrir el envase.

Roundup Custom, Certainty, Outrider, Monsanto y el símbolo de la enredadera son marcas comerciales de Monsanto Technology LLC. Todas las demás son propiedad de sus respectivos dueños-

No se han otorgado licencias de uso bajo ninguna patente que no sea de los Estados Unidos de América.

Reg. EPA nro. 524-343

En caso de una emergencia originada por este producto o para solicitar asistencia médica, llame con cobro revertido las 24 horas al (314) 694-4000.

MONSANTO

Envasado por:
MONSANTO COMPANY
800 N. LINDBERGH BLVD.
ST. LOUIS, MISSOURI 63167, EE.UU.
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032712

MONSANTO COMPANY

Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

Product name
Roundup Custom[TM] for Aquatic & Terrestrial Use

EPA Reg. No.
524-343
Product use
Herbicide
Chemical name
Not applicable.
Synonyms
None.
Company
MONSANTO COMPANY, 800 N. Lindbergh Blvd., St. Louis, MO, 63167
Telephone: 800-332-3111, **Fax:** 314-694-5557
E-mail: safety.datasheet@monsanto.com
Emergency numbers
FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT Call CHEMTREC - Day or Night: 1-800-424-9300 toll free in the continental U.S., Puerto Rico, Canada, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted).
FOR MEDICAL EMERGENCY - Day or Night: +1 (314) 694-4000 (collect calls accepted).

2. HAZARDS IDENTIFICATION

Emergency overview
Appearance and odour (colour/form/odour): Colourless - Amber / Liquid, (viscous) / Odourless

CAUTION!

Potential health effects
Likely routes of exposure
Skin contact, eye contact, inhalation
Eye contact, short term
Not expected to produce significant adverse effects when recommended use instructions are followed.
Skin contact, short term
Not expected to produce significant adverse effects when recommended use instructions are followed.
Inhalation, short term
Not expected to produce significant adverse effects when recommended use instructions are followed.
Single ingestion
Not expected to produce significant adverse effects when recommended use instructions are followed.

Refer to section 11 for toxicological and section 12 for environmental information.

OSHA Status
This product is not hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient

Isopropylamine salt of N-(phosphonomethyl)glycine; {Isopropylamine salt of glyphosate}

Composition

COMPONENT	CAS No.	% by weight (approximate)
Isopropylamine salt of glyphosate	38641-94-0	53.8
Water	7732-18-5	46.2

4. FIRST AID MEASURES

Use personal protection recommended in section 8.

Eye contact

If in eyes, hold eye open and rinse slowly and gently for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

Skin contact

Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Wash clothes and clean shoes before re-use.

Inhalation

If inhaled, move person to fresh air. If person is not breathing, call emergency number or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

Ingestion

Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison center or doctor. Do not give anything by mouth to an unconscious person.

Advice to doctors

This product is not an inhibitor of cholinesterase.

Antidote

Treatment with atropine and oximes is not indicated.

5. FIRE-FIGHTING MEASURES

Flash point

Does not flash.

Extinguishing media

Recommended: Water, foam, dry chemical, carbon dioxide (CO2)

Unusual fire and explosion hazards

None.
Minimise use of water to prevent environmental contamination.
Environmental precautions: see section 6.

Hazardous products of combustion

Carbon monoxide (CO), phosphorus oxides (PxOy), nitrogen oxides (NOx)

Fire fighting equipment

Self-contained breathing apparatus.
Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Environmental precautions

SMALL QUANTITIES:
Low environmental hazard.
LARGE QUANTITIES:
Minimise spread.
Keep out of drains, sewers, ditches and water ways.

Methods for cleaning up

SMALL QUANTITIES:
Absorb only in non-combustible material.
Sweep, scoop or vacuum to remove.
LARGE QUANTITIES:
Absorb in earth, sand or absorbent material.
Dig up heavily contaminated soil.
Collect in containers for disposal.
Flush residues with small quantities of water.
Minimise use of water to prevent environmental contamination.
Refer to section 7 for types of containers.

Refer to section 13 for disposal of spilled material.
Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

Handling

Avoid contact with eyes, skin and clothing.
When using do not eat, drink or smoke.
Wash hands thoroughly after handling or contact.
Wash contaminated clothing before re-use.
Thoroughly clean equipment after use.
Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.
Refer to section 13 of the safety data sheet for disposal of rinse water.
Emptied containers retain vapour and product residue.

Storage

Minimum storage temperature: -15 °C
Maximum storage temperature: 50 °C
Compatible materials for storage: stainless steel, fibreglass, plastic
Incompatible materials for storage: galvanised steel, unlined mild steel, see section 10.
Keep out of reach of children.
Keep away from food, drink and animal feed.
Keep only in the original container.
Keep container tightly closed in a cool, well-ventilated place.
Partial crystallization may occur on prolonged storage below the minimum storage temperature.
If frozen, place in warm room and shake frequently to put back into solution.
Minimum shelf life: 5 years.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne exposure limits

Components	Exposure Guidelines
Isopropylamine salt of glyphosate	No specific occupational exposure limit has been established.

Water	No specific occupational exposure limit has been established.

Engineering controls
No special requirement when used as recommended.

Eye protection
No special requirement when used as recommended.

Skin protection
No special requirement when used as recommended.

Respiratory protection
No special requirement when used as recommended.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

9. PHYSICAL AND CHEMICAL PROPERTIES

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

Colour/colour range:	Colourless - Amber
Odour:	Odourless
Form:	Liquid, (viscous)
Physical form changes (melting, boiling, etc.):	
Melting point:	Not applicable.
Boiling point:	No data.
Flash point:	Does not flash.
Explosive properties:	No data.
Auto ignition temperature:	No data.
Specific gravity:	1.206 @ 20 °C / 15.6 °C
Vapour pressure:	No significant volatility; aqueous solution.
Vapour density:	No data.
Evaporation rate:	No data.
Dynamic viscosity:	No data.
Kinematic viscosity:	No data.
Density:	1.206 g/cm3 @ 20 °C
Solubility:	Water: Completely miscible.
pH:	4.6 - 4.8 @ 63 g/l
Partition coefficient:	log Pow: < 0.000 (active ingredient)

10. STABILITY AND REACTIVITY

Stability
Stable under normal conditions of handling and storage.

Oxidizing properties
No data.

Materials to avoid/Reactivity

Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

Hazardous decomposition
Thermal decomposition: Hazardous products of combustion: see section 5.

Self-accelerating decomposition temperature (SADT)
No data.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

Data obtained on product, similar products and on components are summarized below.

Mutagenicity
Micronucleus test(s):
Not mutagenic.
Ames test(s):
Not mutagenic with and without metabolic activation.

Isopropylamine salt of glyphosate (62%)

Data obtained on product and components are summarized below.

Acute oral toxicity
Rat, LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic.
FIFRA category IV.
No mortality.
Mouse, LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic.
FIFRA category IV.
No mortality.
Acute dermal toxicity
Rabbit, LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic.
FIFRA category IV.
No mortality.
Skin irritation
Rabbit, 6 animals, Draize test:
Days to heal: 3
Primary Irritation Index (PII): 0.0/8.0
Essentially non irritating.
FIFRA category IV.
Eye irritation
Rabbit, 6 animals, OECD 405 test:
Days to heal: 0
FIFRA category IV.
Acute inhalation toxicity
Rat, LC50, 4 hours, aerosol: > 4.24 mg/L
Practically non-toxic.
FIFRA category IV.
No mortality. Maximum attainable concentration.
Skin sensitization
Guinea pig, 3-induction Buehler test:
Positive incidence: 0 %

N-(phosphonomethyl)glycine; { glyphosate}

Mutagenicity
In vitro and in vivo mutagenicity test(s):
Not mutagenic.
Repeated dose toxicity
Rabbit, dermal, 21 days:
NOAEL toxicity: > 5,000 mg/kg body weight/day
Target organs/systems: none
Other effects: none
Rat, oral, 3 months:
NOAEL toxicity: > 20,000 mg/kg diet
Target organs/systems: none
Other effects: none
Chronic effects/carcinogenicity
Rat, oral, 24 months:
NOAEL toxicity: ~ 8,000 mg/kg diet
Target organs/systems: eyes
Other effects: decrease of body weight gain, histopathologic effects
NOEL tumour: > 20,000 ppm
Tumours: none
Toxicity to reproduction/fertility
Rat, oral, 2 generations:
NOAEL toxicity: 10,000 ppm
NOAEL reproduction: > 30,000 mg/kg diet
Target organs/systems in parents: none
Other effects in parents: decrease of body weight gain
Target organs/systems in pups: none
Other effects in pups: decrease of body weight gain
Effects on offspring only observed with maternal toxicity.
Developmental toxicity/teratogenicity
Rat, oral, 6 - 19 days of gestation:
NOAEL toxicity: 1,000 mg/kg body weight
NOAEL development: 1,000 mg/kg body weight
Other effects in mother animal: decrease of body weight gain, decrease of survival
Developmental effects: weight loss, post-implantation loss, delayed ossification
Effects on offspring only observed with maternal toxicity.
Rabbit, oral, 6 - 27 days of gestation:
NOAEL toxicity: 175 mg/kg body weight
NOAEL development: 175 mg/kg body weight
Target organs/systems in mother animal: none
Other effects in mother animal: decrease of survival
Developmental effects: none

12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Data obtained on components are summarized below.

Isopropylamine salt of glyphosate (62%)

Aquatic toxicity, fish
Bluegill sunfish (Lepomis macrochirus):
Acute toxicity, 96 hours, static, LC50: > 1,000 mg/L
Practically non-toxic.

Rainbow trout (Oncorhynchus mykiss):
Acute toxicity, 96 hours, static, LC50: > 1,000 mg/L
Practically non-toxic.

Aquatic toxicity, invertebrates

Water flea (Daphnia magna):
Acute toxicity, 48 hours, static, EC50: 930 mg/L
Practically non-toxic.

Aquatic toxicity, algae/aquatic plants

Green algae (Scenedesmus subspicatus):
Acute toxicity, 72 hours, static, EbC50 (biomass): 72.9 mg/L
Slightly toxic.

Soil organism toxicity, invertebrates

Earthworm (Eisenia foetida):
Acute toxicity, 14 days, LC50: > 5,000 mg/kg dry soil
Practically non-toxic.

N-(phosphonomethyl)glycine; { glyphosate}

Avian toxicity

Bobwhite quail (Colinus virginianus):
Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet
No more than slightly toxic.

Mallard duck (Anas platyrhynchos):
Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet
No more than slightly toxic.

Bobwhite quail (Colinus virginianus):
Acute oral toxicity, single dose, LD50: > 3,851 mg/kg body weight
Practically non-toxic.

Arthropod toxicity

Honey bee (Apis mellifera):
Oral, 48 hours, LD50: 100 µg/bee

Honey bee (Apis mellifera):
Contact, 48 hours, LD50: > 100 µg/bee
Practically non-toxic.

Bioaccumulation

Bluegill sunfish (Lepomis macrochirus):
Whole fish: BCF: < 1
No significant bioaccumulation is expected.

Dissipation

Soil, field:
Half life: 2 - 174 days
Koc: 884 - 60,000 L/kg
Adsorbs strongly to soil.

Water, aerobic:
Half life: < 7 days

13. DISPOSAL CONSIDERATIONS

Product

Not classified as hazardous waste by the Resource, Conservation and Recovery Act (RCRA), 40 CFR 261.
Keep out of drains, sewers, ditches and water ways.
Recycle if appropriate facilities/equipment available.
Burn in proper incinerator.
Follow all local/regional/national/international regulations.

Container

Dispose of as non hazardous industrial waste.

See the individual container label for disposal information.
Emptied containers retain vapour and product residue.
Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.
Empty packaging completely.
Triple or pressure rinse empty containers.
Pour rinse water into spray tank.
Do NOT contaminate water when disposing of rinse waters.
Do NOT re-use containers.
Store for collection by approved waste disposal service.
Follow all local/regional/national/international regulations.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

Not hazardous under the applicable DOT, ICAO/IATA, IMO, TDG and Mexican regulations.

15. REGULATORY INFORMATION

TSCA Inventory
All components are on the US EPA's TSCA Inventory

SARA Title III Rules
Section 311/312 Hazard Categories
Not applicable.
Section 302 Extremely Hazardous Substances
Not applicable.
Section 313 Toxic Chemical(s)
Not applicable.

CERCLA Reportable quantity
Not applicable.

16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.
Follow all local/regional/national/international regulations.
Please consult supplier if further information is needed.
For more information refer to product label.
Please consult Monsanto if further information is needed.
In this document the British spelling was applied.
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	Health	Flammability	Instability	Additional Markings
NFPA	0	1	1	

0 = Minimal hazard, 1 = Slight hazard, 2 = Moderate hazard, 3 = Severe hazard, 4 = Extreme hazard

Full denomination of most frequently used acronyms. BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), I.V. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LDLo (Lower limit of lethal dosage), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOEL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary

Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short-Term Exposure Limit), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, MONSANTO Company or any of its subsidiaries makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for the purposes prior to use. In no event will MONSANTO Company or any of its subsidiaries be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR TO THE PRODUCT TO WHICH INFORMATION REFERS.

Appendix E - Pesticide Application Log

I. General Information (To be completed by Maintenance Supervisor)

Application Date [MM/DD/YYYY]:		***Truck No.:***	***Applicator(s):***
Facility Name:		***Proj. No.:***	***Facility Type:*** ☐ Channel ☐ Levee ☐ Basin ☐ Inlet/Outlet
Location:	***From:***		***To:***
Weather Forecast:	*Check www.weather.gov. Enter a zip code or city in the top right and click go. Scroll down and click "Forecast Weather Table Interface." Review the "Chance of Precip" row.* **Is the chance of rain greater than 50% within 24 hrs. of application?** ☐ Yes ☐ No		**Note:** *If "Yes" then do not apply aquatic herbicides. Non-aquatic herbicides that are appropriate for rain can still be used. However, during rain, ensure that non-aquatic herbicides do not run-off into the channel.*

	1.	2.	3.	4.
Product:				
Aquatic Use?:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Concentrate:				
Ratio:				
Mix:				

II. Visual Assessment

Observed Time [HH:MM]	***Weather***		
	Wind	***Precipitation***	
	☐ Calm[1] ☐ Light Breeze[2] ☐ Gentle Breeze[3]	☐ None ☐ Fog ☐ Drizzle ☐ Rain	**Do not apply aquatic herbicides if Drizzle or Rain is observed or if the chance of rain is greater than 50% within 24 hrs. of application**

III. Aquatic Application ☐ Yes ☐ No

Site Flow Conditions (Color, Sheen, Temp and Depth not required if no flow is observed)

Flow Observed?	***Color of Water***		
☐ Yes ☐ No	☐ No Color ☐ Green ☐ Yellow ☐ Brown ☐ Other: _____		
Sheen (oil or gas)?	***Water Temp***	***Estimated Water Depth***	
☐ Yes ☐ No	°F	☐ < 1 in. ☐ 1 in. to 6 in. ☐ 6 in. to 1 ft. ☐ > 1 ft.	

IV. Application Information (To be completed by Applicators)

	Start Time [HH:MM]	***Finish Time [HH:MM]***	***Herbicides Used***	***Application Area***	***Application Method***
A				☐ Bottom/Side Slope ☐ Access Road/RW	☐ Spray Truck ☐ Hand Sprayer
B				☐ Bottom/Side Slope ☐ Access Road/RW	☐ Spray Truck ☐ Hand Sprayer

V. Herbicide Usage Information and Certification (To be completed by Applicators)

	1.	2.	3.	4.	***Diluted Amount Remaining in Tank:***	
Amount Checked out:						
Amount Back In:						
Amount Used:						

I certify that all applications listed on this sheet were conducted in accordance with the Riverside County Agricultural Commissioner's Use Permit, Manufacturer's label instructions, and training received:

Signatures of Applicators:		

[1]Smoke rises vertically; [2]Wind felt on face, leaves rustle; [3]Leaves and small twigs in constant motion, light weight flags extended

Appendix F - Chain of Custody, Directions, Lab Procedures

E.S. Babcock & Sons, Inc.
6100 Quail Valley Court Riverside, CA 92507
(909) 653-3351 • FAX (909) 653-1662

Chain of Custody & Sample Information Record

Client: | Contact: | Phone No.

Project Name: _____
Project Location:

Turn Around Time: Routine | 3-5 Days | 48 Hours | 24 Hours | *(Rushes Require Approval, Additional Charges May Apply)*

Sampler Information

Name: _____
Employer: _____
Signature: _____

ESB #	Sample ID	Date	Time	# of Containers & Preservatives: Unpreserved	H_2SO_4	HCl	HNO_3	$Na_2S_2O_3$	NaOH			Total # of Containers	Analysis Requested	Matrix	Notes
														DW = Drinking Water WW = Wastewater GW = Groundwater S = Soil SG = Sludge L = Liquid M = Miscellaneous	

Relinquished By (sign)	Print Name / Company	Date / Time	Received By (Sign)	Print Name / Company

(For Lab Use Only) — *Sample Integrity Upon Receipt*

Sample(s) Submitted on Ice? Yes No — Temperature
Custody Seal(s) Intact? Yes No N/A — ºC
Sample(s) Intact? Yes No

Lab No. _____

Page _____ of _____

Chain of Custody Form Instructions

Example filled-out Chain of Custody Forms are available in the monitoring location-specific binders at David Ortega's (951-955-4390) office.

1. **Client**: **RCFC&WCD**

2. **Contact**: [name of monitoring program manager] **Rebekah Guil**

3. **Phone number**: The Contact's phone number **951-955-51251**

4. **Project Name**: SAR/SMR/WWR (note which one) or Complaint Response

5. **Project Location**: Brief description

6. **Turn Around Time**: Usually Routine.

7. **Sampler Name**: [name of lead sampler]

8. **Employer**: RCFC&WCD or the company name if other than a District employee collected the sample.

9. **Signature**: Signature of the lead sampler.

10. **Sample ID**: Use the sample format described in Section 4.7.4 of the APAP. The sample id is in the following format: {Sample Date}-AQPEST-{Event Code}-{Station Code}-{Sample Code}. For example: 20130820-AQPEST-PRE-10226-01.

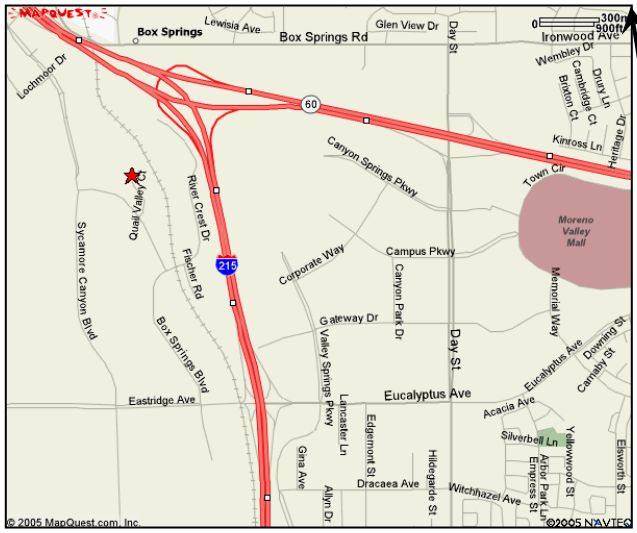
11. **# of Containers & Preservatives**: Write the number of bottles with a specific preservative under the preservative's column. Write the number of unpreserved bottles under the "Unpreserved" column. Write the total number of containers under the appropriate column as a check.

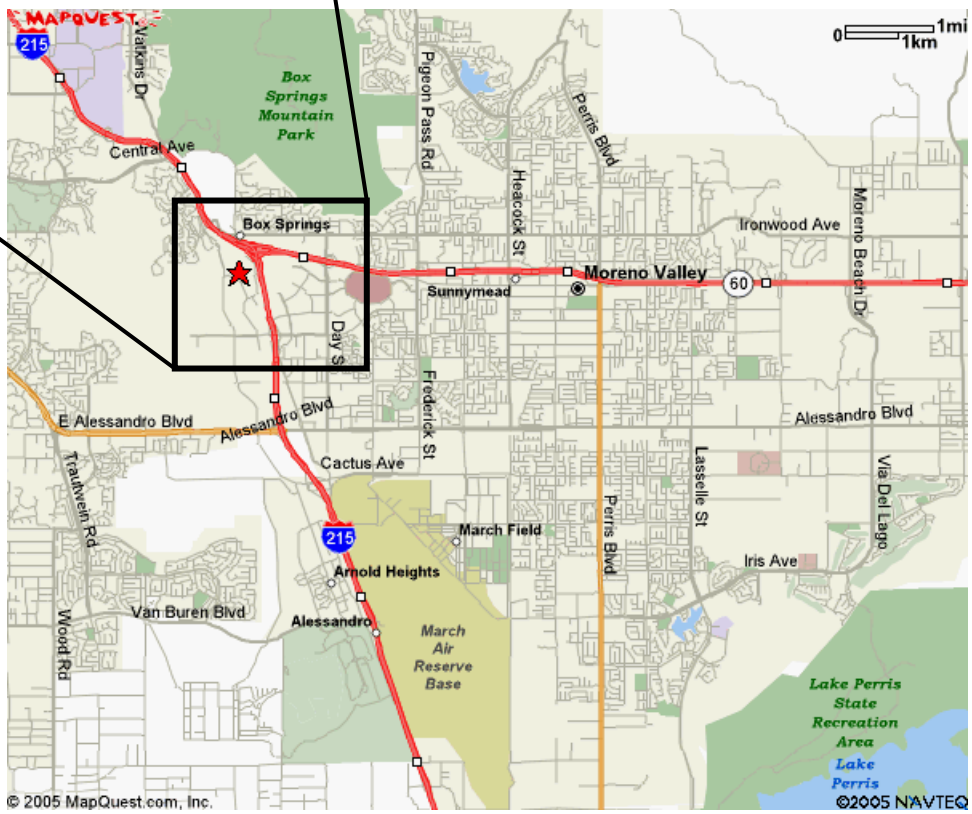
12. **Analysis Requested**: Indicate the pre-determined analyses for the samples or attach the specific watershed analyses sheet.

13. **Matrix**: Usually wastewater (WW)

14. **Relinquished By**: This area is important and must be filled out. When a person hands the sample to another person, the date and time the transfer took place and the signature of both parties involved in the transfer must be included. For example, when the samples are delivered to the lab, the District and lab staff people will sign and date the *Chain of Custody*. If someone outside of the District collects the sample, that person and you will be the first signatories.

Map to Babcock Laboratories





Driving directions to Babcock (taken from Mapquest)

From the South (e.g., Temecula):

Merge onto I-15 N	
Take I-215 N toward Riverside/San Bernardino	28.8 miles
Take the EUCALYPTUS AVE / EASTRIDGE AVE exit.	0.2 miles
Turn SLIGHT LEFT to take the EASTRIDGE AVE ramp.	<0.1 miles
Turn LEFT onto EUCALYPTUS AVE / EASTRIDGE AVE. Continue to follow EASTRIDGE AVE.	0.1 miles
Turn RIGHT onto BOX SPRINGS BLVD.	0.4 miles
Turn LEFT to stay on BOX SPRINGS BLVD.	0.1 miles
Turn RIGHT onto QUAIL VALLEY CT.	0.1 miles
End at **6100 Quail Valley Ct**	

From the West (e.g., Corona)

Take the CA-91 E toward SAN BERNARDINO	
Merge onto I-215 S / CA-60 E	4.2 miles
Take the BOX SPRINGS exit toward FAIR ISLE DR.	0.2 miles
Turn RIGHT onto BOX SPRINGS RD.	<0.1 miles
Turn LEFT onto SYCAMORE CANYON BLVD	0.5 miles
Turn LEFT onto BOX SPRINGS BLVD	0.2 miles
Turn LEFT onto QUAIL VALLEY CT.	0.1 miles
End at **6100 Quail Valley Ct**	

From the North (e.g., Norco)

Merge onto I-15 S toward SAN DIEGO	
Merge onto CA-60 E toward RIVERSIDE	16.5 miles
Take the BOX SPRINGS exit toward FAIR ISLE DR	0.2 miles
Turn RIGHT onto BOX SPRINGS RD	<0.1 miles
Turn LEFT onto SYCAMORE CANYON BLVD	0.5 miles
Turn LEFT onto BOX SPRINGS BLVD	0.2 miles
Turn LEFT onto QUAIL VALLEY CT.	0.1 miles
End at **6100 Quail Valley Ct**	

From the East (e.g., Banning)

Merge onto I-10 W toward LOS ANGELES	
Merge onto CA-60 W via the exit on the LEFT toward RIVERSIDE	18.4 miles
Take the BOX SPRINGS exit toward FAIR ISLE DR	0.1 miles
Turn LEFT onto BOX SPRINGS RD.	0.1 miles
Turn LEFT onto SYCAMORE CANYON BLVD.	0.5 miles
Turn LEFT onto BOX SPRINGS BLVD	0.2 miles
Turn LEFT onto QUAIL VALLEY CT	0.1 miles
End at **6100 Quail Valley Ct**	

Appendix G - Safety Procedures

Safety Procedures

Field samplers should be familiar with the following general health and safety procedures prior to sample collection. Safety of the sampling team is paramount. The field vehicle should start out with a full tank of gas and be in good repair. Extra care must be taken when driving at night or in the rain. If the sampling location is unsafe, make note of the unsafe situation and either do not collect a sample or come back after the hazardous situation has ceased.

- **Before leaving to the representative monitoring site:**
    - Always let someone else at the office know where you are, what your intended route or set of activities is, when you intend to return, and what to do if you don't come back at the appointed time. If in rough terrain, communicate with base when leaving and arriving at sampling sites.

    - Inspect the vehicle prior to leaving base. Make sure communication equipment and vehicle are in proper working condition. All safety equipment should be in the vehicle. Gas up the vehicle before you leave.

    - Know your equipment, sampling instructions, and procedures before going out into the field. Prepare labels, calibrate field meters, and clean equipment before you get started.

    - Know how to use and store chemicals. Do not expose chemicals or equipment to temperature extremes or long term direct sunshine.

- **When arriving at representative monitoring site:**
    - Prior to sampling, always assess the situation at the site. If it is unsafe, move on and return later or find a safer alternate location that will give comparable water quality results. If the situation remains unsafe, record the hazardous conditions in the Field Data Sheet, including photos, and do not collect a sample. Your safety is more important than the data.

    - If visibility is poor, use the vehicle lights to sweep the sampling site for safe entry and to illuminate the path. Use flashlights for additional lighting.

    - Do not cross low water crossings as the depth of the water and the integrity of the underlying roadway is uncertain. Floating debris may damage the vehicle or even push it from the roadway. Water as shallow as two feet deep can float a car.

    - Never cross private property without the permission of the landowner. Carry your employee identification card with you.

    - Watch for irate dogs, farm animals, wildlife, and insects such as ticks, hornets, wasps, and bees. Know what to do if you get bitten or stung.

- **During representative site monitoring:**

- When working with potentially hazardous materials, follow EPA, OSHA, and specific health and safety procedures. HAZWOPER certification is required if you will be sampling potentially hazardous materials.

- Confined space entry is not allowed.

- Avoid contact between chemical reagents and skin, eyes, nose, and mouth.

- Know chemical cleanup and disposal procedures. Wipe up all spills when they occur.

- Monitoring should be a team activity. Two person teams are required for night and wet weather sampling.

- If you have health considerations such as epilepsy, severe allergies, or diabetes, let your partner know, as well as instructions on what to do if you need emergency assistance.

- If in an active traffic area, cones should be placed around the parked vehicle, and personnel should be wearing reflective clothing. Make sure you are visible to passing traffic. Do not stand in front of the vehicle while sampling; better yet, park the vehicle a safe distance away. If visibility is poor, use flashlights when walking to and from the sampling site.

- If sampling from a bridge, be wary of passing traffic, and personnel should be wearing reflective clothing. Never lean over the bridge rails unless you are firmly anchored to the ground or the bridge with good hand/foot holds. Never stand in front of the vehicle while sampling if it is parked on the bridge. Place flashing lights up-road when sampling off a roadway bridge. If visibility is poor, use flashlights when walking to and from the sampling site.

- The person performing the sampling should be properly secured, such as on a lifeline, and be wearing adequate protective equipment.

- Stay out of the channel if at all possible. Dip sample rather than enter the channel.

- If you must enter the channel, use two hands to descend and ascend the iron ladder attached to the channel wall. Have your partner lower the sample bottles in an ice chest attached to a rope.

- Test the traction before walking down a slope.

- Do not walk on unstable stream banks. Disturbing these banks can accelerate erosion, contaminate your sample, and might prove dangerous if a bank collapses.

- Be very careful when walking in the stream itself. Rocky-bottom streams can be very slippery and can contain deep pools; muddy-bottom streams might also prove treacherous in areas where mud, silt, or sand have accumulated in sink holes. If you must cross the stream, use a walking stick to steady yourself and to probe for deep water or muck. Your partner(s) should wait on dry land ready to assist you if you fall. Never wade in swift or high water. A rule of thumb used by USGS is to not attempt wading in a stream where the depth multiplied by the velocity is equal to or greater than 10 sq ft/s. Watch the stream stage, especially if there is a chance it could rise rapidly.

- Wear hip boots or chest waders. Boots and waders protect against contaminants, cold, and underwater objects. Be aware that traction may be impaired while wearing them. Do not allow water to get into the boots or waders.

- If sampling at night, carry a bright flashlight or use a head-mounted lantern. Avoid shining the light in others' eyes.

- Do not go sampling if severe weather is predicted. If there is active lightning, find cover to avoid being struck.

- Watch for poison ivy, oak or sumac, and other types of vegetation in your area, such as nettles, that can cause rashes and irritation.

- Never drink the water in a stream, no matter how pristine the environment appears. Assume it is unsafe to drink, and bring your own water or sports drink from home. After monitoring, wash your hands with antibacterial soap.

- The ideal comfort range for humans is between 60 and 90 degrees Fahrenheit. Hypothermia (cold) and hyperthermia (heat) may occur outside this range. Be aware of the symptoms of either and leave the sampling area if symptoms begin to appear.

- If you become injured in the field, contact your supervisor or another supervisor for instructions. If the injury creates an emergency situation, call 911 and contact the District after the situation is stabilized.

Appendix H - Field Data Sheet

DRAFT

Rev. 8/15/2013
KAA

Aquatic Pesticide Application Plan

Field Data Sheet

Part I. Application Site Information

PROJECT NAME/DWG NUMBER: _____ SAMPLE DATE (MM/DD/YYY): _____

CONVEYANCE TYPE: _____ WATERSHED: ☐ WWR ☐ SAR ☐ SMR

APPLICATION BOUNDS: **U/S (Lat/Long):** _____ **D/S (Lat/Long):** _____

SAMPLE LOCATION: **(Lat/Long):** _____

PRINTED NAMES OF SAMPLING TEAM: _____

SIGNATURE OF LEAD SAMPLER: _____

Part II. Sample Information

SAMPLE ID: _____(YYYYMMDD)-AQPEST-_____(EVENT)-_____(STATION)-_____(SAMPLE)

EVENT TYPE: ☐ Background ☐ Event ☐ Post-Event

SAMPLE TYPES: ☐ Glyphosate (Grab) ☐ _____

☐ Travel Blank ☐ Field Blank ☐ Field DUP

Part III. Field Parameters

Time Measured: _____

Meter: _____ Calibration Date: _____

☐ Water Temp (°C) _____ ☐ Turbidity (NTU): _____

☐ pH _____ ☐ DO (mg/L): _____

☐ EC (µS/cm) _____ ☐ _____ _____

Part IV. Past and Current Weather Conditions

PRECIPITATION: ☐ None ☐ _____

NOW: ☐ Fog ☐ Drizzle ☐ Sprinkle ☐ Rain ☐ Hail/Snow

Last 24 hrs: ☐ None ☐ <1" ☐ >1" ☐ _____

Last 72 hrs: ☐ None ☐ <1" ☐ >1" ☐ _____

WIND: ☐ Calm ☐ Light Breeze ☐ Gentle Breeze

Part V. Observations

STREAM FLOW:

Dry?: ☐ Yes ☐ No Ponded?: ☐ Yes ☐ No

Was observed flow due to: Rising Groundwater: ☐ Yes ☐ No

Dry Weather event U/S: ☐ Yes ☐ No

Approx width (ft): _____ Approx. depth (ft): _____

Approx vel. (ft/s): _____ Estimated Flow (cfs): _____

SITE CONDITIONS:

ODOR: ☐ None ☐ Sulfides ☐ Petroleum ☐ Sewage ☐ Other

COLOR: ☐ Colorless ☐ Green ☐ Brown ☐ Other _____

CLARITY: ☐ Clear ☐ Cloudy ☐ Murky ☐ Other _____

TRASH: ☐ Yes ☐ No ☐ Dumping ☐ Other _____

SHEEN: ☐ Yes ☐ No FILM: ☐ Yes ☐ No

FUNGI: ☐ Yes ☐ No SLIMES: ☐ Yes ☐ No

OTHER OBJECTIONABLE GROWTHS: ☐ Yes ☐ No

NUISANCE: ☐ Yes ☐ No AQUATIC LIFE: ☐ Yes ☐ No

BOTTOM DEPOSITS: ☐ Yes ☐ No

If conditions other than no odor, colorless or clear, or if trash, sheen, films, fungi, slimes, objectionable growths, nuisance conditions or aquatic life is present, provide additional details in the "additional observation" box to the right. If adverse site conditions is observed, conduct additional investigations to the cause (District or other). See reverse side for additional details.

Notes: ☐ Photographs?

Aquatic Pesticide Application Plan

Field Data Sheet Instructions

Part I. Application Site Information

- When providing the facility drawing number, ensure it is the most current. Check the current version of the APAP.
- Provide the GPS coordinates of the application bounds and sample location. This is necessary, because application along a facility may vary.

Part II. Sample Information

- The sample id consists of the date (in YYYYMMDD format), event code (PRE, EVENT, or POST), station code (the 5 digit drawing number without the dash), and sample code (1 - primary, 2- field duplicate).

Part III. Field Parameters

- Note the time at which field parameters were measured.
- Enter field meter name and last calibration date.
- **Verify units!**

Part IV. Past and Current Weather Conditions

- Past weather conditions can be filled out at the office
- When identifying the wind speed, Calm – Smoke rises vertically; Light Breeze – Wind felt on face; Gentle Breeze – Leaves and small twigs in constant motion, light weighted flags extended; Note if wind speed appear higher.

Part V. Site Observations

- Prior to conducting water quality sampling, inspect the entire application site. The application site is the area that will be treated with aquatic herbicide. It is important that the visual observations are detailed enough so that comparisons can be made between pre-application and post-application. Take several representative photos of the site.
- Note any unusual conditions, under the site conditions section. Pay attention to unusual odors, colors, clarity, trash, sheen, films, and growths such as fungi, or slimes, or nuisance conditions or bottom deposits. If observed, provide detailed description and photographs.
- Note any potential impacts to effluent or receiving water limitations. For reference, Receiving Water Limitations are summarized below.
- Note any signs of IC/ID. If identified, IC/IDs will need to be eliminated per procedures in Section 4 of the DAMP or Section 4 of the District's JRMP.

Receiving Water Limitations

- **Dissolved Oxygen** below the Regional Water Board Basin Plan dissolved oxygen objectives (5 mg/L);
- **Floating Material** to be present in the amounts that cause nuisance or adversely affect beneficial uses;
- **Settleable Substances** to be present in concentrations that result in the deposition of material that causes nuisance or adversely affect beneficial uses;
- **Suspended Material** to be present in concentrations that cause nuisance or adversely affect beneficial uses.
- **Taste- or odor-producing** substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses or domestic or municipal water supplies;
- **Toxic Pollutants** to be present in the water column, sediments or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health;
- **Color** that is esthetically undesirable; and
- Degradation of **Aquatic Communities and populations**, including vertebrates, invertebrates, and non-target plant species.

Site Observation Guide

Odor: None, Musty, Sewage, Rotten Egg, Sour Milk, Fishy, Petroleum, Ammonia, Chlorine, Decaying Organisms, describe if other.

Floatables: None, Oil, Foam, Animal Waste, Green Waste, Algae, Food, Paper, Plastic, Other. Include estimated percentage.

Settleables: None, Minor, Major, Other

Vegetation: None, Normal, Excessive, Dying, Color, Other

Staining: None, Salt, Clay, Oil, Rust, Microbes, Other

Color: None, Yellow, Brown, Grey, Red, Green, Amber, Blue, Olive Brown, Other.

Sheen: Gasoline, Oil, or other fuel.

Note other conditions: Biological [Larvae, Crawfish, Frogs, Fish, Water Fowl, Other], Sediments [Normal, None]

Appendix I - Riverside CAC Use Permit

Riverside County Agricultural Commissioner
4080 Lemon Street, Room 19
Riverside, CA 92501

Office Phone (951) 955-3045
Fax (951) 955-3047

SCANNED
1/7/13 #150834

Operator Identification Number 33-15-3315100

Operator: RIVERSIDE COUNTY FLOOD CONTROL
PO BOX 1033
RIVERSIDE, CA 92502-

3315100-2015-Version: 1
County District #: RI
Issued on: 12/13/2012
Valid as of: 1/1/2013
[redacted]

Agent: MARK BILOKI
1995 MARKET STREET
RIVERSIDE
CA 92502-

Primary Phone: (951) 955-1310
Alternate Phone: (951) 955-1495
Mobile Phone: ( ) -
Fax: (951) 955-1552

Type of Use: Non-Agricultural Use

Employees Handle Pesticides
Permit Conditions: D, I

See condition detail for code descriptions.

Regulatory Notes:

I understand this operator identification number does not relieve me from liability for any damage to persons or property caused by the use of pesticides. I acknowledge that duly authorized representatives from the County Department of Agriculture or the Department of Pesticide Regulation may, at reasonable times, enter and inspect fields, areas, structures, greenhouses and equipment (including protective clothing and equipment) where pesticides are handled, stored or applied (ref. 3 CCR 6140).

[Form PR-ENF-125 (Rev 11/06) Pesticide Enforcement Branch]

Applicant: MARK W. BILOKI SUPERINTENDENT.
(Name & Title)

Applicant Signature: Mark W. Biloki Date: 12/13/12

Issuing Officer: [signature] Date: 12/13/2012

CONTACT LIST

Name	Auth Rep.	Phone	License	Expiration	Contact Type

PESTICIDES LIST

Number	Pesticide	Pests	Forms	Methods	Applicators
99998	NON-PERMIT NON-AG	VARIOUS	All Reg.	Ground	PCB/Operator

SITES LIST

Site	Location | Site Name Commodity Name/Code	Quantity	District	Section (MTRS)
01	MAPS;ENDGSPP&GWPA;U=MLES;CLIST - CNTY FLOOD CNTRLCHANNELS&BANKS **RIGHTS OF WAY / 40-0**	929 MISCELLANEOUS UNITS		S02S05W14
Pesticide #s:	99998			
01-A	MAPS;ENDGSPP&GWPAS;SEE LIST - CNTY FLOOD CNTRLCHANNELS&BANKS **RIGHTS OF WAY / 40-0**	5788 ACRES		S02S05W14
Pesticide #s:	99998			

OPERATION-WIDE CONDITIONS

D **ENDANGERED SPECIES CONDITIONS**

PESTICIDE APPLICATIONS IN OR NEAR HABITAT OF ENDANGERED SPECIES SHALL FOLLOW INTERIM MEASURERS FOR RIVERSIDE COUNTY AND/OR ATTACHED "PRESCRIBE" PRINT-OUT (ATTACHED).

I **6800(a) PRE-EMERGENTS**

NO APPLICATIONS IN LEACHING OR RUN-OFF GWPA WITHOUT RECOMMENDATION FROM PEST CONTROL ADVISOR AND JOB SITE PERMIT.

RIVERSIDE COUNTY AGRICULTURAL COMMISIONER
EMPLOYER'S RESPONSIBLITIES & PESTICIDE USE REQUIREMENTS

:RMITTEE Riverside County Flood Control

D/PERMIT # 33-15-3315100

✓ RECOGNIZE THE DAMAGE KNOW THE PEST

✓ EMPLOYEE HANDLERS

mployees must be trained by a Qualified Trainer prior to ıdling & trained annually thereafter. Mechanics must also be ined when handling contaminated equipment. Document ining with written training program records.

mployees must have physician approval prior to using a ;pirator, and fit testing.

ırrange in advance for emergency medical care (Conspicuously ;ted at work site).

rov( )hange area. Contaminated clothing should not be taken me. (Pesticides with signal word "Danger" and "Warning.")

rovide unimpeded access to completed A-8 or N-8 "Hazard)mmunication Information for Handlers," other appropriate SIS leaflets, pesticide use records and Material Safety Data ieets at a central work location.

)isplay application specific information for handlers at a central ork location after completion..

'rovide decontamination facilities, including eye wash, at ixing/loading sites.

'rovide coveralls for employees handling pesticides with signal ords "Danger" or "Warning."

\ssure that protective clothing and safety equipment is provided ıd used as required.

>rovide closed mixing system. (Liquid pesticides with the signal 'ord "Danger" & Minimum Exposure Pesticides).

>rovide medical supervision (Organophosphates and Carbamates 'ith signal words "Danger" and "Warning" used 6 or more days ı a 30 day period).

)o not allow employees to work alone. (Pesticides with signal 'ord "Danger").

✓ APPLICATOR RESPONSIBILITIES

~~-Submit notice of intent (California Restricted Materials).~~

-Give notice prior to application to appropriate parties.

-Keep pest control equipment in good repair and accurately calibrated.

-Use back-flow prevention devices.

-Use accurate weighing & measuring devices.

-Label service containers with the name of pesticide, signal word, & name and address of responsible party.

-Maintain uniform mixtures.

-Thoroughly clean all equipment when necessary to prevent contamination

-Perform all pest control under suitable climatic conditions.

~~-All greenhouse applications require posting.~~

~~-Follow proper greenhouse ventilation procedures.~~

N/A FIELD WORKERS

-All employees to be trained prior to entering treated fields and retrained every 5 years. (Treated Field = REI + 30 days).

-Arrange in advance for emergency medical care.

-Inform employees or labor contractor of the location of the pesticide records.

-Display Application-Specific information at a central work location after completion & before fieldworkers may enter.

-Provide decontamination facilities within ¼ mile.

-Provide required personal protective equipment to employees entering treated fields during re-entry interval.

-Provide unimpeded access to completed A-9 "Hazard Communication Information for Field Workers," Pesticide Use Records and Material Safety Data Sheets at work site or central location.

-Comply with re-entry intervals.

-Immediately take all ill persons to a physician immediately.

-Comply with warning and posting requirements.

{OVER}

✓ USE PESTICIDE ACCORDING TO THE LABEL

-Read the label.

-The commodity (production ag), site and/or pest (non production ag. and non ag.) must be on the label.

-Follow label's timing, method & rate of application.

-Know signal words & symbols that identify toxicity and hazards.

"Danger" - Most toxic
"Warning" - Moderately toxic
"Caution" - Least toxic

-Use protective clothing & safety equipment.

-Know poisoning symptoms and emergency procedures.

-Comply with pre-harvest & re-entry intervals.

✓ TRANSPORTATION, STORAGE & DISPOSAL

-Do not transport with people, food or feed.

-Properly secure pesticides during transportation.

-Lock storage area.

-Post warning signs. (Pesticides with signal words "Danger" and "Warning").

-Triple rinse & puncture empty containers at time of disposal.

-Follow proper spill cleanup procedures.

-Follow proper disposal procedures.

✓ PESTICIDE USE REPORTS & RECORDS

✱ -Submit properly completed use reports by the 10th of the month following use. Submit the original plus one copy.

-Keep all records for at least 2 years. Respirator written program & employee records for 3 years. ~~Cholinesterase Information for 3 years.~~

✓ LOCAL CONCERNS

-Be careful around schools, residential and recreational areas, roads, water, livestock, wildlife, etc.

✱ -Check PRESCRIBE database for endangered species information at www.cdpr.ca.gov/docs/endspec/prescint.htm

-Prevent drift onto adjacent crops or animals.

-Protect bees and endangered species.

✓ GROUND WATER PROTECTION

-Pesticides containing Simazine, Diuron, Bromacil, Prometon, Norflurazon, Atrazine, Bentazon and Norflurazon are designated as restricted materials. These materials cannot be used in a Ground Water Protection Area. Refer to the DPR website for a list of GWPA's by section, township & range.

✱ -Wellhead protection required. Construct a berm around irrigation well(s) to prevent irrigation water, which may contain pesticide residues, from entering the wellhead. Within 100 feet of any well, do not mix load or store pesticides; rinse spray equipment or pesticide containers; maintain or repair spray equipment; or apply pre-emergent herbicides.

I understand the requirements contained within this guideline are pertaining to possession and use of pesticides for which a permit/OID is being requested.

APPLICANT SIGNATURE Mark W. Bell DATE 12/13/12

ISSUED BY [signature] DATE 12/13/2012

RIVERSIDE COUNTY AGRICULTURAL COMMISSIONER

APPLICANT Riverside County Flood Control **OID NO.** 33-15-3315100

Authorized Representative Mark Biloki

OPERATOR IDENTIFICATION NUMBER (OID) INFORMATION

1. ___ Licensed PCO to purchase and apply all pesticides.
2. ✓ For rodenticides, dispose of all above-ground carcasses properly. Bury carcasses.
3. ✓ Pesticide Use Report due: ___ within seven (7) days of application (AG PCO)
   ✓ by 10th of following month
4. ___ Follow all requirements on use, as listed on: SLN#_____
5. ✓ Safety series provided: (ENG) *N
   (SPN)_____
6. ___ Fieldworkers to be trained prior to entering treated fields and every 5 years.
7. ✓ Comply with Federal endangered species requirements (You may or may not have State (Calif.) listed endangered species). All pest control to be conducted to ensure that endangered species and their habitats are not affected. For questions concerning Federal endangered species contact U.S. Fish and Wildlife at (760) 431-9440 or (310) 328-1516; for State listed endangered species, contact the CA Dept. of Fish and Game at www.dfg.ca.gov.
   ✓ Stephen's K-Rat ✓ Least Bell's Vireo ✓ Burrowing Owl ✓ Other
8. ___ Site is in a ___ Runoff ___ Leaching Ground Water Protection Area. Ground water pesticide use is prohibited.
9. ___ PAC #PA-33-_____ Exp. 12/31/_____ Federally Restricted & Ground Water Pesticides
10. ___ QAL/QAC #_____ Exp 12/31/_____ Federally Restricted & Ground Water Pesticides
11. ✓ Wellhead protection regulations apply.
12. ✓ Notify AG. Department of any changes to OID. Copper Sulfate precautions apply
13. ✓ Pest control recommendations are required for all agricultural mixing, loading, and applications done at public non-production agricultural sites such as cemeteries, golf courses, parks, and rights of way. This includes non-restricted and restricted use pesticides.

Previously issued

{OVER}

INFORMATION ISSUED

(*Previously Issued)

- ✓ Employer's Responsibility & Pesticide Use Requirements Sheet - OID
- * Pesticide Worker Training Packet (English/Spanish)
- * Training Record for Handlers (English/Spanish)
- * Heat Stress Information
- ___ Field Worker Safety Packet / Field Worker Training Record (English/Spanish)
- ___ Restricted Entry Interval Requirements (English/Spanish)
- * New Respirator Regulations Handout Effective January 1, 2008/Q & A handouts/Requirement Charts
- * Restricted Materials List
- * Endangered Species Information/Vertebrate Pest Control Requirements / Designs for Modified Bait Station's
- * Pesticide Use Record Requirements * Service Container Labeling Requirements
- * Pesticide Disposal Regulations/~~Disposal Form~~
- * Inspection "Highlights" Handouts: HQ, Application/Storage
- ___ Pesticide Use Report Example
- ___ Authorization Form for Operator Identification Number (OID)
- ___ Medical Supervision Statement (PROD. AGRIC.)
- ___ Field/Site/Sensitive Area Identification Sheet (Golf Courses, Schools)
- * Copper Sulfate Precaution
- * Wellhead Protection Regulations
- * Emergency Preparedness Packet/Storm Water Pollution Leaflet
- ___ Application Specific Information for Handlers/Fieldworkers form
- * Outreach Documents: * PPE (Handler's) _____ What to say when you spray (FW's)
- ___ _____

NOTE: The additional information, revised handouts, and Safety Series noted above were issued in conjunction with this OID. All other information, handouts, and Safety Series were issued with previous OID(s) and are still in my possession.

Applicant Signature Mark W. Black *Date* 12/13/12

Issued By _____ *Date* 12/13/2012

Revised 7/9/08 WD/mydoc/oidinfo

RIVERSIDE COUNTY AGRICULTURAL DEPARTMENT
4080 LEMON, RM 19, PO BOX 1089
RIVERSIDE, CA 92502-1089
Office: (951)955-3045 Recorder (NOI) (951)955-2532 FAX: (951)955-3047

OPERATOR/SITE IDENTIFICATION NUMBER

OPERATOR/SITE I.D. #: 33-12-3315100
County HQ District #: RI

RIVERSIDE COUNTY FLOOD CONTROL
PO BOX 1033
RIVERSIDE, CA 92502-

Expiration Date: 12/31/2012
Effective Date : 01/14/2010

MARK BILOKI
1995 MARKET STREET
RIVERSIDE, CA 92502-
EM:

Business:
Shop: 951/955-1495
Mobile/PGR: ( ) -
FAX: 951/955-1552

Employees handle pesticides (Y or N) |Y|

Numb	Pesticide	Pest(s)	Form.	Method(s)	Applicator(s)	
99998	NON-PERMIT NON-	VARIOUS	All Reg	Ground	PCO	Employee

Permit Applicant: MARK BILOKI Sign: Mark Biloki

Title: SUPERINTENDENT Issue Date: 1-14-10

Issuing Officer: Issue Date: 1-14-10

FIELD WORKERS
YES
X NO

PRIVATE APPLICATOR
Seasonal
Purchase & Use

FOLLOW LABELS; USE REPORTS DUE MONTHLY; SEE ATTACHED REGULATIONS.

Possible endangered species habitats. See attached.
Wellhead Regulations apply
Copper Sulfate precaution rgd.

RIVERSIDE COUNTY FLOOD CONTROL Operator/Site #: 33-12-3315100

S #	Location/Site Narrative / Crop	Dist	Sect	Town	Range	Meridian	Quant	Unit	Condition
01	CNTY FLOOD CNTRLCHANNELS&BANKS MAPS;ENDGSPP&GWPA;U=MLES;CLIST RIGHTS OF WAY (Code: 40- 0)	RI	1	00S	00W	S	929.00	U	N
	APN: 0 0 0 0 0 0 0 0 0 0 99998								
01-A	CNTY FLOOD CNTRLCHANNELS&BANKS MAPS;ENDGSPP&GWPAS;SEE LIST RIGHTS OF WAY (Code: 40- 0)	RI	1	00S	00W	S	5788.00	A	N
	APN: 0 0 0 0 0 0 0 0 0 0 99998								

*** Last Page ***

RIVERSIDE COUNTY AGRICULTURAL COMMISSIONER

APPLICANT Riverside County Flood Control **OID NO.** 33-12-3315100

Authorized Representative Mark Bilecki

OPERATOR IDENTIFICATION NUMBER (OID) INFORMATION

1. ____Licensed PCO to purchase and apply all pesticides.
2. ✓ For rodenticides, dispose of all above-ground carcasses properly. Bury carcasses.
3. ✓ Pesticide Use Report due: ___within seven (7) days of application (AG PCO)
   ✓ by 10th of following month
4. ____Follow all requirements on use, as listed on: SLN#_____
5. ✓ Safety series provided: (ENG) * N
   (SPN)_____
6. ___Fieldworkers to be trained prior to entering treated fields and every 5 years.
7. ✓ Comply with Federal endangered species requirements (You may or may not have State (Calif.) listed endangered species). All pest control to be conducted to ensure that endangered species and their habitats are not affected. For questions concerning Federal endangered species contact U.S. Fish and Wildlife at (760) 431-9440 or (310) 328-1516; for State listed endangered species, contact the CA Dept. of Fish and Game at www.dfg.ca.gov.
   ✓ Stephen's K-Rat ✓ Least Bell's Vireo ✓ Burrowing Owl ✓ Other
8. ____Site is in a ____Runoff ____Leaching Ground Water Protection Area. Ground water pesticide use is prohibited.
9. ____PAC #PA-33-_____ Exp. 12/31/_____ Federally Restricted & Ground Water Pesticides
10. ____QAL/QAC #_____ Exp 12/31/_____ Federally Restricted & Ground Water Pesticides
11. ✓ Wellhead protection regulations apply.
12. ✓ Notify AG. Department of any changes to OID. Copper Sulfate precaution apples
13. ✓ Pest control recommendations are required for all agricultural mixing, loading, and applications done at public non-production agricultural sites such as cemeteries, golf courses, parks, and rights of way. This includes non-restricted and restricted use pesticides.

***Previously issued**

{OVER}

INFORMATION ISSUED

(*Previously Issued)

- * Employer's Responsibility & Pesticide Use Requirements Sheet - OID
- * Pesticide Worker Training Packet (English/Spanish)
- * Training Record for Handlers (English/Spanish)
- * Heat Stress Information
- ___ Field Worker Safety Packet / Field Worker Training Record (English/Spanish)
- ___ Restricted Entry Interval Requirements (English/Spanish)
- ✓ New Respirator Regulations Handout Effective January 1, 2008/Q & A handouts/Requirement Charts
- * Restricted Materials List
- * Endangered Species Information/Vertebrate Pest Control Requirements / Designs for Modified Bait Station's
- * Pesticide Use Record Requirements ✓ Service Container Labeling Requirements
- * Pesticide Disposal Regulations/Disposal Form
- * Inspection "Highlights" Handouts: HQ, Application/Storage
- ___ Pesticide Use Report Example
- * Authorization Form for Operator Identification Number (OID)
- ___ Medical Supervision Statement (PROD. AGRIC.)
- ___ Field/Site/Sensitive Area Identification Sheet (Golf Courses, Schools)
- * Copper Sulfate Precaution
- * Wellhead Protection Regulations
- * Emergency Preparedness Packet/Storm Water Pollution Leaflet
- ___ Application Specific Information for Handlers/Fieldworkers form
- * Outreach Documents: * PPE (Handler's) _____ What to say when you spray (FW's)
- ___ _____

NOTE: The additional information, revised handouts, and Safety Series noted above were issued in conjunction with this OID. All other information, handouts, and Safety Series were issued with previous OID(s) and are still in my possession.

Applicant Signature _____ *Date* 1-14-10

Issued By _____ *Date* 1-14-10

RIVERSIDE COUNTY AGRICULTURAL COMMISIONER
EMPLOYER'S RESPONSIBLITIES & PESTICIDE USE REQUIREMENTS

PERMITTEE Riverside County Flood Control

PID/~~PERMIT~~ # 33-12-3315100

V RECOGNIZE THE DAMAGE
~~KNOW THE PEST~~

√EMPLOYEE HANDLERS

Employees must be trained by a Qualified Trainer prior to handling & trained annually thereafter. Mechanics must also be trained when handling contaminated equipment. Document training with written training program records.

Employees must have physician approval prior to using a respirator, and fit testing.

Arrange in advance for emergency medical care (Conspicuously posted at work site).

Provide change area. Contaminated clothing should not be taken home. (Pesticides with signal word "Danger" and "Warning.")

Provide unimpeded access to completed A-8 or N-8 "Hazard Communication Information for Handlers," other appropriate CSIS leaflets, pesticide use records and Material Safety Data Sheets at a central work location.

Display application specific information for handlers at a central work location after completion..

Provide decontamination facilities, including eye wash, at mixing/loading sites.

Provide coveralls for employees handling pesticides with signal words "Danger" or "Warning."

Assure that protective clothing and safety equipment is provided and used as required.

Provide closed mixing system. (Liquid pesticides with the signal word "Danger" & Minimum Exposure Pesticides).

Provide medical supervision (Organophosphates and Carbamates with signal words "Danger" and "Warning" used 6 or more days in a 30 day period).

Do not allow employees to work alone. (Pesticides with signal word "Danger").

√ APPLICATOR RESPONSIBILITIES

~~-Submit notice of intent (California Restricted Materials).~~

-Give notice prior to application to appropriate parties.

-Keep pest control equipment in good repair and accurately calibrated.

-Use back-flow prevention devices.

-Use accurate weighing & measuring devices.

-Label service containers with the name of pesticide, signal word, & name and address of responsible party.

-Maintain uniform mixtures.

-Thoroughly clean all equipment when necessary to prevent contamination

-Perform all pest control under suitable climatic conditions.

~~-All greenhouse applications require posting.~~

~~-Follow proper greenhouse ventilation procedures.~~

N/A FIELD WORKERS

-All employees to be trained prior to entering treated fields and retrained every 5 years. (Treated Field = REI + 30 days).

-Arrange in advance for emergency medical care.

-Inform employees or labor contractor of the location of the pesticide records.

-Display Application-Specific information at a central work location after completion & before fieldworkers may enter.

-Provide decontamination facilities within ¼ mile.

-Provide required personal protective equipment to employees entering treated fields during re-entry interval.

-Provide unimpeded access to completed A-9 "Hazard Communication Information for Field Workers," Pesticide Use Records and Material Safety Data Sheets at work site or central location.

-Comply with re-entry intervals.

-Immediately take all ill persons to a physician immediately.

-Comply with warning and posting requirements.

{OVER}

√ USE PESTICIDE ACCORDING TO THE LABEL

-Read the label.

-The commodity (production ag), site and/or pest (non production ag. and non ag.) must be on the label.

-Follow label's timing, method & rate of application.

-Know signal words & symbols that identify toxicity and hazards.

"Danger" - Most toxic
"Warning" - Moderately toxic
"Caution" - Least toxic

-Use protective clothing & safety equipment.

-Know poisoning symptoms and emergency procedures.

-Comply with pre-harvest & re-entry intervals.

√ TRANSPORTATION, STORAGE & DISPOSAL

-Do not transport with people, food or feed.

-Properly secure pesticides during transportation.

-Lock storage area.

-Post warning signs. (Pesticides with signal words "Danger" and "Warning").

-Triple rinse & puncture empty containers at time of disposal.

-Follow proper spill cleanup procedures.

-Follow proper disposal procedures.

√ PESTICIDE USE REPORTS & RECORDS

✳ -Submit properly completed use reports by the 10th of the month following use. Submit the original plus one copy.

-Keep all records for at least 2 years. Respirator wri... program & employee records for 3 years. Cholinesterase Information for 3 years.

√ LOCAL CONCERNS

-Be careful around schools, residential and recreational areas, roads, water, livestock, wildlife, etc.

-Check PRESCRIBE database for endangered species information at www.cdpr.ca.gov/docs/endspec/prescint.htm

-Prevent drift onto adjacent crops or animals.

-Protect bees and endangered species.

√ GROUND WATER PROTECTION

-Pesticides containing Simazine, Diuron, Bromacil, Prometon, Norflurazon, Atrazine, Bentazon and Norflurazon are designated as restricted materials. These materials cannot be used in a Ground Water Protection Area. Refer to the DPR website for a list of GWPA's by section, township & range.

✳ -Wellhead protection required. Construct a berm around irrigation well(s) to prevent irrigation water, which may contain pesticide residues, from entering the wellhead. W... 100 feet of any well, do not mix load or store pesticides; r... spray equipment or pesticide containers; maintain or repair spray equipment; or apply pre-emergent herbicides.

I understand the requirements contained within this guideline are pertaining to possession and use of pesticides for which a permit/OID is being requested.

APPLICANT SIGNATURE Mark Blick DATE 1-14-10

ISSUED BY [signature] DATE 1-14-10

Appendix J - General Permit

STATE WATER RESOURCES CONTROL BOARD

1001 I Street, Sacramento, California 95814
http://www.waterboards.ca.gov/water_issues/programs/npdes/aquatic.shtml

WATER QUALITY ORDER NO. 2013-0002-DWQ
GENERAL PERMIT NO. CAG990005

STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR RESIDUAL AQUATIC PESTICIDE DISCHARGES TO WATERS OF THE UNITED STATES FROM ALGAE AND AQUATIC WEED CONTROL APPLICATIONS

The following Dischargers may apply for coverage under this General Permit in compliance with the waste discharge requirements as set forth in this General Permit:

Table 1. Discharger Information

Dischargers	Any entity that discharges residual algaecides and aquatic herbicide and their degradation byproducts to waters of the United States* from algae and aquatic weed control applications.

Table 2. Administrative Information

This General Permit was adopted by the State Water Resources Control Board (hereinafter State Water Board) on:	**March 5, 2013**
This General Permit shall become effective on:	**December 1, 2013**
This General Permit shall expire on:	**November 30, 2018**
The U.S. Environmental Protection Agency (U.S. EPA) and the State Water Board have classified this discharge as a **minor** discharge.	

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this General Permit with all attachments is a full, true, and correct copy of the General Permit adopted by the State Water Board on March 5, 2013.

AYE: Vice Chair Frances Spivy-Weber
Board Member Tam M. Doduc
Board Member Steven Moore
Board Member Felicia Marcus

NAY: None

ABSENT: None

ABSTAIN: Chairman Charles R. Hoppin

Jeanine Townsend
Clerk to the Board

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Attachment E – Notice of Intent E-1
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Attachment G – Exception List G-1

I. DISCHARGE INFORMATION

Pesticide formulations may include "active ingredients"* and "inert ingredients."* Adjuvants* or surfactants may be added to the ingredients in the application equipment used in delivery of the pesticide. As part of the registration process of pesticides for use in California, U.S. EPA and the California Department of Pesticide Regulation (DPR) evaluate data submitted by registrants to ensure that a product used according to label instructions will cause no harm or adverse impact on non-target organisms that cannot be reduced or mitigated with protective measures or use restrictions. The Clean Water Act (CWA) section 301(a) broadly prohibits the discharge of any pollutant to waters of the United States, except in compliance with an NPDES permit. Residual pesticides* discharged into surface waters constitute pollutants within the meaning of the CWA even if the discharge is in compliance with the registration requirements of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Therefore, coverage under an NPDES permit is required.

The discharge of algaecides and aquatic herbicides and their residues to surface waters for algae and aquatic weed control throughout the State of California may pose a threat to existing and potential beneficial uses of waters of the United States if not properly controlled and regulated.

This General Permit regulates the discharge of aquatic pesticides* (algaecides and aquatic herbicides) used for algae and aquatic weed control to waters of the United States. These are algaecides and aquatic herbicides with registration labels that explicitly allow direct application to water bodies.

II. PERMIT COVERAGE AND APPLICATION REQUIREMENTS

A. General Permit Coverage

Except for discharges on tribal lands that are regulated by a federal permit, this General Permit covers the point source* discharge to waters of the United States of residues resulting from pesticide applications using products containing 2,4-D, acrolein, copper, diquat, endothall, fluridone, glyphosate, imazamox, imazapyr, penoxsulam, sodium carbonate peroxyhydrate, and triclopyr-based algaecides and aquatic herbicides, and adjuvants containing ingredients represented by the surrogate nonylphenol. This General Permit covers only discharges of algaecides, and aquatic herbicides that are currently registered for use in California, or that become registered for use and contain the above-listed active ingredients and ingredients represented by the surrogate of nonylphenol.

* An asterisk means the term is defined in Attachment A. This applies to all sections of this General permit.

This General Permit does not cover agricultural storm water discharges or return flows from irrigated agriculture because these discharges are not defined as “point sources” and do not require coverage under an NPDES permit. This General Permit also does not cover other indirect or nonpoint source discharges from applications of algaecides and aquatic herbicides, including discharges of pesticides to land that may be conveyed in storm water or irrigation runoff.

As shown in Table 1, this General Permit becomes effective on December 1, 2013. To obtain coverage under this General Permit on or after that date, Dischargers must submit their application for coverage as set forth in Section II.C below, at least 90 days prior to their first pesticide application.

B. Discharger

A Discharger under this General Permit includes any entity involved in the application of algaecides and aquatic herbicides that results in a discharge of algaecides and aquatic herbicides and their residues and degradation byproducts to waters of the United States, and meets either or both of the following two criteria:

The entity has control over the financing for or the decision to perform algaecide and aquatic herbicide applications that result in discharges, including the ability to modify those decisions; or

The entity has day-to-day control of algaecide and aquatic herbicide applications or performs activities that are necessary to ensure compliance with this General Permit. For example, the entity is authorized to direct workers to carry out activities required by this General Permit or perform such activities themselves.

C. General Permit Application

To obtain authorization under this General Permit, Dischargers must submit to the State Water Board a complete application that consists of the following:

1. A Notice of Intent (NOI) shown as Attachment E, signed in accordance with the signatory requirements of the Standard Provisions in Attachment B;
2. An application fee. A fee is required only for new Dischargers. Dischargersenrolled under Order No. 2004-0009-DWQ and applying for coverage under this Permit will be billed during the regular billing cycle; and
3. An Aquatic Pesticide* Application Plan (APAP).

Within 90 days of receipt of an application, the State Water Board's Deputy Director of the Division of Water Quality (Deputy Director) will either issue a Notice of Applicability (NOA) or deny the application. The NOA will specify the permitted algaecide and aquatic herbicide active ingredients that may be used, and any region-specific conditions and requirements not stated in this General Permit. Any such region-specific conditions and requirements shall be enforceable. The Discharger is authorized to discharge starting on the date of the NOA.

Alternatively, the Deputy Director or a Regional Water Board Executive Officer may issue a Notice of Exclusion (NOE),[1] which either terminates the permit coverage or requires submittal of an application for an individual permit or alternative general permit.

D. Fees

The fee for enrollment under this General Permit shall be based on section 2200(b)(9) category 3 of title 23, California Code of Regulations, which is available at http://www.waterboards.ca.gov/resources/fees/docs/fy1112fee_schdl_npdes_prmt.pdf and is payable to the State Water Board.

E. Terminating Coverage

To terminate permit coverage, a Discharger must submit a complete and accurate Notice of Termination (NOT) provided in Attachment F. The Discharger's authorization to discharge under this General Permit terminates on the day of the coverage termination letter issued by the Deputy Director. Prior to the termination effective date, the Discharger is subject to the terms and conditions of this General Permit and is responsible for submitting the annual fee and all reports associated with this General Permit.

A Discharger must submit an NOT when one of the following conditions occurs:

1. A new operator has taken over responsibility of the Discharger's algae or aquatic weed control activities covered under an existing NOA;
2. The Discharger has ceased all discharges from the application of algaecides and aquatic herbicide for which it obtained General Permit coverage and does not expect to discharge during the remainder of this General Permit term; or
3. The Discharger has obtained coverage under an individual permit or an alternative general permit for all discharges required to be covered by an NPDES permit.

III. FINDINGS

The Fact Sheet (Attachment D), which contains the background information and rationale for the requirements in this General Permit, is hereby incorporated into this General Permit and constitutes its findings. All other attachments (A, B, C, and E through G) are also incorporated into this General Permit.

---

[1] An NOE is a one-page notice that indicates and justifies why the Discharger or proposed Discharger is not eligible for coverage under this General Permit and states the reason why. This justification can include, but is not limited to, necessity to comply with a total maximum daily load or to protect sensitive water bodies. The NOE can also indicate that the coverage is denied if feasible alternatives to the selected pesticide application project are not analyzed.

THEREFORE, IT IS HEREBY ORDERED that this General Permit supersedes Order No. 2004-0009-DWQ except for enforcement purposes, and in order to meet the provisions contained in division 7 of the Water Code (commencing with §13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

IV. DISCHARGE PROHIBITIONS

A. The discharge of residual algaecides and aquatic herbicides in a manner different from that described in this General Permit is prohibited.

B. The discharge of residual algaecides and aquatic herbicides shall not create a nuisance as defined in section 13050 of the California Water Code.

C. The discharge shall not cause, have a reasonable potential to cause, or contribute to an in-stream excursion above any applicable standard or criterion promulgated by U.S. EPA pursuant to section 303 of the CWA, or water quality objective adopted by the State or Regional Water Boards.

D. All pesticides are prohibited from the waters of the Lahontan Region (Region 6). The use of this permit is invalid in the Lahontan Region unless the discharger has requested a prohibition exemption from the Lahontan Water Board and the Lahontan Water Board has granted an exemption for the use of algaecides or aquatic herbicides.

V. EFFLUENT LIMITATIONS

A. The discharge of residual algaecides and aquatic herbicides must meet applicable water quality standards; and

B. Dischargers shall implement Best Management Practices (BMPs) when applying aquatic algaecides and aquatic herbicides. The BMPs must be provided in the APAP which is described in Section VIII.C below.

VI. RECEIVING WATER LIMITATIONS

The discharge shall not result in any of the following:

A. The discharge of residual algaecides and aquatic herbicides shall not cause or contribute to an exceedance of the following limitations in the receiving water:*

Table 3. Receiving Water Limitations

Constituent/ Parameter	BENEFICIAL USE[1]				Basis
	MUN, µg/L	WARM or COLD, µg/L	Other than MUN, WARM, or COLD, µg/L	All Designations	
2,4-D	70				U.S. EPA MCL
Acrolein[2]	320	21	780		U.S. EPA Water Quality Criteria, 1986.
Copper[2]				Dissolved Freshwater[3] Copper Chronic = 0.960exp{0.8545 [ln(hardness[4])] – 1.702} [5, 6] Dissolved saltwater[3] Copper Chronic = 0.83exp{0.8545 [ln(hardness[4])] – 1.702} [5,6]	California Toxics Rule
Diquat	20				U.S. EPA MCL
Endothall	100				U.S. EPA MCL
Fluridone	560				U.S. EPA Integrated Risk Information System
Glyphosate	700				U.S. EPA MCL
Nonylphenol				Freshwater Chronic Criterion = 6.6 µg/L Saltwater Chronic Criterion = 1.7 µg/L	U.S. EPA National Recommended Ambient Water Quality Criteria
Toxicity	Algaecide and aquatic herbicide applications shall not cause or contribute to toxicity in receiving water(s).				Regional Water Boards' Basin Plans

Notes:
1. See Regional Water Boards' Water Quality Control Plans (Basin Plans) for beneficial use definitions.
2. Public entities and mutual water companies* listed in Attachment G are not required to meet these limitations in receiving waters during the exception period described in the APAP and Section VIII.C.10 below.
3. For waters in which the salinity is equal to or less than 1 part per thousand 95% or more of the time, the freshwater criteria apply. For waters in which the salinity is equal to or greater than 10 parts per thousand 95% or more of the time, saltwater criteria apply. For waters in which the salinity is between 1 and 10 parts per thousand, the applicable criteria are the more stringent of the freshwater or saltwater criteria.
4. For freshwater aquatic life criteria, waters with a hardness 400 mg/L or less as calcium carbonate, the actual ambient hardness of surface water shall be used. For waters with a hardness of over 400 mg/L as calcium carbonate, a hardness of 400 mg/L as calcium carbonate shall be used with a default Water-Effect Ratio of 1.
5. Values should be rounded to two significant figures.
6. This limitation does not apply to the Sacramento River and its tributaries above the State Highway 32 Bridge at Hamilton City. See Table III-1 of the Basin Plan for the Sacramento and San Joaquin River Basins for copper limitation.

B. **Dissolved Oxygen.** Dissolved oxygen to be below the Regional Water Board Basin Plans' dissolved oxygen objectives for the receiving water.

C. **Floating Material.** Floating material to be present in the amounts that cause nuisance or adversely affect beneficial uses.

D. **Settleable Substances.** Settleable substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

E. **Suspended Material.** Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.

F. **Taste and Odors.** Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses or domestic or municipal water supplies.

G. **Toxic Pollutants.** Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

H. **Color.** Esthetically undesirable discoloration.

I. **Aquatic Communities.** Aquatic communities and populations, including vertebrates, invertebrates, and non-target plant species to be degraded.

VII. RECEIVING WATER MONITORING TRIGGERS

In the absence of Receiving Water Limitations, the Receiving Water Monitoring Triggers shown in Table 4 below will be used to assess compliance with the narrative receiving water toxicity limitation. However, exceeding the monitoring trigger does not constitute a violation of this General Permit as long as the Discharger performs the following actions: (1) initiates additional investigations for the cause of the exceedance; (2) implements additional BMPs to reduce the algaecide and aquatic herbicide residue concentration to be below the monitoring triggers in future applications; and (3) evaluates the appropriateness of using alternative products.

Table 4. Receiving Water Monitoring Triggers

Ingredient	Unit	Instantaneous Maximum Monitoring Trigger	Basis
Imazapyr	mg/L	11.2	U.S. EPA Office of Pesticides *Ecotoxicity Database*
Triclopyr Triethylamine	mg/L	13.0	U.S. EPA Office of Pesticides *Ecotoxicity Database*

VIII. AQUATIC PESTICIDE USE REQUIREMENTS

A. Application Schedule

The Discharger shall provide a phone number or other specific contact information to all persons who request the Discharger's application schedule. The Discharger shall provide the requester with the most current application schedule and inform the requester if the schedule is subject to change. Information may be made available by electronic means, including posting prominently on a well-known website.

B. Public Notice Requirements

Every calendar year, at least 15 days prior to the first application of algaecide or aquatic herbicide, the Discharger shall notify potentially affected public agencies. The Discharger shall post the notification on its website if available. The notification shall include the following information:

1. A statement of the discharger's intent to apply algaecide or aquatic herbicide(s);
2. Name of algaecide and aquatic herbicide(s);
3. Purpose of use;
4. General time period and locations of expected use;
5. Any water use restrictions or precautions during treatment; and
6. A phone number that interested persons may call to obtain additional information from the Discharger.

C. Aquatic Pesticides Application Plan (APAP)

Dischargers shall submit an APAP at least 90 days before the expected day of permit coverage. The APAP shall contain, but not be limited to, the following elements sufficient to address each proposed treatment area:*

1. Description of the water system to which algaecides and aquatic herbicides are being applied;
2. Description of the treatment area in the water system;
3. Description of types of weed(s) and algae that are being controlled and why;
4. Algaecide and aquatic herbicide products or types of algaecides and aquatic herbicides expected to be used and if known their degradation byproducts, the method in which they are applied, and if applicable, the adjuvants and surfactants used;
5. Discussion of the factors influencing the decision to select algaecide and aquatic herbicide applications for algae and weed control;
6. If applicable, list the gates or control structures to be used to control the extent of receiving waters potentially affected by algaecide and aquatic herbicide application and provide an inspection schedule of those gates or control structures to ensure they are not leaking;
7. If the Discharger has been granted a short-term or seasonal exception under State Water Board *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays,* and Estuaries of California* (Policy) section 5.3 from meeting acrolein and copper receiving water limitations, provide the beginning and ending dates of the exception period, and justification for the needed time for the exception. If algaecide and aquatic herbicide applications occur outside of the exception period, describe plans to ensure that receiving water criteria are not exceeded because the Dischargers must comply with the

acrolein and copper receiving water limitations for all applications that occur outside of the exception period;

8. Description of monitoring program;
9. Description of procedures used to prevent sample contamination from persons, equipment, and vehicles associated with algaecide and aquatic herbicide application;
10. Description of the BMPs to be implemented. The BMPs shall include, at the minimum:
    a. Measures to prevent algaecide and aquatic herbicide spill and for spill containment during the event of a spill;
    b. Measures to ensure that only an appropriate rate of application consistent with product label requirements is applied for the targeted weeds or algae;
    c. The Discharger's plan in educating its staff and algaecide and aquatic herbicide applicators on how to avoid any potential adverse effects* from the algaecide and aquatic herbicide applications;
    d. Discussion on planning and coordination with nearby farmers and agencies with water rights diversion so that beneficial uses of the water (irrigation, drinking water supply, domestic stock water, etc.) are not impacted during the treatment period; and
    e. A description of measures that will be used for preventing fish kill when algaecides and aquatic herbicides will be used for algae and aquatic weed controls.
11. Examination of Possible Alternatives. Dischargers should examine the alternatives to algaecide and aquatic herbicide use to reduce the need for applying algaecides and herbicides. Such methods include:
    a. Evaluating the following management options, in which the impact to water quality, impact to non-target organisms including plants, algaecide and aquatic herbicide resistance, feasibility, and cost effectiveness should be considered:
        i. No action;
        ii. Prevention;
        iii. Mechanical or physical methods;
        iv. Cultural methods;
        v. Biological control agents; and
        vi. Algaecides and aquatic herbicides;

        If there are no alternatives to algaecides and aquatic herbicides, Dischargers shall use the minimum amount of algaecides and aquatic herbicides that is necessary to have an effective control program and is consistent with the algaecide and aquatic herbicide product label requirements.

b. Using the least intrusive method of algaecide and aquatic herbicide application; and

c. Applying a decision matrix concept to the choice of the most appropriate formulation.

D. APAP Processing, Approval, and Modifications

Upon receipt of an APAP, staff will post it on the State Water Board's website for a 30-day public comment period[2] and will distribute a notice via the State Water Board's Lyris list that an APAP has been posted. Staff will coordinate with Regional Water Board staff in reviewing the application package for completeness and applicability to this General Permit. If no comments are received and State and Regional Water Board staff deem the APAP complete, the Deputy Director will issue an NOA within five (5) working days of closure of the comment period. If comments are received, staff will work with Regional Water Board staff and the Discharger to address the comments to allow the Deputy Director to issue an NOA as expeditiously as possible. Permit coverage will begin when the Discharger receives the NOA.

Major changes to the APAP shall be submitted to the Deputy Director for approval. Examples of major changes include using a different product other than what is specified in the APAP, changing an application method that may result in different amounts of pesticides being applied, or adding or deleting BMPs.

E. Algaecide and Aquatic Herbicide Application Log

The Discharger shall maintain a log for each algaecide and aquatic herbicide application. The application log shall contain, at a minimum, the following information:

1. Date of application;
2. Location of application;
3. Name of applicator;
4. Type and amount of algaecide and aquatic herbicide used;
5. Application details, such as flow and level of water body, time application started and stopped, algaecide and aquatic herbicide application rate and concentration;
6. Visual monitoring assessment; and
7. Certification that applicator(s) followed the APAP.

[2] See Waterkeeper Alliance, Inc. v. EPA, 399 F.3d 486 (2nd Cir. 2005).

IX. PROVISIONS

A. Standard Provisions

1. All Dischargers authorized to discharge under this General Permit shall comply with the Federal Standard Provisions included in Attachment B of this General Permit.
2. This General Permit does not authorize the discharge of residual algaecides and aquatic herbicides or their degradation byproducts to waters of the United States that are impaired by the active ingredient of the algaecides and herbicides used. Impaired waters are those waters not meeting water quality standards pursuant to section 303(d) of the CWA. California impaired waters are listed on: http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/2010_combo303d.xls.
3. This General Permit does not authorize any take of endangered species. The discharge is prohibited from adversely impacting biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or state endangered species laws. To ensure that endangered species issues are raised to the responsible agencies, the State Water Board has notified the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife of this General Permit.
4. The State Water Board may use this General Permit to regulate the discharge of algaecides and aquatic herbicides and their residues to a surface water classified as Outstanding National Resource Waters or as a water body impaired by unknown toxicity only after the following conditions are satisfied: (1) the proposed project will comply with the limitations and discharge requirements specified in the General Permit; and (2) if required, the proposed algaecide and aquatic herbicide application qualifies for and has been granted a Basin Plan prohibition exception prior to discharge. The two bodies of water that are classified as Outstanding National Resource Waters in California are Lake Tahoe and Mono Lake.
5. The Discharger must follow all FIFRA pesticide label instructions and any Restricted Material Use Permits issued by a County Agricultural Commissioner.
6. All adjuvants used with the algaecides and aquatic herbicides must be labeled for aquatic use.
7. The Discharger must comply with effluent and receiving water limitations and must develop and implement an APAP.
8. To reduce the potential impacts to water quality, Dischargers shall implement the feasible alternatives to algaecide and aquatic herbicide use that are identified in the APAP.
9. All Dischargers authorized to discharge under this General Permit shall comply with discharge prohibitions and other requirements contained in Basin Plans, as implemented by the State and the nine Regional Water Boards.

10. All Dischargers authorized to discharge under this General Permit shall comply with the following provisions:
    a. After notice and opportunity for a hearing, this General Permit may be terminated or modified for cause, including, but not limited to:
        i. Violation of any term or condition contained in this General Permit;
        ii. Obtaining this General Permit by misrepresentation or by failing to disclose fully all relevant facts;
        iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and
        iv. A material change in the character, location, or volume of discharge (if applicable).
    b. The provisions of this General Permit are severable. If any provision of this General Permit is found invalid, the remainder of this General Permit shall not be affected.
    c. The Discharger shall maintain a copy of this General Permit and make it available at all times to operating personnel. Key operating personnel shall be familiar with its content.
    d. Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the State and Regional Water Boards.
    e. All monitoring and analysis instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated based on manufacturer's recommendations to ensure their continued accuracy.
    f. Each Discharger shall file with the State Water Board and the appropriate Regional Water Board technical reports on self monitoring* performed according to the detailed specifications contained in the Monitoring and Reporting Program attached to this General Permit.
    g. The State and Regional Water Board are authorized to enforce the terms of this General Permit under provisions of the California Water Code, including, but not limited to, sections 13385, 13386, and 13387.

B. Monitoring and Reporting Program Requirements

The Discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment C of this General Permit.

C. Special Provisions

1. Reopener Provisions

This General Permit may be reopened for modification and reissuance in accordance with the provisions contained in title 40 Code Federal Regulation (40 C.F.R.) section 122.62, and for the following reasons:

a. **Addition to the Public Entity List**. This General Permit may be reopened to modify Attachment G if any additional entity becomes qualified for a Policy section 5.3 exception.

b. **Addition of Aquatic Pesticide Active Ingredients**. This General Permit may be reopened to add additional algaecide and aquatic herbicide active ingredients if new active ingredients are registered by U.S. EPA and DPR.

c. **Acute and Chronic Toxicity.** If the State Water Board revises the Policy toxicity control provisions that would require new implementation procedures including the establishment of numeric chronic toxicity limitations, this General Permit may be reopened to include numeric acute and/or chronic toxicity receiving water limitations based on the new provisions.

d. **Receiving Water Limitations.** This General Permit may be reopened to add numeric Receiving Water Limitations for the residual algaecide and aquatic herbicides* exceeding the triggers if the additional investigation results show necessary.

e. **Endangered Species Act**. If U.S. EPA develops biological opinions regarding algaecides and aquatic herbicides included in this General Permit, this General Permit may be re-opened to add or modify Receiving Water Limitations/Monitoring Triggers for aquatic herbicides and algaecides and their residues of concern, if necessary.

2. **Change of Discharger**

In the event of any change in the Discharger that has obtained coverage under this General Permit, the previous Discharger shall notify the new Discharger of the existence of this General Permit by letter. A copy of the letter shall be immediately forwarded to the Deputy Director. After receipt of the letter, the Deputy Director will terminate the permit coverage to the previous Discharger. The new Discharger shall complete and submit to the Deputy Director a revised NOI form (Attachment E), and any revisions to the APAP prepared by the previous control entity or a new APAP.

3. **Application Package**

Dischargers who seek coverage under this General Permit shall file a complete application package at least 90 days before the expected date of algaecide and aquatic herbicide application. The application package shall include an NOI, APAP, and application fee. Enrolled Dischargers will be billed annually thereafter.

4. **Special Studies, Technical Reports, and Additional Monitoring Requirements**

a. **Additional Investigation**

Each Discharger must conduct additional investigations when the chemical monitoring shows exceedance of any receiving water limitation or monitoring trigger. The additional investigations shall identify corrective actions to

eliminate exceedance of receiving water limitations or monitoring triggers caused by the algaecide and aquatic herbicide application. The investigation shall include, but not be limited to evaluating the need to implement one or more of the following actions: revising and improving the existing BMPs, revising the mode of application, using less toxic algaecide and aquatic herbicide products, or selecting alternative methods for algae and aquatic weed control.

b. **Qualified Biologist Certification Following Project Completion**

Upon completion of an algaecide and aquatic herbicide project, public entities and mutual water companies listed in Attachment G of this General Permit shall provide certification by a qualified biologist* that beneficial uses of receiving waters have been restored.

5. **Corrective Action**

a. **Exceedance of Receiving Water Limitations or Monitoring Triggers.**

If a Receiving Water Limitation in Table 3 or a Monitoring Trigger in Table 4 is exceeded in the Event or Post-Event sample, the Discharger shall perform the following actions: (1) initiate additional investigations for the cause of the exceedance, (2) implement appropriate BMPs to reduce the algaecide and aquatic herbicide concentration to be below the applicable receiving water limitation or monitoring triggers in future applications, and (3) evaluate the appropriateness of using alternative products.

b. **Revision of Control Measures.**

If any of the following situations occur, the Discharger must review and, as necessary, revise the evaluation and selection of the control measures to ensure that the situation is eliminated and will not be repeated in the future:

i. An unauthorized release or discharge associated with the application of algaecides and aquatic herbicides (e.g., spill, leak, or discharge not authorized by this or another NPDES permit) occurs;

ii. The Discharger becomes aware, or the State Water Board concludes, that the control measures are not adequate/sufficient for the discharge to meet applicable water quality standards;

iii. Any monitoring activities indicate that the Discharger failed to:

a) Follow the label instructions for the product used;

b) Use the minimum amount of algaecide and aquatic herbicide product per application and optimum frequency of algaecide and aquatic herbicide applications that are necessary for an effective control program consistent with reducing the potential for development of resistance and the algaecide and aquatic herbicide product label requirements;

c) Perform regular maintenance activities to reduce leaks, spills, or other unintended discharges of algaecides and aquatic herbicides

associated with the application of algaecides and aquatic herbicides covered under this General Permit; or

d) Maintain algaecide and aquatic herbicide application equipment in proper operating condition by adhering to any manufacturer's conditions and industry practices, and by calibrating, cleaning, and repairing such equipment on a regular basis to ensure effective algaecide and aquatic herbicide application and algae and aquatic weed control. The Discharger must ensure that the equipment's rate of algaecide and aquatic herbicide application is calibrated to deliver the minimum quantity of algaecides and aquatic herbicides that is needed to have an effective control program and is consistent with the algaecide and aquatic herbicide product label requirements.

c. **Corrective Action Deadlines**

If the Discharger determines that changes to the control measures are necessary to eliminate any situation identified above, the Discharger shall make such changes within 60 days. The Discharger shall take the corrective action before any further discharge of the algaecides and aquatic herbicides and their residues will be allowed.

d. **Effect of Corrective Action**

The occurrence of a situation identified in Section C.5.b above may constitute a violation of this General Permit. Correcting the situation according to Corrective Action Section C.5.c above does not absolve the Discharger of liability for any original violation. However, failure to comply with any Corrective Action as required by Section C.5.c above constitutes an additional permit violation. The State and Regional Water Boards will consider the appropriateness and promptness of corrective action in determining enforcement responses to permit violations.

The State Water Board and the appropriate Regional Water Boards may impose additional requirements and schedules of compliance, including requirements to submit additional information concerning the condition(s) triggering corrective action or schedules and requirements more stringent than specified in this General Permit. Those requirements and schedules will supersede those in the Corrective Action Section above if such requirements conflict.

6. **Adverse Incident to Threatened or Endangered Species or Critical Habitat**

If the Discharger becomes aware of an adverse incident* to a federally-listed threatened or endangered species or its federally-designated critical habitat, that may have resulted from the Discharger's algaecides and aquatic herbicides application, the Discharger must immediately notify the National Marine Fisheries Service (NMFS) Santa Rosa office by phone at (707) 575-6050 in the case of an anadromous or marine species, or the U.S. Fish and Wildlife Service (FWS) at (916) 414-6600 in the case of a terrestrial or freshwater species. This notification must be made by telephone immediately when the Discharger becomes aware of the adverse incident and must include at least the following information:

a. The caller's name, telephone number, and e-mail address;

b. Applicator name and mailing address;

c. The name of the affected species;

d. How and when the Discharger became aware of the adverse incident;

e. Description of the location of the adverse incident;

f. Description of the adverse incident, including the U.S. EPA pesticide registration number for each product applied in the area of the adverse incident; and

g. Description of any steps that have been taken or will be taken to alleviate the adverse impact to the species.

Additional information on federally-listed threatened or endangered species and federally-designated critical habitat is available from NMFS (www.nmfs.noaa.gov) for anadromous or marine species or FWS (www.fws.gov) for terrestrial or freshwater species.

X. COMPLIANCE DETERMINATION

Compliance with receiving water limitations and monitoring triggers shall be determined through event and post-event monitoring results.

Attachment A – Definitions

Active Ingredient
Active ingredients are ingredients disclosed by manufacturers that yield toxic effects* on target organisms.

Adjuvants
Adjuvants are ingredients that are mixed with herbicides prior to an application event and are often trade secrets. These ingredients are chosen by the Discharger, based on site characteristics, and typically increase the effectiveness of pesticides on target organisms.

Adverse Incident
Adverse Incident means a situation where the Discharger observes upon inspection or becomes aware of in which**:**

- A person or non-target organism may have been exposed to an algaecide or aquatic herbicide residue; and
- The person or non-target organism suffered an adverse or toxic effect.

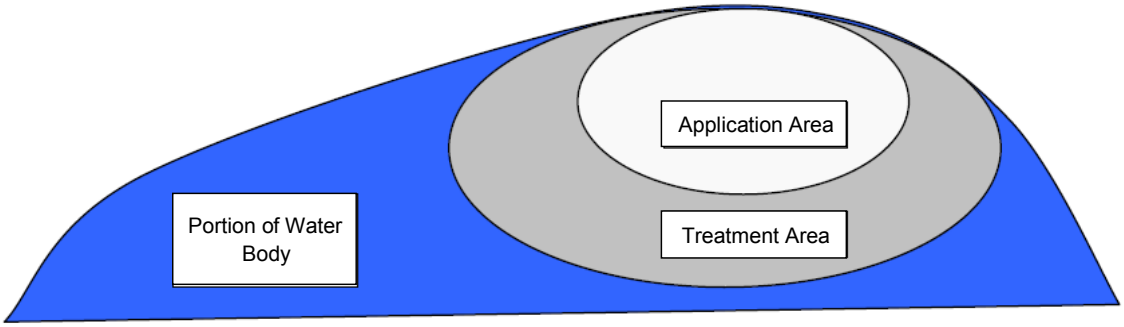
Adverse or Toxic Effect
An "adverse or toxic effect" includes any impact that occurs within waters of the United States on non-target organisms as a result of algaecide or aquatic herbicide residue discharge. Examples of these effects may include:

- Distressed or dead juvenile and small fishes
- Washed up or floating fish
- Fish swimming abnormally or erratically
- Fish lying lethargically at water surface or in shallow water
- Fish that are listless or nonresponsive to disturbance
- Stunting, wilting, or desiccation of non-target submerged or emergent aquatic plants
- Other dead or visibly distressed non-target aquatic organisms (amphibians, turtles, invertebrates, etc.)

An "adverse or toxic effect" also includes any adverse effects to humans (e.g., skin rashes) or domesticated animals that occur either directly or indirectly from a discharge to waters of the United States that are temporally and spatially related to exposure to an algaecide and aquatic herbicide residue (e.g., vomiting, lethargy).

Algae Control
Algae control means the treatment of filamentous algae, cyanobacteria (blue-green algae), or algal species that have the potential to affect human or environmental health.

Application Area
The application area is the area to which aquatic pesticides are directly applied.



Application Event
The application event is the time that introduction of the algaecide or aquatic herbicide to the treatment area takes place, not the length of time that the environment is exposed to the algaecide or aquatic herbicide.

Aquatic Pesticides
Aquatic pesticides in this General Permit are limited to algaecides and aquatic herbicides labeled for aquatic use to control aquatic weeds or algae.

Beneficial Uses
Beneficial uses of the waters of the state that may be protected against quality degradation include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

Coalition
Specifically refers to a monitoring coalition which is a collaborative monitoring partnership of dischargers to develop a monitoring plan that addresses the monitoring requirements of this General Permit. The Coalition's monitoring plan will be submitted for Coalition members in lieu of individual monitoring plans from each member.

Enclosed Bays
Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays do not include inland surface waters or ocean waters.

Estuaries
Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of freshwater and seawater. Estuaries do not include inland surface waters or ocean waters.

Half-Life
Half-life is the time required for half of the compound introduced into an ecosystem to be eliminated or disintegrated by natural processes.

Inert Ingredients
Inert ingredients are additional ingredients and are often trade secrets; therefore, they are not always disclosed by the manufacturer.

Mutual Water Company
A mutual water company is defined in the Public Utilities Code, section 2725 as “[a]ny private corporation or association organized for the purpose of delivering water to its stockholders and members at cost, including use of works for conserving, treating, and reclaiming water."

Point Source
Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, or vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

Priority Pollutants
Priority pollutants are listed within the California Toxics Rule in 40 Code of Federal Regulations, section 131.38(b)(1). Criteria to protect aquatic life and human health are set for priority pollutants in the California Toxics Rule.

Public Entity
Public entity includes the federal government or a state, county, city and county, city, district, public authority, or public agency.

Qualified Biologist
A qualified biologist is a biologist who has the knowledge and experience in the ecosystem where the algaecide or aquatic herbicide is applied so that he or she can adequately evaluate whether the beneficial uses of the receiving waters have been protected and/or restored upon completion of the algaecide and aquatic herbicide application project.

Receiving Waters
Receiving waters are waters of the United States anywhere outside of the treatment area at anytime and anywhere inside the treatment area after completion of the treatment event.

Representative Monitoring Location
To be considered “representative,” at a minimum, a location must be similar in hydrology, algaecide or aquatic herbicide use, and other factors that affect the residual discharge to the areas being represented in that environmental setting.

Residual Algaecide and Aquatic Herbicide
Residual algaecide and aquatic herbicide are those portions of the pesticides that remain in

the water after the application and its intended purpose (injury or elimination of targeted pests) have been completed.

Self Monitoring
Sampling and analysis performed by the Discharger or Coalition to determine compliance with the Permit. All laboratory analyses must be conducted by a laboratory certified by the California Department of Public Health.

Treatment Area
The treatment area is the area being treated by the algaecide or aquatic herbicide for algae and aquatic weed control and, therefore, the area being targeted to receive an appropriate rate of application consistent with product label requirements of algaecide or aquatic herbicide. It is the responsibility of the Discharger to define the treatment area for each specific algaecide and aquatic herbicide application.

Waters of the United States
1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters, including interstate “wetlands;”
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, “wetlands,” sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
   a. Which are or could be used by interstate or foreign travelers for recreational or other purposes;
   b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
   c. Which are used or could be used for industrial purposes by industries in interstate commerce.
4. All impoundments of waters otherwise defined as waters of the United States under this definition;
5. Tributaries of waters identified in items1 through 4 of this definition;
6. The territorial sea; and
7. "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1) through (6) of this definition. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. section 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States [See Note 1 of this Section.] Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with U.S. EPA.

Attachment B – Standard Provisions

I. STANDARD PROVISIONS – PERMIT COMPLIANCE (IF APPLICABLE)

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this General Permit. Any noncompliance constitutes a violation of the CWA and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 C.F.R. §122.41(a).)
2. The Discharger shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this General Permit has not yet been modified to incorporate the requirement. (40 C.F.R. §122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this General Permit. (40 C.F.R. §122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this General Permit that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. §122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this General Permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. (40 C.F.R. §122.41(e).)

E. Property Rights

1. This General Permit does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. §122.41(g).)
2. The issuance of this General Permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 C.F.R. §122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (U.S. EPA), and/or their authorized

representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, (40 C.F.R. §122.41(i); Water Code, §13383) to:

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this General Permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this General Permit;
3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this General Permit; and
4. Sample or monitor, at reasonable times, for the purposes of assuring General Permit compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location.

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This General Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any General Permit condition. (40 C.F.R. §122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this General Permit after the expiration date of this General Permit, the Discharger must apply for and obtain authorization as required by the new permit. (40 C.F.R. §122.41(b).)

C. Transfers

This General Permit is not transferable to any person except after notice to the State Water Board. The State Water Board may require modification or revocation and reissuance of the General Permit to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. §122.41(l)(3); §122.61.)

D. Continuation of this Permit

If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with 40 C.F.R. section 122.6 and remain in full force and effect.

III. STANDARD PROVISIONS – MONITORING

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. §122.41(j)(1).)

Monitoring results must be conducted according to test procedures under 40 C.F.R. part 136 unless other test procedures have been specified in this General Permit. (40 C.F.R. §122.41(j)(4); §122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Records Retention

The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, copies of all reports required by this General Permit, and records of all data used to complete the application for this General Permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the the State Water Board's Deputy Director of the Division of Water Quality (Deputy Director) at any time. (40 C.F.R. §122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 C.F.R. §122.41(j)(3)(i).);
2. The individual(s) who performed the sampling or measurements (40 C.F.R. §122.41(j)(3)(ii).);
3. The date(s) analyses were performed (40 C.F.R. §122.41(j)(3)(iii).);
4. The individual(s) who performed the analyses (40 C.F.R. §122.41(j)(3)(iv).);
5. The analytical techniques or methods used (40 C.F.R. §122.41(j)(3)(v).); and
6. The results of such analyses. (40 C.F.R. §122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 C.F.R. §122.7(b).):

1. The name and address of any permit applicant or Discharger (40 C.F.R. §122.7(b)(1).); and
2. Permit applications and attachments, permits and effluent data. (40 C.F.R. §122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or U.S. EPA within a reasonable time, any information which the Regional Water Board, State Water Board, or U.S. EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this General Permit or to determine compliance with this General Permit. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or U.S. EPA copies of records required to be kept by this General Permit. (40 C.F.R. §122.41(h); Wat. Code, §13267.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, V.B.5, and V.B.6 below. (40 C.F.R. §122.41(k).)

2. **For a corporation.** By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who perfoms similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

3. **For a partnership or sole proprietorship.** By a general partner or the proprietor, respectively;

4. **For a municipality, state, federal, or other public agency:** All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA). (40 C.F.R. §122.22(a)(3).)

5. All reports required by this General Permit and other information requested by the Regional Water Board, State Water Board, or U.S. EPA shall be signed by a person described in Standard Provisions – Reporting V.B.1 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.1 above (40 C.F.R. §122.22(b)(1).);

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity or an individual or a position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. §122.22(b)(2).); and

   c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 C.F.R. §122.22(b)(3).)

6. If an authorization under Standard Provisions – Reporting V.B.1 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.1 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. §122.22(c).)

   Any person signing a document under Standard Provisions – Reporting V.B.1 or V.B.3 above shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 C.F.R. §122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment C) in this General Permit. (40 C.F.R. §122.22(l)(4).)
2. Monitoring results must be reported on a Self Monitoring* Report (SMR) form as agreed to by the Deputy Director and the Discharger.
3. If the Discharger monitors any pollutant more frequently than required by this General Permit using test procedures approved under 40 C.F.R part 136 or as specified in this General Permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the SMR or a reporting form specified by the State Water Board. (40 C.F.R. §122.41(l)(4)(ii).)
4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this General Permit. (40 C.F.R. §122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this General Permit, shall be submitted no later than 14 days following each schedule date. (40 C.F.R. §122.41(l)(5).)

E. Planned Changes

The Discharger shall give notice to the State and the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted activity or discharge. Notice is required under this provision (40 C.F.R. §122.41(l)(1)) only when

the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this General Permit nor to notification requirements under 40 C.F.R. section 122.42(a)(1).

F. Anticipated Noncompliance

The Discharger shall give advance notice to the State and Regional Water Boards of any planned changes in the permitted discharge or activity that may result in noncompliance with General Permit requirements. (40 C.F.R. §122.41(l)(2).)

G. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.F above. (40 C.F.R. §122.41(l)(7).)

H. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the State Water Board, Regional Water Board, or U.S. EPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. §122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

The State and the Regional Water Boards are authorized to enforce the terms of this General Permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

Attachment C – Monitoring and Reporting Program

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ATTACHMENT C – MONITORING AND REPORTING PROGRAM

Section 122.48 of title 40 of the Code of Federal Regulations (40 C.F.R. §122.48) requires that all NPDES permits specify monitoring and reporting requirements. California Water Code sections 13267 and 13383 also authorize the State Water Resources Control Board (the State Water Board) and the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This Monitoring and Reporting Program (MRP) establishes monitoring and reporting requirements which implement federal and California State laws and regulations.

This MRP is designed to address the two key questions shown below. It also encourages Dischargers to form monitoring coalitions with others doing similar applications within a given watershed or doing applications of similar environmental settings (flowing water and non-flowing water). The Coalition or Discharger may select sites representing worst case scenarios or high-use areas for each active ingredient in each environmental setting. If the Discharger elects in its Aquatic Pesticide Application Plan (APAP) to undertake monitoring and reporting through a Coalition, then the Coalition will prepare and implement an MRP (pursuant to this Attachment C) and act on behalf of the Discharger with respect to monitoring and reporting. Otherwise, the Discharger will prepare and implement an individual MRP.

Question No. 1: Does the residual algaecides and aquatic herbicides discharge cause an exceedance of receiving water limitations?

Question No. 2: Does the discharge of residual algaecides and aquatic herbicides, including active ingredients, inert ingredients, and degradation byproducts, in any combination cause or contribute to an exceedance of the “no toxics in toxic amount” narrative toxicity objective?

If the Discharger elects in its APAP to undertake monitoring and reporting through a Coalition, the APAP should reference and attach the Coalition’s monitoring plan.

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the nature of the monitored discharge. All samples shall be taken at the anticipated monitoring locations specified in the Discharger’s or Coalition’s APAP.

B. All laboratory analyses shall be conducted at a laboratory certified for such analyses by the California Department of Public Health in accordance with California Water Code section 13176. Laboratories that perform sample analyses shall be identified in all monitoring reports. The Discharger shall institute a Quality Assurance-Quality Control Program for any onsite field measurements such as electric conductivity, pH, turbidity, and temperature. A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by the State Water Board and the appropriate Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to United States Environmental Protection Agency (U.S. EPA) guidelines or to procedures approved by the State Water Board and the appropriate Regional Water Board.

C. All analyses shall be conducted in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants," promulgated by the U.S. EPA in title 40 Code Federal Regulation (40 C.F.R.) 136 or equivalent methods that are commercially and reasonably available and that provide quantification of sampling parameters and constituents sufficient to evaluate compliance with applicable effluent limits and to perform reasonable potential analysis. Equivalent methods must be more sensitive than those specified in 40 C.F.R. 136 if the method is available in the 40 C.F.R. 136, and must be approved for use by the Regional Water Board Executive Officer.

Any procedures to prevent the contamination of samples as described in the monitoring program in the APAP shall be implemented.

D. Records of monitoring information shall include the following:

1. The date, exact place, and time of sampling or measurements;
2. The individuals who performed the sampling or measurements;
3. The dates analysis were performed;
4. The individuals who performed the analyses;
5. The analytical techniques or methods used; and
6. Results of analyses.

E. All monitoring instruments and devices used to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their accuracy.

F. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this MRP.

II. MONITORING LOCATIONS AND SAMPLE TYPES

A. Monitoring Locations

Each Discharger or Coalition shall establish monitoring locations specified in the APAP to demonstrate compliance with the receiving water limitations, discharge specifications, and other requirements in this General Permit. The number and location of samples shall be selected to answer the two key questions. A Discharger or Coalition may use representative monitoring locations* to characterize water quality for all waters of the United States within the Discharger's or Coalition's boundaries for each environmental setting (flowing water and non-flowing water). However, the Discharger or Coalition must provide justification for the selection of the representative monitoring locations. To be considered "representative," at a minimum, a location must be similar in hydrology, algaecides and aquatic herbicides use, and other factors that affect the discharge of algaecides and aquatic herbicides and their residues to surface waters as a result of applications to the areas being represented in that environmental setting. Each Discharger or Coalition must provide technical justification and identify which areas are to be considered representative. Monitoring location information shall include a description of the treatment area, GPS

coordinates if feasible, and algaecides and aquatic herbicides being applied. The specific monitoring locations initially identified as representative monitoring locations may be changed based on surveillance of the Discharger or Coalition.

B. Sample Types

The following monitoring is required for each sampling:

1. **Background Monitoring.** Background monitoring samples shall be collected upstream at the time of the application event* or in the application area* just prior to (up to 24 hours in advance of) the application event.
2. **Event Monitoring.** Event monitoring samples shall be collected immediately downstream of the treatment area in flowing waters or immediately outside of the treatment area in non-flowing waters, immediately after the application event, but after sufficient time has elapsed such that treated water would have exited the treatment area.
3. **Post-Event Monitoring.** Post-event monitoring samples shall be collected within the treatment area within one week after application.

III. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER

A. General Monitoring Requirements

The monitoring program described in the APAP shall be designed to answer the two key questions stated above. The monitoring program in the APAP shall describe the tasks and time schedules in which these two key questions will be addressed. Monitoring shall take place at locations that are being planned to be applied or may be applied as described in the Discharger's APAP.

The monitoring program described in the APAP must consider watershed specific attributes and waste constituents, based on the characteristics of applications within the Coalition's or Discharger's area, as well as the receiving water quality conditions. Developing the details of a monitoring design requires clearly defining several inputs to the design and then organizing these in a logical framework that supports effective decision making about indicators, monitoring locations, and monitoring frequency. The logical framework should describe:

1. The basic geographic and hydrographic features of the area, particularly application points and the pathways(s) of residue flows;
2. Algaecides and aquatic herbicides application practices and how they are distributed in space and time;
3. Relevant knowledge about the transport, fates, and effects of algaecides and aquatic herbicides, including best- and worst-case scenarios;
4. Description of the designated beneficial uses in each water body;
5. Relevant knowledge about the action of cumulative and indirect effects;

6. Mechanisms through which algaecides and aquatic herbicides applications could lead to designated use impacts, given the basic features of the area;
7. Known and potential impacts of algaecides and aquatic herbicides applications on water quality, ranked in terms of relative risk, based on factors such as magnitude, frequency and duration;
8. Sufficient number of sampling areas to assess the entire Discharger's or Coalition's area of influence; and
9. A description of sampling methods and a sampling schedule.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by the treatment area. Attention shall be given to the presence or absence of:

1. Floating or suspended matter;
2. Discoloration;
3. Bottom deposits;
4. Aquatic life;
5. Visible films, sheens, or coatings;
6. Fungi, slimes, or objectionable growths; and
7. Potential nuisance conditions.

Notes on receiving water conditions shall be summarized in the monitoring report.

B. Visual, Physical, and Chemical Monitoring Requirements

Monitoring shall take place at locations that are described and scheduled in the Coalition's or Discharger's APAP. Monitoring for all active ingredients must include frequent and routine monitoring on a pre-determined schedule, as summarized in the Table C-1 below:

Table C-1. Monitoring Requirements

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Sample Type Requirement	Required Analytical Test Method
Visual	1. Monitoring area description (pond, lake, open waterway, channel, etc.) 2. Appearance of waterway (sheen, color, clarity, etc.) 3. Weather conditions (fog, rain, wind, etc.)	Not applicable	Visual Observation	[1]	Background, Event and Post-event Monitoring	Not applicable
Physical	1. Temperature[2]	ºF	Grab[4]	[5]	Background, Event and Post-event Monitoring	[6]
	2. pH[3]	Number				
	3. Turbidity[3]	NTU				
	4. Electric Conductivity[3] @ 25°C	µmhos/cm				
Chemical	1. Active Ingredient[7]	µg/L	Grab[4]	[5]	Background, Event and Post-event Monitoring	[6]
	2. Nonylphenol[8]	µg/L				
	3. Hardness (if copper is monitored)	mg/L				
	4. Dissolved Oxygen[2]	mg/L				

[1] All applications at all sites.
[2] Field testing.
[3] Field or laboratory testing.
[4] Samples shall be collected at three feet below the surface of the water body or at mid water column depth if the depth is less than three feet.
[5] Collect samples from a minimum of six application events for each active ingredient in each environmental setting (flowing water and non-flowing water) per year, except for glyphosate. If there are less than six application events in a year, collect samples during each application event for each active ingredient in each environmental setting (flowing water and non-flowing water). If the results from six consecutive sampling events show concentrations that are less than the receiving water limitation/trigger for an active ingredient in an environmental setting, sampling shall be reduced to one application event per year for that active ingredient in that environmental setting. If the yearly sampling event shows exceedance of the receiving water limitation/trigger for an active ingredient in an environmental setting, then sampling shall return to six application events for that active ingredient in each environmental setting. For glyphosate, collect samples from one application event from each environmental setting (flowing water and non-flowing water) per year.
[6] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136.
[7] 2,4-D, acrolein, dissolved copper, diquat, endothall, fluridone, glyphosate, imazamox, imazapyr, penoxsulam, and triclopyr.
[8] It is required only when a surfactant is used.

IV. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Coalition or Discharger shall comply with all Standard Provisions (Attachment B) related to monitoring, reporting, and recordkeeping.

2. Upon written direction of the State Water Board or the Regional Water Board, the Coalition or Discharger shall submit information as specified.

3. The Coalition or Discharger shall report to the State Water Board and appropriate Regional Water Board any toxic chemical release data that are reported to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act" of 1986 (42 U.S.C. §11001 et. seq.).

B. Annual Information Collection

The Coalition or Discharger shall complete and retain all information on the previous reporting year beginning January 1 and ending December 31. When requested by the Deputy Director or Executive Officer of the applicable Regional Water Board, the Coalition or Discharger shall submit the annual information which must include the following:

1. An executive summary discussing compliance or violation of this General Permit and the effectiveness of the APAP to reduce or prevent the discharge of pollutants associated with algaecide and aquatic herbicide applications;

2. A summary of monitoring data, including the identification of water quality improvements or degradation as a result of the algaecide or aquatic pesticide application, if appropriate, and recommendations for improvements to the APAP [including proposed best management practices (BMPs)] and monitoring program based on the monitoring results. All receiving water monitoring data shall be compared to receiving water limitations and receiving water monitoring triggers;

3. Identification of BMPs currently in use and a discussion of their effectiveness in meeting the requirements in this General Permit;

4. A discussion of BMP modifications addressing violations of this General Permit;

5. A map showing the location of each treatment area;

6. Types and amounts of algaecides and aquatic herbicides used at each application event;*

7. Information on surface area and/or volume of treatment areas and any other information used to calculate dosage, concentration, and quantity of each algaecide and aquatic herbicide used;

8. Sampling results shall indicate the name of the sampling agency or organization, detailed sampling location information (including latitude and longitude or township/range/section if available), detailed map or description of each sampling area (address, cross roads, etc.), collection date, name of constituent/parameter and its concentration detected, minimum levels, method detection limits for each constituent analysis, name or description of water body sampled, and a comparison with applicable water quality standards, description of analytical QA/quality control plan. Sampling results shall be tabulated so that they are readily discernible; and

9. Summary of algaecide and aquatic herbicide application log.

C. Annual Report

The Coalition or Discharger shall submit to the Deputy Director and the appropriate Regional Water Board Executive Officer an annual report consisting of a summary of the past year's activities, and certify compliance with all requirements of this General Permit. If there is no discharge of algaecides and aquatic herbicides, their residues, or their degradation byproducts, the Coalition or Discharger shall provide the Deputy Director and the appropriate Regional Water Board Executive Officer a certification that algaecide and aquatic herbicide application activities did not result in a discharge to any water body. The annual report shall contain the following information:

1. An executive summary discussing compliance or violation of this General Permit and the effectiveness of the APAP; and
2. A summary of monitoring data, including the identification of water quality improvements or degradation as a result of the algaecide or aquatic pesticide application,
3. Dischargers shall submit the annual report according to the following schedule:

Table C-2. Reporting Schedule

Reporting Frequency	Reporting Period	Annual Report Due
Annual	January 1 through December 31	March 1

D. Electronic Reporting

At any time during the term of this General Permit, the State Water Board or the appropriate Regional Water Board may notify the Coalition or Discharger of the requirement to submit electronically Self Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Coalition or Discharger shall submit hardcopy SMRs. The CIWQS website will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

The Coalition or Discharger shall report the results for all monitoring specified in this MRP in the SMR. The Coalition or Discharger shall submit annual SMRs including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this General Permit. If the Coalition or Discharger monitors any pollutant more frequently than required by this General Permit, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

E. Reporting Protocols

The Coalition or Discharger shall report with each sample result the applicable reported Minimum Level (ML) and the current Minimum Detection Limit, as determined by the procedure in 40 C.F.R. part 136.

The Coalition or Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

1. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
2. Sample results less than the Report Limit, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

   For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (plus a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.
3. Sample results less than the laboratory's MDL shall be reported as "<" followed by the MDL.
4. The Coalition or Discharger shall instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Coalition or Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.
5. Multiple Sample Data: If two or more sample results are available, the Coalition or Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or "Not Detected" (ND). In those cases, the Coalition or Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
   a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
   b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.
6. The annual report shall comply with the following requirements:
   a. The Coalition or Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the algaecide and aquatic herbicide applications are conducted in compliance

with effluent and receiving water limitations. The Coalition or Discharger is not required to duplicate the submittal of data that are entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Coalition or Discharger shall submit electronically the data in a tabular format as an attachment.

b. The Coalition or Discharger shall attach a cover letter to the annual report that clearly identifies violations of the permit; discusses corrective actions taken or planned; and provides a time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

c. The annual report must be submitted to the State Water Board and the appropriate Regional Water Board, signed and certified as required by the Standard Provisions (Attachment B).

F. Other Reporting Requirements

1. Twenty-Four Hour Report

The Coalition or Discharger shall report to the State Water Board and appropriate Regional Water Board any noncompliance, including any unexpected or unintended effect of an algaecide or aquatic herbicide use that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Coalition or Discharger becomes aware of the circumstances and must include the following information:

a. The caller's name and telephone number;

b. Applicator name and mailing address;

c. Waste Discharge Identification (WDID) number;

d. The name and telephone number of a contact person;

e. How and when the Coalition or Discharger become aware of the noncompliance;

f. Description of the location of the noncompliance;

g. Description of the noncompliance identified and the U.S. EPA pesticide registration number for each product the Discharger applied in the area of the noncompliance; and

h. Description of any steps that the Coalition or Discharger has taken or will take to correct, repair, remedy, cleanup, or otherwise address any adverse effects.

If the Coalition or Discharger is unable to notify the State and the appropriate Regional Water Board within 24 hours, the Coalition or Discharger must do so as soon as possible and also provide the rationale for why the Discharger was unable to provide such notification within 24 hours.

2. **Five-Day Written Report**

The Coalition or Discharger shall also provide a written submission within five (5) days of the time the Discharger becomes aware of the noncompliance. The written submission shall contain the following information:

a. Date and time the Coalition or Discharger contacted the State Water Board and the appropriate Regional Water Board notifying of the noncompliance and any instructions received from the State and/or Regional Water Board; information required to be provided in Section D.1 (24-Hour Reporting);

b. A description of the noncompliance and its cause, including exact date and time and species affected, estimated number of individual and approximate size of dead or distressed organisms (other than the pests to be eliminated);

c. Location of incident, including the names of any waters affected and appearance of those waters (sheen, color, clarity, etc);

d. Magnitude and scope of the affected area (e.g. aquatic square area or total stream distance affected);

e. Algaecide and aquatic herbicide application rate, intended use site (e.g., banks, above, or direct to water), method of application, and name of algaecide and herbicide product, description of algaecide and herbicide ingredients, and U.S. EPA registration number;

f. Description of the habitat and the circumstances under which the noncompliance activity occurred (including any available ambient water data for aquatic algaecides and aquatic herbicides applied);

g. Laboratory tests performed, if any, and timing of tests. Provide a summary of the test results within five days after they become available;

h. If applicable, explain why the Coalition or Discharger believes the noncompliance could not have been caused by exposure to the algaecides or aquatic herbicides from the Coalition's or Discharger's application; and

i. Actions to be taken to prevent recurrence of adverse incidents.

The State Water Board staff or Regional Water Board staff may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours.

Attachment D – Fact Sheet

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Attachment D – Fact Sheet

As described in Section III, Findings, of this General Permit, the State Water Resources Control Board (State Water Board) incorporates this Fact Sheet as findings of the State Water Board that support the issuance of this General Permit. This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this General Permit.

This General Permit has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California.

I. PERMIT INFORMATION

A. Background

1. The Regulatory Background

In 1972, the Federal Water Pollution Control Act (also referred to as the Clean Water Act or CWA) was amended to provide that the discharge of pollutants to waters of the United States from any point source is effectively prohibited unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit.

On September 22, 1989, the U.S. Environmental Protection Agency (U.S. EPA) granted the State of California, through the State Water Resources Control Board (State Water Board) and the Regional Water Quality Control Boards (Regional Water Boards), the authority to issue general NPDES permits pursuant to title 40 Code of Federal Regulations (40 C.F.R.) 122 and 123.

Section 122.28 of 40 C.F.R. provides for issuance of general permits to regulate a category of point sources if the sources involve the same or substantially similar types of operations; discharge the same type of waste; require the same type of effluent limitations or operating conditions; require similar monitoring; and are more appropriately regulated under a general permit rather than individual permits.

On March 12, 2001, the Ninth Circuit Court of Appeals held that discharges of pollutants from the use of aquatic pesticides in waters of the United States require coverage under an NPDES permit. (*Headwaters, Inc. v. Talent Irrigation District).*[3] The *Talent* decision was issued just prior to the major season for applying aquatic pesticides.

Because of the serious public health, safety, and economic implications of delaying pesticide applications, in 2001 the State Water Board adopted Water Quality Order (Order) No. 2001-12-DWQ, Statewide General NPDES Permit for

[3] 243 F.3d 526 (9th Cir., 2001).

Discharges of Aquatic Pesticides to Waters of the United States on an emergency basis to provide immediate NPDES permit coverage for broad categories of aquatic pesticide use in California.

Order No. 2001-12-DWQ imposed requirements on any discharge of aquatic pesticides by public entities to waters of the United States in accordance with the Policy which establishes procedures for implementing water quality standards for priority pollutants* in NPDES permits.

Section 5.3 of the State Water Board Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Policy) allows for short-term or seasonal exceptions from its requirements for resource or pest management conducted by public entities or mutual water companies. In order to qualify for an exception from meeting priority pollutant standards, a public entity must fulfill the requirements listed in section 5.3 and the State Water Board must decide to grant the exception. Among other requirements, entities seeking an exception to complying with water quality standards for priority pollutants must submit documents in compliance with California Environmental Quality Act (CEQA).[4] Because of the emergency adoption of Order No. 2001-12-DWQ, the State Water Board invoked an exemption to the requirements of section 5.3 of the Policy and issued the permit incorporating a categorical exception to water quality standards for priority pollutants.

Order No. 2001-12-DWQ required that Dischargers develop a best management practices (BMPs) plan that minimizes adverse impacts to receiving waters and a monitoring and reporting plan that is representative of each type of aquatic pesticide application.

In August 2001, Waterkeepers Northern California (Waterkeepers) filed a lawsuit against the State Water Board challenging several aspects of Order No. 2001-12-DWQ. Major aspects of the challenge included the emergency adoption of the Order without compliance with CEQA and other exception requirements of the Policy; failure to address cumulative impacts; and failure to comply with the California Toxics Rule (CTR).[5]

In a settlement of the Waterkeepers' lawsuit, the State Water Board agreed to fund a comprehensive aquatic pesticide monitoring program that would assess receiving water toxicity caused by aquatic pesticides and alternatives for pesticide use. The State Water Board contracted with the San Francisco Estuary Institute (SFEI) to conduct the program. SFEI published the final report on February 5, 2004.

In November 2002, the Ninth Circuit issued another opinion concerning the need for an NPDES permit for pesticide application. (*League of Wilderness Defenders*

[4] Cal. Pub. Resources Code § 21000 et. seq.
[5] 40 C.F.R. Section 131.38.

v. Forsgren.[6]) In this case, the court held that the USDA Forest Service must obtain an NPDES permit before it sprays insecticides* from an aircraft directly into or over rivers as part of silviculture activities. The court found that the insecticides are pollutants under the CWA. The court also defined the exemption for silvicultural pest control from the definition of "point source" in U.S. EPA's regulations to be limited to pest control activities from which there is natural runoff.

Also in 2002, the Second Circuit issued an unpublished decision regarding the need for an NPDES permit for application of pesticides for mosquito control in federal wetland areas. (*Altman v. Town of Amherst*.) The lower court had dismissed a citizens' suit, holding that pesticides, when used for their intended purpose, do not constitute a "pollutant" for purposes of the CWA, and are more appropriately regulated under Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The appeals court vacated the trial court's decision and remanded the matter. In its unpublished decision, the Second Circuit expressed concern that: "[u]ntil the EPA articulates a clear interpretation of current law - among other things, whether properly used pesticides released into or over waters of the United States can trigger the requirements for NPDES permits - the question of whether properly used pesticides can become pollutants that violate the [Clean Water Act] will remain open."

Order No. 2001-12-DWQ expired on January 31, 2004. In 2004, it was replaced by two general permits: a vector control permit for larvicides (Order No. 2004-0008-DWQ) and a weed control permit (Order No. 2004-0009-DWQ). The State Water Board determined that adoption of these two permits was consistent with the Ninth Circuit decisions.

In 2005, the Ninth Circuit held that a pesticide that is applied consistent with FIFRA is not a "chemical waste" (*Fairhurst v. Hagener),*[7] but also stated that it would not change its decision in *Headwaters.* The court stated that whether an NPDES permit was required depends on whether there was any "residue or unintended effect" from application of the pesticide. In *Fairhurst*, the court found neither residue nor unintended effect was present. Therefore, the pesticide application at issue did not require an NPDES permit.

U.S. EPA's Final Rule: On November 20, 2006, U.S. EPA adopted a final regulation providing that NPDES permits are not required for pesticide applications as long as the Discharger follows FIFRA label instructions. According to the regulation, pesticides applied under the following two circumstances are not pollutants and, therefore, are not subject to NPDES permitting requirements:

a. The application of pesticides directly to waters of the United States in order to control pests. Examples of such applications include applications to control

[6] 309 F.3d 1181 (9th Cir., 2002).
[7] 422 F.3d 1146 (9th Cir., 2005).

mosquito larvae, aquatic weeds, or other pests that are present in waters of the United States; and

b. The application of pesticides to control pests that are present over waters of the United States, including near such waters, where a portion of the pesticides will unavoidably be deposited to waters of the United States in order to target the pests effectively; for example, when insecticides are aerially applied to a forest canopy where waters of the United States may be present below the canopy or when pesticides are applied over or near water for control of adult mosquitoes or other pests.

Lawsuits Against U.S. EPA's Final Rule: After U.S. EPA's new regulation was adopted in 2006, lawsuits were filed by both the pesticide industry and environmental groups in 11 of the 13 Circuits, including the Ninth Circuit Court, challenging U.S. EPA's Final Rule.

The National Cotton Council of America v. U.S. EPA:[8] The petitions for review were consolidated in the Sixth Circuit Court by an order of the Judicial Panel on Multidistrict Litigation.

On January 11, 2009, the Sixth Circuit Court of Appeals determined that U.S. EPA's Final Rule is not a reasonable interpretation of the CWA and vacated the Final Rule. U.S. EPA did not request reconsideration of the decision, but did file a motion for a two-year stay of the effect of the decision in order to provide agencies time to develop, propose, and issue NPDES general permits for pesticide applications covered by the ruling. On June 8, 2009, the Sixth Circuit granted the motion, such that the U.S. EPA exemption was to remain in place until April 9, 2011. Subsequently, U.S. EPA was granted an extension of the stay, which allowed the exemption to continue until October 31, 2011.

2. **Related Pesticide Regulation Information**

Pesticide formulations may include "active ingredients" and "inert ingredients." Adjuvants or surfactants may be added to the ingredients in the application equipment that is used in the delivery of the aquatic pesticide.

As part of the registration process of pesticides for use in California, U.S. EPA and the California Department of Pesticide Regulation (DPR) evaluate data submitted by registrants to ensure that a product used according to label instructions will cause no harm or adverse impact on non-target organisms that cannot be reduced or mitigated with protective measures or use restrictions. Registrants are required to submit data on the effects of pesticides on target pests (efficacy) as well as non-target effects. Data on non-target effects include plant effects (phytotoxicity), fish and wildlife hazards (ecotoxicity), impacts on endangered species, effects on the environment, environmental fate, degradation byproducts, leachability, and persistence. Requirements that are specific to use in California are included in many pesticide labels that are approved by U.S. EPA.

[8] 553 F.3d 927 (6th Cir., 2009).

Use must be reported to the County Agricultural Commissioner where required by law or by agreement with DPR.

The CWA, at section 301(a), broadly prohibits the discharge of any pollutant to waters of the United States, except in compliance with an NPDES permit. Since FIFRA is not necessarily as protective of water quality as the CWA, pesticides discharged into surface waters may constitute pollutants within the meaning of the CWA even if the discharge is in compliance with the registration requirements of FIFRA, thus, requiring coverage under a valid NPDES permit.

DPR and the County Agricultural Commissioners regulate the sale and use of pesticides in California. Pesticide applications subject to this General Permit must be consistent with permits issued by County Agricultural Commissioners and the pesticide label instructions approved by U.S. EPA under FIFRA. According to federal law, pesticide label language is under the sole jurisdiction of U.S. EPA. Label language and any changes thereto must be approved by U.S. EPA before the product can be sold in this country. DPR cannot require manufacturers to make changes on labels; however, DPR can refuse to register products unless manufacturers address unmitigated hazards by amending the pesticide label.

State regulations require that the County Agricultural Commissioners determine if a substantial adverse environmental impact will result from the proposed use of a restricted material. If the County Agricultural Commissioner determines that this is likely, the commissioner may deny the restricted pesticide use permit or may issue it under the condition that site-specific use practices be followed (beyond the label and applicable regulations) to mitigate potentially adverse effects. DPR conducts scientific evaluations of potential health and environmental impacts and provides commissioners with information in the form of suggested permit conditions. DPR's suggested permit conditions reflect minimum measures necessary to protect people and the environment. County Agricultural Commissioners use this information and its evaluation of local conditions to set site-specific limits in permits.

B. General Criteria

1. This General Permit serves as a general NPDES Permit for the discharge of residual algaecides and aquatic herbicides to surface waters as a result of algaecides and aquatic herbicides applications for algae and aquatic weed controls.
2. Dischargers who submit a complete application under this General Permit are not required to submit an individual permit application. The State Water Board's Deputy Director of the Division of Water Quality (Deputy Director) may request additional information or determine that a Discharger is not eligible for coverage under this General Permit and would be better regulated under an individual permit or other general NPDES permit adopted by the appropriate Regional Water Board. If the discharge becomes covered by an individual or another general permit, the applicability of this General Permit to the specified discharge

will be immediately terminated on the effective date of the individual permit or coverage under the other general permit.

II. NOTIFICATION REQUIREMENTS

A. General Permit Application

To obtain authorization under this General Permit, Dischargers must submit to the State Water Board a complete application at least 90 days prior to their first application of the season. This is to allow posting of the Aquatic Pesticide Application Plan (APAP) for a 30-day comment period, staff to review APAP and respond to comments, and the Deputy Director to issue the Notice of Applicability (NOA). Following are the application information requirements:

1. A Notice of Intent (NOI shown as Attachment E) signed in accordance with the signatory requirements of the Standard Provisions in Attachment B;
2. An application fee. A fee is required only for new Dischargers. Dischargers that are enrolled under Order No. 2004-0009-DWQ and are applying for coverage under this Permit will be billed during the regular billing cycle; and
3. An APAP.

State Water Board staff will post the APAP on the State Water Board's website for 30 days for public review. In the meantime, the State and Regional Water Board staff will review the application package for completeness and applicability to this General Permit. After the application has been deemed complete, the Deputy Director will issue an NOA. The NOA will specify the permitted active ingredients of algaecides and aquatic herbicides that may be used, and any Regional Water Board specific conditions and requirements not stated in this General Permit. Any such region-specific conditions and requirements shall be enforceable. The Discharger is authorized to discharge starting on the date of the NOA. If comments are received, staff will immediately work to resolve them in order to issue an NOA within 90 days of receipt of the application.

This General Permit specifices an effective date of December 1, 2013. The effective date is delayed because, with the impending start of the 2013 application season, Dischargers may be unable to comply with the requirement to submit their applications 90 days prior to their first pesticide application.The delay will allow enrollees under Water Quality Order No. 2004-0009-DWQ to have continued permit coverage throughout the 2013 application season while preparing their new application for coverage under this General Permit; new enrollees to prepare and submit their applications as well; and Water Boards' staff to process the applications and issue NOAs.

Alternatively, the Deputy Director may issue a Notice of Exclusion**,** which either terminates permit coverage or requires submittal of an application for an individual permit or alternative general permit.

B. Fee

The annual fee for enrollment under this General Permit, shall be based on Category 3 in section 2200(b)(9) of title 23, California Code of Regulations (Cal. Code Regs.). This category is appropriate because algaecide and aquatic herbicide applications incorporate BMPs to control potential impacts to beneficial uses, and this General Permit prohibits pollutant discharge associated with algaecide and aquatic herbicide applications from causing exceedance of CTR criteria or water quality objectives. Information concerning the applicable fees can be found at http://www.waterboards.ca.gov/resources/fees/docs/fy1112fee_schdl_npdes_prmt.pdf

C. Public Notification

The State Water Board has notified interested agencies and persons of its intent to prescribe waste discharge requirements in this General Permit and provided them with an opportunity to submit their written comments and recommendations.

III. DISCHARGE DESCRIPTION

This General Permit covers the point source discharge to waters of the United States of pesticide residues resulting from applications using products containing 2,4-D, acrolein, copper, diquat, endothall, fluridone, glyphosate, imazamox, imazapyr, penoxsulam, sodium carbonate peroxyhydrate, and triclopyr-based algaecides and aquatic herbicides, and adjuvants containing ingredients represented by the surrogate nonylphenol. This General Permit covers only discharges of algaecides, aquatic herbicides, and adjuvants that are currently registered for use in California, or that become registered for use and contain the above-listed active ingredients and ingredients represented by the surrogate of nonylphenol.

A. Existing Discharge Description

As of January 11, 2013, there were 153 active enrollees under Water Quality Order No. 2004-0009-DWQ, Statewide General National Pollutant Discharge Elimination System Permit for the Discharge of Aquatic Pesticides for Aquatic Weed Control in Waters of the United States, General Permit No. CAG990005 (Order No. 2004-0009-DWQ). Most of the enrollees are local public agencies such as cities and irrigation, flood control, or reclamation districts. The other enrollees include six state of California agencies: the Departments of Boating and Waterways, Fish and Wildlife, Food and Agriculture, Parks and Recreation, Transportation, and Water Resources; a federal agency, U.S. Department of Fish and Wildlife Service; and a few private entities such as home owner associations and mobile home park owners.

The State Water Board granted exceptions to public agencies and mutual water companies that met the criteria stated in section 5.3 of the Policy for short-term or seasonal exceptions from meeting the receiving water limitations for priority pollutants of acrolein and copper.

Order No. 2004-0009-DWQ permits the discharge of aquatic pesticides with the following active ingredients: 2,4-D, acrolein, copper, diquat, endothall, fluridone, glyphosate, and triclopyr. The State Water Board reopened Order No. 2004-0009-DWQ after its adoption to add two more active ingredients: (1) imazapyr, a non-selective herbicide, for control of cordgrass and broadleaf weeds and other emergent aquatic species; and (2) sodium carbonate peroxyhydrate as an alternative to copper for algae control.*

B. Annual Report Review

State Water Board staff reviewed annual reports from 2004 through 2008[9] submitted under Order No. 2004-0009-DWQ. The data are summarized in Table D-1 below. As shown in Table D-1, all constituent concentrations from post-event application samples were below receiving water limitations except for the following: three exceedances each for acrolein and glyphosate and 82 exceedances for copper out of 288 monitoring events. For glyphosate, it is likely that the three exceedances were not the result of aquatic pesticide applications because the pre-application samples also showed exceedances and the remaining 151 sampling events showed no exceedance. For copper, 43 of the 82 exceedances were from public agencies or mutual water companies that were excepted from meeting priority pollutant limitations during the exception period. Thus, staff did not consider these exceedances as violations of the receiving water limitations. However, 39 of the exceedances were from entities that did not have a Policy exception. Therefore, staff considered these exceedances as true violations of the receiving water limitations.

Table D-1. Monitoring Data Summary, 2004-2008, Order No. 2004-0009-DWQ

Pollutant	Number of Samples	Number of Exceedance
2,4-D	3	0
Acrolein	213	3
Copper	288	85
Diquat	17	0
Endothall	6	0
Fluridone	12	0
Glyphosate	154	3
Nonylphenol	53	0

Under Order No. 2004-0009-DWQ, the most commonly used aquatic pesticide products contained copper, acrolein, and glyphosate in descending order.

[9] The data are submitted to the Regional Water Boards per Order No. 2004-0009-DWQ. When State Water Board staff started collecting data from the Regional Water Boards, the data available covered only this period.

C. Receiving Water Description

The annual reports showed that most algae and aquatic weed control applications were performed in fresh inland surface waters such as lakes, ponds, flood control and drainage channels, or canals. Some applications were performed in coastal waters, marina lagoons, and slough with brackish water.

IV. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this General Permit are based on the applicable plans, policies, and regulations identified below.

A. Legal Authorities

This General Permit is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (U.S. EPA) and chapter 5.5, division 7 of the California Water Code, commencing with section 13370. It shall serve as an NPDES permit for point source discharges of residual algaecides and aquatic herbicides to surface waters. This General Permit also serves as WDRs pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with §13260).

This General Permit shall serve as a General NPDES permit for point source discharges of residues from algaecides and aquatic herbicide applications for algae and aquatic weed control. This General Permit also serves as general Waste Discharge Requirements pursuant to article 4, chapter 4, and division 7 of the California Water Code (commencing with §13260).

B. California Environmental Quality Act (CEQA)

Pursuant to California Water Code section 13389, State and Regional Water Boards are exempt from the requirement to comply with Chapter 3, Division 13 of the Public Resources Code when adopting NPDES permits.

C. State and Federal Regulations, Policies, and Plans

1. Water Quality Control Plans (Basin Plans)

The Regional Water Boards have adopted Basin Plans that designate beneficial uses, establish water quality objectives, and contain implementation programs and policies to achieve those objectives for all waters addressed through the plans. In addition, the Basin Plans implement State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. The Basin Plans identify typical beneficial uses as follows: municipal and domestic supply, agricultural irrigation, stock watering, process supply, service supply, hydropower supply, water contact recreation, canoeing and rafting recreation, other non-contact water recreation,* warm freshwater aquatic habitat, cold freshwater habitat,* warm fish migration habitat, cold fish migration habitat,

warm and cold spawning habitat, wildlife habitat, navigation, rare, threatened, or endangered species habitat, groundwater recharge,* and freshwater replenishment.

Requirements of this General Permit implement provisions contained in the applicable Basin Plans.

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR)**

U.S. EPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About 40 criteria in the NTR applied in California. On May 18, 2000, U.S. EPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

3. **State Implementation Policy (Policy)**

On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (Policy). The Policy became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by U.S. EPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plans. The Policy became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by U.S. EPA through the CTR. The State Water Board adopted amendments to the Policy on February 24, 2005 that became effective on July 13, 2005. The Policy establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this General Permit implement the Policy.

Policy Exception

The Policy provides categorical exceptions allowing short-term or seasonal exceptions from meeting the priority pollutant criteria/objectives if it is determined to be necessary to implement control measures for resource or pest management conducted by public entities or mutual water companies to fulfill statutory requirements. The Policy specifically refers to vector or weed control, pest eradication, or fishery management as the basis for categorical exceptions. The exceptions are only granted to public entities or mutual water companies that have adequately provided the following information as required by the Policy:

a. A detailed description of the proposed action which includes the proposed method of completing the action;

c. A time schedule;

d. A discharge and receiving water monitoring plan that specifies monitoring prior to application events,* during application events, and after completion with the appropriate quality control procedures;

e. CEQA documentation including notifying potentially affected public and government agencies; and

f. Any necessary contingency plans.

The public entities and mutual water companies listed in Attachment G have met the above requirements before the issuance or during the term of the Order No. 2004-0009-DWQ.

The final Negative Declaration or Mitigated Negative Declarations (ND/MND) prepared by the public entities or mutual water companies have determined that the water quality impacts identified in the environmental assessments of the ND/MND from algaecide and aquatic herbicide applications are less than significant, and would not have a significant effect on the environment. The boards of each public entity and mutual water company*, as the lead agencies under CEQA, approved the final ND/MND. Therefore, each public entity or mutual water company is not required to meet priority pollutant criteria during the exception period.

During the issuance of the Order No. 2004-0009-DWQ, as required in section 15096 of the CEQA Guidelines, the State Water Board, as a Responsible Agency under CEQA, considered the ND/MND approved by the board of each public entity or mutual water company. The State Water Board found that the projects will have less than significant water quality impact if the Dischargers meet the requirements in this General Permit. Accordingly, the Policy 5.3 exception granted previously will continue to be valid under this Order.

Any Discharger not listed in Attachment G is required to meet all applicable priority pollutant criteria for receiving waters.

4. **Antidegradation Policy**

Section 131.12 of 40 C.F.R. requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plans implement, and incorporate by reference, both the state and federal antidegradation policies.

The permitted discharge must be consistent with the antidegradation provision of 40 C.F.R. section 131.12 and Resolution No. 68-16. The conditions of this General Permit require residual algaecide and aquatic herbicide discharges to meet applicable water quality objectives. Specifically, the General Permit sets receiving water limitations for 2,4-D, acrolein, copper, diquat, endothall, fluridone glyphosate, and nonylphenol. It also sets receiving water monitoring triggers for imazapyr and triclopyr triethylamine (TEA).

The BMPs and other controls required pursuant to the General Permit constitute Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT).

The General Permit requirements are protective of the broad range of beneficial uses set forth in basin plans throughout the state, constituting best control available consistent with the purposes of the algaecide and aquatic herbicide application in order to ensure that pollution or nuisance will not occur. The nature of pesticides is to be toxic in order to protect beneficial uses such as human health or long-term viability of aquatic life. For example, blue-green algae are bacteria that live in both fresh and marine waters. In California, certain forms of blue-green algae have been a particular problem in the Klamath River watershed and on the Central Coast. Blooms of these bacteria can poison livestock, wildlife, and humans; they can also damage drinking water sources. The use of an algaecide is one of the effective ways to control the harmful blooms of blue-green algae. Although algaecide application will temporarily degrade the water quality and result in short-term toxicity in the receiving water, it prevents the toxicities in the entire water body for a long period of time. While surface waters may be temporarily degraded; water quality standards and objectives will not be exceeded after project completion.

Another example of benefits of pesticide application is the control of aquatic weeds in flood control channels. Aquatic herbicides used to control emerging aquatic weeds in a flood control channel will effectively prevent full growth and bloom of aquatic weeds that may block the channel and cause flooding in the surrounding communities. Although the water quality is temporarily degraded while the herbicide is taking its effect in eliminating the weeds, the water quality will not be exceeded after the project is completed. In addition, the receiving water limitations and other requirements of this General Permit will ensure maintenance of the highest water quality consistent with maximum benefit to the people of the state.

Given the nature of a General Permit and the broad range of beneficial uses to be protected across the state, data analysis of specific water bodies is infeasible. While surface waters may be temporarily degraded, water quality standards and objectives will not be exceeded. The nature of pesticides is to be toxic in order to protect human health and water resources. However, compliance with receiving water limitations is required. Therefore, this General Permit is consistent with state and federal antidegradation policies.

5. **Endangered Species Act**

This General Permit does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code §2050 et. seq) or the Federal Endangered Species Act (16 U.S.C.A. §1531 et. seq). This General Permit requires compliance with effluent limitations, receiving water limitations, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

6. **Impaired Water Bodies on CWA 303(d) List**

   This General Permit does not authorize the discharge of residual algaecides and aquatic herbicides and their degradation byproducts to waters of the United States that are impaired by the same active ingredients and their degradation byproducts. The links to California's impaired waters bodies are provided at http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtm.

7. **Other Plans, Policies, and Regulations**

   The State Water Board adopted the *Water Quality Control Policy for the Enclosed Bays and Estuaries of California*. The requirements within this General Permit are consistent with the policy.

V. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: (1) 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards; and (2) 40 C.F.R. section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law (33 U.S.C., §1311(b)(1)(C); 40 C.F.R. §122.44(d)(1)). NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to numeric criteria specifying maximum amounts of particular pollutants. Pursuant to 40 C.F.R. section 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality*." Section 122.44(d)(1)(vi) of 40 C.F.R. further provides that "[w]*here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.*"

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based

limitations and standards; and section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established.

With respect to narrative objectives, the State Water Board must establish effluent limitations using one or more of three specified sources: (1) U.S. EPA's published water quality criteria; (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria; or (3) an indicator parameter (i.e., 40 C.F.R. §122.44(d)(1)(vi)(A), (B) or (C)). Basin Plans contain a narrative objective requiring that: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" Basin Plans require the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor producing substances that adversely affect beneficial uses. Basin Plans state that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. Basin Plans also limit chemical constituents in concentrations that adversely affect surface water beneficial uses. Basin Plans further state that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

A. Discharge Prohibitions

1. The discharge of residual algaecides, residual aquatic herbicides, and their degradation byproducts in a manner different from that described in this General Permit is prohibited.

   This prohibition is based on 40 C.F.R. 122.21(a), "Duty to Apply," and California Water Code section 13260, which requires filing a Report of Waste Discharge before discharges can occur. Discharges not described in the NOI, and subsequently not discharged in the manner permitted by this General Permit, are prohibited.

2. The discharge of residual algaecides, residual aquatic herbicides, and their degradation byproducts shall not create a nuisance as defined in section 13050 of the California Water Code.

   This prohibition is based on California Water Code section 13050 for water quality control for achieving water quality objectives.

3. The discharge shall not cause, have a reasonable potential to cause, or contribute to an in-stream excursion above any applicable standard or criterion promulgated by U.S. EPA pursuant to section 303 of the CWA, or water quality objective adopted by the State or Regional Water Boards.

   This prohibition is based on CWA section 301 and California Water Code.

4. All pesticides are prohibited from the waters of the Lahontan Region (Region 6). The use of this permit is invalid in the Lahontan Region unless the discharger has

requested a prohibition exemption from the Lahontan Water Board and the Lahontan Water Board has granted an exemption for the use of algaecides or aquatic herbicides.

This prohibition is based on the Lahontan Water Board's region-wide waste discharge prohibition for pesticides in water with exemption criteria to allow certain uses of aquatic pesticides.

B. Effluent Limitations

1. Technology-Based Effluent Limitations

The intent of technology-based effluent limitations in NPDES permits is to require a minimum level of treatment of pollutants based on available treatment technologies while allowing the Discharger to use any available control technique to meet the limitations. For industrial and other non-municipal facilities, technology-based effluent limitations are derived by using: (1) national effluent limitations guidelines and standards established by U.S. EPA; or best professional judgment on a case-by-case basis in the absence of national effluent limitations guidelines and standards. In the case of pesticide applications, U.S. EPA has not developed guidelines and standards other than the requirement to follow the labels when applying pesticides. At this point, it is not appropriate to establish technology-based effluent limitations other than following the label when applying algaecides and aquatic herbicides.

Therefore, the effluent limitations contained in this General Permit are narrative and include requirements to develop and implement an APAP that describes appropriate BMPs, including compliance with all algaecide and aquatic herbicide label instructions, and to comply with numeric receiving water limitations and actions required if monitoring triggers are exceeded.

The BMPs required herein constitute BAT and BCT and will be implemented to minimize the area and duration of impacts caused by the discharge of algaecides and aquatic herbicides in the treatment area and to allow for restoration of water quality and protection of beneficial uses of the receiving waters to pre-application quality following completion of an application event.* In addition, for those enrollees that have been granted an exception to meeting receiving water limitations for acrolein and copper, in accordance with the Policy, this General Permit requires that upon completion of a pesticide application project, the Discharger shall provide certification by a qualified biologist that the receiving water beneficial uses have been restored.

The development of BMPs provides the flexibility necessary to establish controls to minimize the area extent and duration of impacts caused by the discharge of algaecides and aquatic herbicides. This flexibility allows Dischargers to implement appropriate BMPs for different types of applications and different types of waters.

Much of the BMP development has been incorporated into the algaecide and aquatic herbicide regulation process by U.S. EPA, DPR, and County Agricultural

Commissioners. The Dischargers must be licensed by DPR if such licensing is required for the algaecide and aquatic herbicide application project. The algaecide and aquatic herbicide use must be consistent with the algaecide and aquatic herbicide label instructions and any Restricted Material Use Permits issued by County Agricultural Commissioners.

U.S. EPA and DPR scientists review algaecide and aquatic herbicide labels to ensure that a product used according to label instructions will cause no harm (or "adverse impact") on non-target organisms that cannot be reduced (or "mitigated") with protective measures or use restrictions. Many of the label directions constitute BMPs to protect water quality and beneficial uses. Label directions may include: precautionary statements regarding toxicity and environmental hazards; directions for proper handling, dosage, application, and disposal practices; prohibited activities; spill prevention and response measures; and restrictions on type of water body and flow conditions.

A Restricted Material Use Permit issued by the County Agricultural Commissioner incorporates applicable suggested permit conditions from DPR and local site-specific conditions necessary to protect the environment. State regulations require that specific types of information be provided in an application to the County Agricultural Commissioners for a Restricted Material Use Permit. The County Agricultural Commissioners review the application to ensure that appropriate alternatives were considered and that any potential adverse effects are mitigated. The County Agricultural Commissioners also conduct pre-project inspections on at least five percent of projects.

This General Permit requires that Dischargers use BMPs when implementing control programs in order to mitigate effects to water quality resulting from algaecide and aquatic herbicide applications. Dischargers are required to consider alternative control measures to determine if there are feasible alternatives to the selected algaecide and aquatic herbicide application project that could reduce potential water quality impacts. If the Discharger identifies alternative control measures to the selected algaecide and aquatic herbicide application project that could reduce potential water quality impacts and that are also feasible, practicable, and cost-effective, the Discharger shall implement the identified alternative measures. The selection of control measures that use non-toxic and less toxic alternatives is an example of an effective BMP.

2. **Water Quality-Based Effluent Limitations (WQBELs)**

a. **Scope and Authority**

Section 122.44(d)(1)(i) of 40 C.F.R. mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) U.S. EPA criteria under CWA section 304(a), supplemented where necessary by other relevant information; (2) an

indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 C.F.R. section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plans, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

Section 122.44(k)(3) of 40 C.F.R. allows the use of other requirements such as BMPs in lieu of numeric effluent limits if the latter are infeasible. It is infeasible for the State Water Board to establish numeric effluent limitations in this General Permit because:

i. The application of algaecides and aquatic herbicides is not necessarily considered a discharge of pollutants according to the *National Cotton Council of America v. U.S. EPA*[10] and other applicable case law. The Sixth Circuit Court of Appeals ruled that residual pesticides associated with the application of pesticides at, over, or near water constitute pollutants within the meaning of the CWA and that the discharge must be regulated under an NPDES permit;

ii. This General Permit regulates the discharge of residual algaecides and aquatic herbicides used for algae and aquatic weed control to waters of the United States. These are algaecides and herbicides with registration labels that explicitly allow direct application to water bodies. In algaecides and aquatic herbicides applications to control pests, any algaecides and aquatic herbicides residue or degradation byproduct that is deposited in waters of the United States is a pollutant. However, at what point the algaecides and aquatic herbicides become a residue is not precisely known and varies depending on the type of algaecides and aquatic herbicides, application method and quantity, water chemistry, etc. Therefore, in the application of algaecides and aquatic herbicides, the exact effluent is unknown;

iii. It would be impractical to provide effective treatment of the algaecides and aquatic herbicides residue to protect water quality, given typically, algaecides and aquatic herbicides applications consist of numerous short duration intermittent algaecides and aquatic herbicides residue releases to surface waters from many different locations; and

iv. Treatment may render the algaecides and aquatic herbicides useless for algae and aquatic weed control.

[10] 553 F.3d 927 (6th Cir., 2009)

Therefore, as stated in Technology-Based Effluent Limitations, Section V.B.1 above, the effluent limitations contained in this General Permit are narrative and include requirements to develop and implement an APAP that describes appropriate BMPs, including compliance with all algaecides and aquatic herbicides label instructions, and to comply with narrative receiving water limitations and triggers.

b. **Receiving Water Beneficial Uses**

Algaecide and aquatic herbicide applications for algae and aquatic weed control may potentially deposit residual algaecides and aquatic herbicides to surface waters. Beneficial uses of receiving waters are as follows: municipal and domestic supply, agricultural irrigation, agricultural stock watering, process water supply, service water supply, and hydropower supply, water contact recreation, canoeing and rafting recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm and cold spawning habitat, wildlife habitat, navigation, groundwater recharge, and freshwater replenishment. Requirements of this General Permit implement the applicable Basin Plans.

c. **Determining the Need for WQBELs**

Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR, as well as antidegradation policies. The Basin Plans include numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." With regard to the narrative chemical constituent objective, the Basin Plans state that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)" in title 22 of CCR.* The narrative tastes and odors objective states: *"Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses*."

Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard.

d. **Antidegradation Policy**

The permitted discharge is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. Due to the low volume of discharge expected from discharges regulated under this General Permit, the impact on existing water quality will be insignificant. Dischargers seeking authorization to discharge under this General Permit are required to demonstrate compliance with receiving water limitations during the application. If, however, the appropriate Regional Water Board, subsequent to review of any application, finds that the impact of a discharge will be significant, then authorization for coverage under this General Permit will be denied and coverage under an individual permit will be required (including preparation of an antidegradation analysis).

VI. RATIONALE FOR RECEIVING WATER LIMITATIONS AND MONITORING TRIGGERS

A. Groundwater

[Not Applicable]

B. Surface Water

CWA section 303(a-c), requires states to adopt water quality standards, including criteria necessary to protect beneficial uses. Regional Water Boards adopted water quality criteria as water quality objectives in the Basin Plans. The Basin Plans state that "[t]*he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.*" The Basin Plans include numeric and narrative water quality objectives for various beneficial uses and water bodies. This General Permit contains receiving water limitations based on the Basin Plans' numerical and narrative water quality objectives for bio-stimulatory substances, chemical constituents, color, temperature, floating material, settleable substances, suspended material, tastes and odors, and toxicity. This General Permit also requires compliance with any amendment or revision to the water quality objectives contained in the Basin Plans adopted by Regional Water Boards subsequent to adoption of this General Permit.

Once algaecides and aquatic herbicides have been applied to a treatment area, the algaecide and aquatic herbicide product can actively control pests within the treatment area. The discharge of algaecides and aquatic herbicides, their residues, and their degradation byproducts from the applications to surface water must meet applicable water quality criteria and objectives. The receiving water limitations ensure that an application event* does not result in an exceedance of a water quality standard in the receiving water.

To protect all designated beneficial uses of the receiving water, the most protective (lowest) and appropriate (to implement the CTR criteria and WQOs in the Basin

Plans) criteria should be selected as the permit limitation for a particular water body and constituent. In many cases, water quality standards include narrative, rather than numerical, water quality objectives. In such cases, numeric water quality limits from the literature or publicly available information may be used to ascertain compliance with water quality criteria.

Algaecide and aquatic herbicide formulations contain disclosed “active” ingredients that yield toxic effects* on target organisms and may also have toxic effects on non-target organisms. Algaecide and aquatic herbicide active ingredients that do not contain pollutants for which there are applicable numeric CTR criteria may still have toxic effects on receiving water bodies. In addition, the inactive or “inert” ingredients of algaecides and aquatic herbicides, which are trade secrets and have not been publicly disclosed, may also contain toxic pollutants or pollutants that could affect water quality.

DPR is responsible for reviewing toxic effects of product formulations and determining whether an algaecide or aquatic herbicide is suitable for use in California’s waters. In this General Permit, inert ingredients are also considered on a constituent-by-constituent basis. U.S. EPA regulates pesticide use through strict labeling requirements in order to mitigate negative impacts to human health and the environment, and DPR environmental and medical toxicologists review toxicity data on formulations and can deny registration or work with registrants or County Agricultural Commissioners to impose additional requirements in order to protect human health or the environment.

U.S. EPA and DPR require that pesticides undergo toxicity testing and meet specific toxicity requirements before registering the pesticide for application to surface waters. U.S. EPA has found that the application of properly registered pesticides pose a minimal threat to people and the environment. In addition, the effects of these pesticides on water quality will be mitigated through compliance with FIFRA label requirements, application of BMPs, and monitoring.

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the MCLs set forth in title 22, Cal. Code Regs. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plans require the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

1. **Receiving Water Limitations**

The instantaneous maximum receiving water limitations are based on promulgated water quality criteria such as those provided in the CTR, water quality objectives adopted by the State and Regional Water Boards in their Basin Plans, water quality criteria adopted by the California Department of Fish and Wildlife, water quality standards such as drinking water standards adopted by U.S. EPA or the California Department of Public Health (CDPH), or U.S. EPA National Recommended Ambient Water Quality Criteria.

This General Permit provides receiving water limitations based on the lowest water quality criteria/objectives to protect all designated beneficial uses of the receiving water. The receiving water limitations in this General Permit are the same as those in Order No. 2004-0009-DWQ. The rationale for each limitation is summarized below.

Table D-2. Summary of Receiving Water Limitations

Constituent/ Parameter	BENEFICIAL USE[1]				Basis
	MUN, µg/L	WARM or COLD, µg/L	Other than MUN, WARM, or COLD, µg/L	All Designations	
2,4,-D	70				U.S. EPA MCL
Acrolein[2]	320	21	780		U.S. EPA Water Quality Criteria, 1986.
Copper[2]				Dissolved Freshwater[3] Copper Chronic = 0.960exp{0.8545 [ln(hardness[4])] – 1.702} [5, 6] Dissolved saltwater[3] Copper Chronic = 0.83exp{0.8545 [ln(hardness[4])] – 1.702} [5,6]	California Toxics Rule
Diquat	20				U.S. EPA MCL
Endothall	100				U.S. EPA MCL
Fluridone	560				U.S. EPA Integrated Risk Information System
Glyphosate	700				U.S. EPA MCL
Nonylphenol				Freshwater Chronic Criterion = 6.6 µg/L Saltwater Chronic Criterion = 1.7 µg/L	U.S. EPA National Recommended Ambient Water Quality Criteria
Toxicity	Algaecide and aquatic herbicide applications shall not cause or contribute to toxicity in receiving water(s).				Regional Water Boards' Basin Plans

Notes
1. See Regional Water Boards' Water Quality Control Plans (Basin Plans) for beneficial use definitions.
2. Public entities and mutual water companies listed in Attachment G are not required to meet this receiving water limitation during the exception period described in Section VIII.C.10, Limitations and Discharge Requirements, Aquatic Pesticides Application Plan (APAP).

3. For waters in which the salinity is equal to or less than 1 part per thousand 95% or more of the time, the freshwater criteria apply. For waters in which the salinity is equal to or greater than 10 parts per thousand 95% or more of the time, saltwater criteria apply. For waters in which the salinity is between 1 and 10 parts per thousand, the applicable criteria are the more stringent of the freshwater or saltwater criteria.
4. For freshwater aquatic life criteria, waters with a hardness 400 mg/L or less as calcium carbonate, the actual ambient hardness of surface water shall be used. For waters with a hardness of over 400 mg/L as calcium carbonate, a hardness of 400 mg/L as calcium carbonate shall be used with a default Water-Effect Ratio of 1.
5. Values should be rounded to two significant figures.
6. This limitation does not apply to the Sacramento River and its tributaries above the State Highway 32 Bridge at Hamilton City. See Table III-1 of the Basin Plan for the Sacramento and San Joaquin River Basins for copper limitation.

The copper limitation in Order No. 2004-0009-DWQ was based on the CTR's Criteria Continuous Concentration (CCC) expressed in total recoverable concentration. This General Permit also uses CCC from the CTR as the basis of the copper limitations; however, the copper limitation is now expressed in dissolved concentration. Since the copper criterion in the CTR is expressed in dissolved concentration, the receiving water limitation must also be expressed in dissolved rather than total concentration since it is the dissolved portion of copper that is bioavailable to aquatic life.

Based on Policy section 5.3, this General Permit grants public entities and mutual water companies listed in Attachment G a short-term or seasonal exception from meeting receiving water limitations for acrolein and copper during treatment. As a condition of the exception, this General Permit requires Dischargers to provide the length and justification of required exception periods in their APAPs. There is no discrete definition for short-term; but the intent is to allow the exception to apply during the treatment period. It is up to the Discharger to make this demonstration.

The receiving water dissolved oxygen limitation is based on the Regional Water Board Basin Plans' dissolved oxygen objectives.

2. **Receiving Water Monitoring Triggers**

In algaecide or aquatic herbicide applications, it is reasonable to conclude that some residual algaecides or aquatic herbicides will remain in the receiving waters. These residual algaecides or aquatic herbicides may cause toxicity to aquatic life. However, information regarding the specific amount of algaecide or aquatic herbicide residues (described below) in the receiving water as a result of direct applications for weed control is not adequate to develop receiving water limitations for these algaecides and aquatic herbicides. Therefore, this General Permit only contains Receiving Water Monitoring Triggers and/or monitoring requirements for these algaecides or aquatic herbicides. The monitoring triggers and monitoring data will be used to assess whether the discharges of these algaecide or aquatic herbicide residues have the reasonable potential to cause or contribute to an excursion of a water quality standard, including numeric and narrative objectives within a standard.

In the absence of adopted criteria, objectives, or standards, the State Water Board used U.S. EPA's Ambient Criteria for the Protection of Freshwater Aquatic

Life (Ambient Water Quality Criteria) which are directly applicable as a regulatory level to implement narrative toxicity limitations included in all Regional Water Board Basin Plans. Where adopted criteria, objectives, standards, or Ambient Water Quality Criteria are unavailable, the State Water Board used data from U.S. EPA's *Ecotoxicity Database* to develop the Receiving Water Monitoring Triggers to protect all beneficial uses of the receiving water.

For constituents that do not have Ambient Water Quality Criteria, the Instantaneous Maximum Receiving Water Monitoring Trigger is based on one-tenth of the lowest 50 Percent Lethal Concentration (LC50) from U.S. EPA's *Ecotoxicity Database*. Using one-tenth of the lowest LC50 as the receiving water monitoring trigger is consistent with the Central Valley Regional Water Board's Basin Plan approach when developing the Daily Maximum Limitation for algaecides or aquatic herbicides that do not have water quality criteria.

This General Permit may be re-opened to add receiving water limitations to the algaecides or aquatic herbicides listed below if the monitoring triggers are exceeded or the monitoring data indicate re-opening of the permit is appropriate. The following is a detailed discussion of toxicity data, applicable water quality criteria, and Receiving Water Monitoring Triggers, if applicable, for these algaecide or aquatic herbicide:

a. Imazamox

Imazamox is a derivative of the active ingredient, ammonium salt of imazamox for the aquatic herbicide Clearcast, which DPR registered for use in California in October 2012. It is labeled for application to water for the control of submerged aquatic plants species and some emergent and floating species.

Imazamox is an herbicide that inhibits an enzyme in aquatic plants that is essential for the synthesis of three-branched chain amino acids.

Staff obtained toxicity data for imazamox from U.S. EPA's *Ecotoxicity Database* to assess its toxicity to freshwater aquatic life. However, U.S. EPA's *Ecotoxicity Database* contains toxicity data only for imazamox, but not for its salt. Table D-3 summarizes the toxicity data for imazamox below.

Table D-3. Toxicity Data Summary for Imazamox (CAS# 114311-32-9)

Type of Organism	Study Length	Study Date	LC50 (mg/L)
Mysid	96 h	1998	> 100
		1998	> 94.3
Bluegill sunfish	96 h	1994	> 119
Rainbow trout	96 h	1994	> 122
Sheephead mino	96 h	1998	> 94.2
		1998	> 94.2
Lowest LC50/10 > 9.4 mg/L			

Ambient Water Quality Criteria are unavailable for imazamox and imazamox salt. Table D-3 shows that one-tenth of the lowest LC50 to protect the most sensitive freshwater aquatic life for imazamox is greater than 9.4 mg/l.

Due to the absence of water quality criteria for imazamox and its low toxicity to aquatic life as indicated in U.S. EPA's *Ecotoxicity Database*, this General Permit does not have a receiving water monitoring trigger for imazamox. However, this General Permit requires receiving water monitoring for imazamox to collect data, which will provide information on whether the use of imazamox has water quality impacts.

b. Imazapyr

The active ingredient imazapyr is marketed by the trade names Arsenal, Chopper, and Assault. Upon contact, imazapyr can interfere with DNA synthesis and cell growth of the plants. The target weed species are grasses, broad-leaves, vines, brambles, shrubs and trees, and riparian and emerged aquatics. The result of exposure is death of new leaves. It was first registered in the United States in 1984.

Imazapyr is a slow-acting amino acid synthesis inhibitor. It has an average water half-life* of four days with photodegradation as the primary form of degradation in water. Imazapyr acts more quickly and is less toxic than other low-volume herbicides. According to the San Francisco Estuary* Invasive Spartina Project's May 4, 2005 report titled *Use of Imazapyr Herbicide to Control Invasive Cordgrass (Spartina spp.) in the San Francisco Estuary*, imazapyr in water rapidly degrades via photolysis. The report further states that a number of field studies demonstrated that imazapyr rapidly dissipated from water within several days, and no detectable residues of imazapyr were found in either water or sediment within two months; in estuarine systems, dilution of imazapyr with the incoming tides contributes to its rapid dissipation, suggesting that imazapyr is not environmentally persistent in the estuarine environment and does not result in significant impacts to water quality. The report concludes that imazapyr herbicides can be a safe, highly effective treatment for control and eradication of non-native *Spartina* species in the San Francisco Estuary and offers an improved risk scenario over the existing treatment regime with glyphosate herbicides. On August 30, 2005, DPR registered imazapyr for aquatic application as an aquatic herbicide.

Toxicity data for imazapyr were obtained from U.S. EPA's *Ecotoxicity Database* to assess the toxicity of imazapyr to freshwater aquatic life. Tables D-4 and D-5 summarize the toxicity data for imazapyr and imazapyr salt.

Table D-4. Toxicity Data Summary for Imazapyr (CAS#81334-34-1)

Type of Organism	Study Length	Study Date	LC50 (mg/L)
Pink shrimp	96 h	1988	> 189
Atlantic silverside	96 h	1988	> 184
Bluegill sunfish	96 h	1983	> 100
		1983	> 100

Type of Organism	Study Length	Study Date	LC50 (mg/L)
Channel catfish	96 h	1983	> 100
Rainbow trout	96 h	1983	> 100
		1995	> 110
Lowest LC50/10 > 10			

Table D-5. Toxicity Data Summary for Imazapyr Isopropylamine Salt (CAS#81510-83-0)

Type of Organism	Study Length	Study Date	LC50 (mg/L)
Water flea	48 h	1984	350
Rainbow trout	96 h	1984	**112**
Bluegill sunfish	96 h	1984	> 1000
Lowest LC50/10 = 11.2			

Ambient Water Quality Criteria are unavailable for imazapyr and imazapyr salt. Tables D-4 and D-5 show that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for imazapyr is 11.2 mg/l.

Due to its safe use in the environment and low toxicity to aquatic life as indicated in U.S. EPA's *Ecotoxicity Database*, this General Permit does not have a receiving water limitation for imazapyr. However, this General Permit contains a monitoring trigger of 11.2 mg/l based on one-tenth of the lowest LC50 from U.S. EPA's *Ecotoxicity Database* and requires receiving water monitoring to collect data, which will provide information on whether imazapyr has water quality impacts.

c. Penoxsulam

Penoxsulam is the active ingredient for Galleon SC, a selective systemic aquatic herbicide for management of freshwater aquatic vegetation in ponds, lakes, reservoirs, marshes, wetlands, non-irrigation canals, slow-moving water bodies, etc. Penoxsulam is a post-emergence acetolactate synthase (ALS) inhibitor developed by Dow AgroSciences to be used as a foliar spray on dry-seeded rice crops. The mode of action is to inhibit the acetolactate synthases enzyme in the target weed.

The U.S. EPA Pesticide Fact Sheet states that penoxsulam is expected to be very mobile, but not very persistent, in either aqueous or terrestrial environments. Penoxsulam exists almost exclusively in a disassociated state at pH values normally found in rice paddy water (averaging about eight), but not in terrestrial environments where lower pH values may be found. Penoxsulam degrades by two different transformation mechanisms, producing 13 different identified transformation products, 11 of which meet

the criteria to be classified as major degradation byproducts,[11] six of which reached peak concentrations at study termination, indicating a greater degree of persistence than penoxsulam and a potential to reach concentrations even greater than those reported at study termination. The results of the screening-level risk assessment suggest that penoxsulam will not pose a threat to aquatic or terrestrial animals, however, this conclusion must be tempered by the fact that testing has not been conducted on several major degradation byproducts.

Toxicity data for penoxsulam were obtained from U.S. EPA's *Ecotoxicity Database* to assess the toxicity of penoxsulam to freshwater aquatic life. Table D-6 summarizes the toxicity data for penoxsulam.

Table D-6. Toxicity Data Summary for Penoxsulam (CAS#219714-96-2)

Type of Organism	Study Length	Study Date	LC50 (mg/L)
Bluegill sunfish	96 h	2000	> 103
Common carp fish	96 h	2001	> **101**
Mysid	96 h	2000	> 114
Rainbow trout	96 h	2002	> 147
		2000	> 102
Scud	96 h	2000	> 126
Lowest LC50/10 > 10.1			

Ambient Water Quality Criteria are unavailable for penoxsulam. Table D-6 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for penoxsulam is greater than 10.1 mg/l.

Due to its safe use in the environment, low toxicity to aquatic life as indicated in U.S. EPA's *Ecotoxicity Database,* and lack of accurate toxicity value, this General Permit does not have a receiving water monitoring trigger. However, this General Permit requires receiving water monitoring to collect data, which will provide information on whether penoxsulam has water quality impacts.

d. Sodium Carbonate Peroxyhydrate

Sodium carbonate hydroxyhydrate has been registered as an algaecide since early 2006. The most common brand names are PAK 27, Phycomycin, and Green Clean. It is an alternative to traditional copper based algaecides. It acts as an oxidizing agent and thus kills the target algae. When it is

[11] U.S. EPA defines major degradation byproducts to be BSA, 2-amino-TP, TPSA, BSTCA methyl, BSTCA, 2-amino-TCA,5-OH-penoxsulam, SFA, sulfonamide, 5,8-di-OH and 5-OH, 2 aminoTP.

applied into water, the compound quickly breaks down into hydrogen peroxide (H_2O_2) and sodium carbonate. The hydrogen peroxide oxidizes and thus kills the target pests. After contact, the hydrogen peroxide breaks down into water and oxygen.

U.S. EPA has waived toxicity testing for freshwater fish and invertebrate during the registration process. According to the U.S. EPA fact sheet, when the pesticide is applied in accordance with directions on the label, no harm is expected to freshwater fish or freshwater invertebrates.

There are no toxicity data for sodium carbonate peroxyhydrate in U.S. EPA's *Ecotoxicity Database.* Therefore, this General Permit does not have a monitoring trigger or a monitoring requirement for sodium carbonate peroxyhydrate.

e. Triclopyr Triethylamine (TEA) Salt

Triclopyr TEA is a systemic herbicide used to control broad-leaf weeds and woody plants.

U.S. EPA concluded in its re-registration document that triclopyr TEA is practically non-toxic to freshwater fish and aquatic invertebrates on an acute basis and triclopyr TEA is slightly toxic to practically non-toxic to estuarine/marine fish and invertebrates on an acute basis.

Triclopyr produces the metabolite or degradate 3,5,6-trichloro-2-pyridinol (TCP). Based on its analysis, U.S. EPA concludes that the existing uses of triclopyr are unlikely to result in acute or chronic dietary risks from TCP. Based on limited available data and modeling estimates, with less certainty, the U.S. EPA concluded that existing uses of triclopyr are unlikely to result in acute or chronic drinking water risks from TCP.

Toxicity data for triclopyr TEA were obtained from U.S. EPA's *Ecotoxicity Database* to assess the toxicity of triclopyr TEA to freshwater aquatic life. Table D-7 summarizes the toxicity data for Triclopyr TEA.

Table D-7. Toxicity Data Summary for Triclopyr TEA Salt (CAS#57213-69-1)

Type of Organism	Study Length	Study Date	LC50 (mg/L)
Bluegill sunfish	96 h	1978	891
	96 h	1973	471
Fathead minnow	96 h	1978	947
	96 h	1983	546
	96 h	1983	279
Grass shrimp	96 h	1992	326
Inland Silverside fish	96 h	1989	**130**
Pink shrimp	96 h	1975	895
Rainbow trout	96 h	1973	240
	96 h	1978	552

Type of Organism	Study Length	Study Date	LC50 (mg/L)
Lowest LC50/10 = 13.0			

Ambient Water Quality Criteria are unavailable for triclopyr TEA. Table D-7 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for triclopyr TEA is 13 mg/l.

Due to its safe use in the environment and low toxicity to aquatic life as indicated in U.S. EPA's *Ecotoxicity Database*, this General Permit does not have a receiving water limitation for triclopyr TEA. However, this General Permit contains a monitoring trigger of 13.0 mg/l based on one-tenth of the lowest LC50 from U.S. EPA's *Ecotoxicity Database* and requires receiving water monitoring to collect data, which will provide information on whether triclopyr TEA has water quality impacts.

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

A. MRP Goals

Section 122.48 of 40 C.F.R. requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the State and Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (MRP) in Attachment C of this General Permit establishes monitoring and reporting requirements to implement federal and state requirements.

The goals of the MRP are to:

1. Identify and characterize algaecide or aquatic herbicide application projects conducted by the Discharger;
2. Determine compliance with the receiving water limitations and other requirements specified in this General Permit;
3. Measure and improve the effectiveness of the APAP;
4. Support the development, implementation, and effectiveness of BMPs;
5. Assess the chemical, physical, and biological impacts on receiving waters resulting from algaecide or aquatic herbicide applications;
6. Assess the overall health and evaluate long-term trends in receiving water quality;
7. Demonstrate that water quality of the receiving waters following completion of resource or weed management projects are equivalent to pre-application conditions; and
8. Ensure that projects that are monitored are representative of all algaecide or aquatic herbicide and application methods used by the Discharger.

The MRP in the Attachment C of this General Permit is considered as baseline monitoring requirements. Monitoring plans proposed by Dischargers in their APAP must meet the minimum requirements prescribed in the MRP. Public entities and mutual water companies that have a Policy section 5.3 exception should comply with the MRP in this General Permit as well as monitoring plan proposed in their CEQA document where the two plans differ.

B. Effluent Monitoring

Pursuant to the requirements of 40 C.F.R. section 122.44(i), effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and assess the impacts of the discharge on the receiving water and groundwater.

The application of pesticides for pest control is not necessarily considered a discharge of pollutants according to the *National Cotton Council of America v. U.S. EPA* decision and other applicable case law. The regulated discharge is the discharge of residual pesticides. At what point the pesticide becomes a residue is not precisely known. Therefore, in the application of pesticides, the exact effluent is unknown. Thus, the effluent monitoring requirement is not applicable for algaecide or aquatic herbicide applications.

C. Toxicity Testing Requirements

The State Water Board, pursuant to the Porter-Cologne Act and the federal CWA, customarily requires the Discharger to conduct toxicity monitoring. In fact, both Acts anticipate Discharger self monitoring. However, this General Permit does not require toxicity testing based on the 2004 toxicity study funded by the State Water Board and data collected from 2004 to 2008. The toxicity study found the following: (1) There was no toxicity with the use of 2,4-D, glyphosate, and triclopyr; (2) Toxicity testing was difficult for acrolein due to its volatility; (3) Results were inconclusive for diquat and fluridone; and (4) Peak copper concentrations did not exceed toxicity values. The monitoring data collected under Order No. 2004-0009-DWQ from 2004 to 2008 showed that all constituent concentrations from post-event application samples were below receiving water limitations except for the following: three exceedances each for acrolein and glyphosate and 82 exceedances for copper out of 288 monitoring events. For glyphosate, it is likely that the three exceedances were not the result of aquatic herbicide applications because the pre-application samples also showed exceedances and the remaining 151 samples showed no exceedance. For copper, 43 of the 82 exceedances were from public agencies or mutual water companies that were excepted from meeting priority pollutant limitations during the exception period. The Policy allows the exception. Thus, staff did not consider these exceedances as violations of the receiving water limitations. However, 39 of the exceedances were from entities that did not have a Policy exception. Although staff considered these exceedances as true violations of the receiving water limitations, staff is not aware of any long-term impacts from these exceedances. Long-term impacts from

exceedances are likely not going to occur for the following reasons: (1) water quality criteria, which are used directly as receiving water limitations in this General Permit, have built-in factors of safety; (2) as shown in the 2004 toxicity study, the actual peak concentrations after applications of copper did not exceed toxicity values; and (3) the applications are short-term in duration. All of the foregoing information indicates that widespread acute ecosystem impacts will not occur from algaecide or aquatic herbicides applied according to their label instructions and requirements of this General Permit. Therefore, toxicity monitoring requirements are not necessary.

D. Receiving Water Monitoring

Receiving water monitoring is necessary to determine the impacts of the discharge on the receiving stream.

All forms of testing have some degree of uncertainty associated with them. The more limited the amount of test data available, the larger the uncertainty. The intent of this General Permit's sampling program is to select a number that will detect most events of noncompliance without requiring needless or burdensome monitoring.

Staff also used EPA's Technical Support Document for Water Quality-Based Toxics Control (TSD) to determine the appropriate number of samples that would be needed to characterize the impacts of the residual pesticide discharge from pesticide applications. Page 53 of the TSD recommends using a coefficient of variation (CV) 0.6 when the data set contains less than 10 samples. Table 3-1 of the TSD shows that with a CV of 0.6, the multiplying factors used to determine whether a discharge causes, has the reasonable potential to cause, or contributes to an excursion above a state water quality standard begin to stabilize when the sample number is six. Thus, this General Permit requires six samples per year for each active ingredient in each environmental setting (flowing water and non-flowing water) to characterize the effects of residual pesticide discharge from pesticide applications. However, after a Discharger or Coalition has provided results from six consecutive sampling events showing concentrations that are less than the receiving water limitation/trigger for an active ingredient in a specific environmental setting, sampling shall be reduced to one application event per year for that active ingredient in that environmental setting.

Similarly, this General Permit contains a reduced monitoring frequency of once per year (instead of six) at each environmental setting for glyphosate. The reduced monitoring frequency is based on staff's review of available data from 2004 to 2008 that showed no exceedance of the permit limitation for glyphosate under Order No. 2004-0009-DWQ.

VIII. RATIONALE FOR AQUATIC PESTICIDE USE REQUIREMENTS

A. Application Schedule

The Discharger shall provide a phone number or other specific contact information for all persons who request the Discharger's application schedule.

B. Application Notification Requirements

The Policy section 5.3, Categorical Exception, requires public agencies and mutual water companies that have been granted the short-term or seasonal exception for compliance with priority pollutant limitations to notify potentially affected public and government agencies of algaecide or aquatic herbicide application.

C. APAP

This General Permit contains narrative effluent limitations, which include implementing BMPs described in the APAP, which is a requirement of this General Permit. See Section VI, Rationale for Effluent Limitations and Discharge Specifications, for more detailed explanation of the need for an APAP.

D. APAP Processing, Approval, and Modifications

Upon receipt of a new or an amended APAP, staff will post it on the State Water Board's website. Major changes to the APAP shall be submitted to the Deputy Director for approval. Examples of major changes include using a different product other than what is specified in the APAP, changing an application method that may result in different amounts of algaecide or aquatic herbicides being applied, or adding or deleting BMPs. Since the APAP shall include ALL (1) the water bodies or water body systems in which algaecide or aquatic herbicides are being planned to be applied or may be applied to control algae and aquatic weeds and (2) the application areas and the target areas in the system that are being planned to be applied or may be applied, changes in monitoring locations are not considered major changes. However, these changes need to be reported in the annual report.

In preparing for the reissuance of the General Permit, staff will evaluate review periods and comments received during the life of this permit and look for efficiencies. Based on this information, staff will propose revisions to the public comment process for APAPs.

E. Aquatic Pesticide Application Log

An application log to record all algaecide or aquatic herbicide applications is necessary. This application log will help Dischargers and the Water Boards' staff to investigate any exceedance of receiving water limitations or receiving water monitoring triggers.

IX. RATIONALE FOR PROVISIONS

A. Standard Provisions

1. Standard Provisions in Attachment B

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. section 122.42, are provided

in Attachment B. The Discharger must comply with applicable standard provisions and with those additional conditions that are applicable under 40 C.F.R. section 122.42.

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the General Permit. Section 123.25(a)(12) of 40 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. Section 123.25, this General Permit omits federal conditions that address enforcement authority specified in 40 C.F.R. section 122.41(j)(5) and (k)(2) because the enforcement authority under the California Water Code is more stringent. In lieu of these conditions, this General Permit incorporates by reference California Water Code section 13387(e).

2. **Discharge to Impaired Water Bodies**

Impaired water bodies are water quality limited segments listed under CWA 303(d) listings. The water bodies on these lists do not meet water quality standards, even if the discharge itself meets water quality standards. The Basin Plans state that "*Additional treatment beyond minimum federal standards will be imposed on dischargers to Water Quality Limit Segments. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" The allocated loads are Discharger and receiving water specific. It is infeasible to assign a uniform load in a statewide general permit. Therefore, this General Permit does not authorize the discharge of active ingredients of algaecides or aquatic herbicides, their residues, and their degradation byproducts to water bodies that are already impaired due to the same product active ingredients, their residues, and their degradation byproducts.

B. Special Provisions

1. **Reopener Provisions**

The reopener provisions allow future modification to this General Permit in accordance with 40 C.F.R. section 122.62.

a. Addition to Policy Exception List in Attachment G

This General Permit may be reopened to add a public entity or a mutual water company which may not otherwise meet the receiving water limitations for acrolein and copper and meets the requirements for an exception from meeting those limitations, consistent with section 5.3 of the Policy.

b. Addition of Aquatic Pesticide Active Ingredients

This General Permit may be reopened to add newly registered algaecide or aquatic herbicide active ingredients so that Dischargers can be covered by this General Permit when they apply the algaecide or aquatic herbicide products with the new active ingredients.

c. Acute and Chronic Toxicity

When the State Water Board revises the Policy's toxicity control provisions that would require the establishment of numeric chronic toxicity limitations or other actions, this General Permit may be reopened to comply with those requirements.

d. Receiving Water Limitations

If monitoring data for residual pesticides show exceedance of monitoring triggers, the Discharger or Coalition shall conduct additional investigations to determine the cause of exceedance. At a minimum, the Discharger or Coalition shall evaluate its application methods, BMPs, and the appropriateness of using alternative products. As a result of the evaluation, this General Permit may be re-opened to add numeric Receiving Water Limitations for the residual pesticides exceeding the triggers.

e. Endangered Species Act

If U.S. EPA develops biological opinions regarding pesticides included in this General Permit, this General Permit may be re-opened to add or modify Receiving Water Limitations/Monitoring Triggers for residual pesticides of concern, if necessary.

2. **Special Studies, Technical Reports, and Additional Monitoring Requirements**

a. Additional Investigation

This General Permit requires Dischargers to conduct additional investigations if the monitoring results exceed the receiving water monitoring limitations. These investigations are necessary in order to address the exceedance caused by the algaecide or aquatic herbicide application and meet the General Permit's limitations and requirements including Basin Plans' narrative water quality objective of no toxics in toxic amount.

b. Qualified Biologist Certification Following Project Completion

The requirement is retained from Order No. 2004-0009-DWQ and is based on Policy section 5.3 exception.

3. **Corrective Action**

When receiving water limitations or triggers are exceeded, Dischargers are expected to assess the cause of exceedance and take appropriate actions as necessary to prevent recurrence of the problem.

X. COMPLIANCE DETERMINATION

This General Permit specifies that compliance be based on event and post-event sampling results. The event sample results will determine if exceedance occurred outside the Treatment Area* during treatment. Post-event samples will determine if exceedance occurred in the Application or Treatment Area after treatment. Since the minimum effective concentration and time needed to effectively kill or control target weeds or algae vary due

to site specific conditions, such as flow, target species, water chemistry, and type of algaecides or aquatic herbicides, this General Permit allows Dischargers to determine when treatment is completed.

XI. PUBLIC PARTICIPATION

The State Water Board is considering the issuance of WDRs that will serve as a general NPDES permit for algaecide or aquatic herbicide applications. As a step in the WDR adoption process, the State Water Board staff has developed tentative WDRs. The State Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The State Water Board has notified interested agencies, parties, and persons of its intent to prescribe general WDRs for algaecide or aquatic herbicide applications and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided to interested parties through specific mailings and publication in major newspapers throughout California. The State Water Board, in a public meeting, heard and considered all comments pertaining to discharges to be regulated by this General Permit. Details of the Public Hearing are provided in the Fact Sheet of this General Permit.

B. Written Comments

Interested persons were invited to submit written comments concerning this tentative WDR. Comments were due at the State Water Board offices by 12:00 noon on **August 21, 2012**. Seven comment letters were received.

C. Public Hearing and Meeting

The State Water Board held a public hearing on the tentative WDRs during its regular Board meeting on **August 7, 2012**. The State Water Board will consider adoption of the WDRs at a public meeting on the following date, time, and location:

Date: **February 19, 2013**
Time: 9:00 a.m.
Location: State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Interested persons are invited to attend. At the public meeting, the State Water Board will hear comments, if any, limited to changes on the draft General Permit.

Please be aware that dates and venues may change. The State Water Board's website address is www.waterboards.ca.gov where you can access the current agenda for changes in dates and locations.

D. Information and Copying

The tentative effluent limitations, receiving water limitations, and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the State Water Board by calling (916) 379-9152.

E. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding this general WDR and NPDES permit should contact the State Water Board, reference the general WDR and NPDES permit, and provide a name, address, and phone number.

F. Additional Information

Requests for additional information or questions regarding this General Permit should be directed to NPDES_Wastewater@waterboards.ca.gov.

Attachment E – Notice of Intent

WATER QUALITY ORDER NO. 2013-0002-DWQ
GENERAL PERMIT NO. CAG990005

STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR RESIDUAL AQUATIC PESTICIDE DISCHARGES TO WATERS OF THE UNITED STATES FROM ALGAE AND AQUATIC WEED CONTROL APPLICATIONS

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item A. New Applicator B. Change of Information: WDID# _____ C. ☐ Change of ownership or responsibility: WDID# _____

II. DISCHARGER INFORMATION

A. Name			
B. Mailing Address			
C. City	D. County	E. State	F. Zip
G. Contact Person	H. E-mail address	I. Title	J. Phone

III. BILLING ADDRESS (Enter Information ***only*** if different from Section II above)

A. Name			
B. Mailing Address			
C. City	D. County	E. State	F. Zip
G. E-mail address	H. Title	I. Phone	

IV. RECEIVING WATER INFORMATION

A. Algaecide and aquatic herbicides are used to treat (check all that apply):

1. ☐ Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger.
   Name of the conveyance system: _____
2. ☐ Canals, ditches, or other constructed conveyance facilities owned and controlled by an entity other than the Discharger.
   Owner's name:_____
   Name of the conveyance system: _____
3. Directly to river, lake, creek, stream, bay, ocean, etc.
   Name of water body: _____

B. Regional Water Quality Control Board(s) where treatment areas are located
(REGION 1, 2, 3, 4, 5, 6, 7, 8, or 9): Region _____
(List all regions where algaecide and aquatic herbicide application is proposed.)

V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION

A. Target Organisms: ____

B. Algaecide and Aquatic Herbicide Used: List Name and Active ingredients

C. Period of Application: Start Date_____ End Date_____

D. Types of Adjuvants Used:

VI. AQUATIC PESTICIDE APPLICATION PLAN

Has an Aquatic Pesticide Application Plan been prepared and is the applicator familiar with its contents?
☐ Yes ☐ No

If not, when will it be prepared? _____

VII. NOTIFICATION

Have potentially affected public and governmental agencies been notified? ☐ Yes ☐ No

VIII. FEE

Have you included payment of the filing fee (for first-time enrollees only) with this submittal?
☐ YES ☐ NO ☐ NA

IX. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. Additionally, I certify that the provisions of the General Permit, including developing and implementing a monitoring program, will be complied with."

A. Printed Name: _____

B. Signature: _____ **Date:** _____

C. Title: _____

XI. FOR STATE WATER BOARD STAFF USE ONLY

WDID:	**Date NOI Received:**	**Date NOI Processed:**
Case Handler's Initial:	**Fee Amount Received:** **$**	**Check #:**
☐ **Lyris List Notification of Posting of APAP**	**Date** _____	**Confirmation Sent** _____

INSTRUCTIONS FOR COMPLETING NOI

WATER QUALITY ORDER NO. 2013-0002-DWQ
GENERAL PERMIT NO. CAG990005

STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR RESIDUAL AQUATIC PESTICIDE DISCHARGES TO WATERS OF THE UNITED STATES FROM ALGAE AND AQUATIC WEED CONTROL APPLICATIONS

These instructions are intended to help you, the Discharger, to complete the Notice of Intent (NOI) form for the Statewide General NPDES permit. **Please type or print clearly when completing the NOI form**. For any field, if more space is needed, submit a supplemental letter with the NOI.

Send the completed and signed form along with the filing fee and supporting documentation to the Division of Water Quality, State Water Resources Control Board. Please also send a copy of the form and supporting documentation to the appropriate Regional Water Quality Control Board (Regional Water Board).

Section I – Notice of Intent Status

Indicate whether this request is for the first time coverage under this General Permit or a change of information for the discharge already covered under this General Permit. Dischargers that are covered under Order No. 2004-0009-DWQ before effective date of this General Permit should check the box for change of information. For a change of information or ownership, please supply the eleven-digit Waste Discharge Identification (WDID) number for the discharge.

Section II – Discharger Information

Enter the name of the Discharger.
Enter the street number and street name where correspondence should be sent (P.O. Box is acceptable).
Enter the city that applies to the mailing address given.
Enter the county that applies to the mailing address given.
Enter the state that applies to the mailing address given.
Enter the zip code that applies to the mailing address given.
Enter the name (first and last) of the contact person.
Enter the e-mail address of the contact person.
Enter the contact person's title.
Enter the daytime telephone number of the contact person

Section III – Billing Address

Enter the information **only** if it is different from Section II above.

A. Enter the name (first and last) of the person who will be responsible for the billing.

B. Enter the street number and street name where the billing should be sent (P.O. Box is acceptable).
C. Enter the city that applies to the billing address.
D. Enter the county that applies to the billing address.
E. Enter the state that applies to the billing address.
F. Enter the zip code that applies to the billing address.
G. Enter the e-mail address of the person responsible for billing.
H. Enter the title of the person responsible for billing.
I. Enter the daytime telephone number of the person responsible for billing.

Section IV – Receiving Water Information

Please be reminded that this General Permit does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code §2050 et. seq) or the Federal Endangered Species Act (16 U.S.C.A. §1531 et. seq). This General Permit requires compliance with effluent limitations, receiving water limitations, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

Additional information on federally-listed threatened or endangered species and federally-designated critical habitat is available from NMFS (www.nmfs.noaa.gov) for anadromous or marine species or FWS (www.fws.gov) for terrestrial or freshwater species.

A. Check all boxes that apply. At least one box must be checked.
1. Check this box if the treatment area is a canal, ditch, or other constructed conveyance system owned and controlled by Discharger. Print the name of the conveyance system.
2. Check this box if the treatment area is a canal, ditch, or other constructed conveyance system owned and controlled by an entity other than the Discharger. Print the owner's name and names of the conveyance system.
3. Check this box if the treatment area is not a constructed conveyance system (including application to river, lake, creek, stream, bay, or ocean) and enter the name(s) of the water body(s).

B. List all Regional Water Board numbers where algaecide and aquatic herbicide application is proposed. Regional Water Board boundaries are defined in section 13200 of the California Water Code. The boundaries can also be found on our website at http://www.waterboards.ca.gov/waterboards_map.shtml

Regional Water Board Numbers	Regional Water Board Names
1	North Coast
2	San Francisco Bay
3	Central Coast

Regional Water Board Numbers	Regional Water Board Names
4	Los Angeles
5	Central Valley (Includes Sacramento, Fresno, Redding Offices)
6	Lahontan (South Lake Tahoe, Victorville offices)
7	Colorado River Basin
8	Santa Ana
9	San Diego

Section V – Algaecide and Aquatic Herbicide Application Information

- **A.** List the appropriate target organism(s).
- **B.** List the name and active ingredients of each algaecide and aquatic herbicide to be used.
- **C.** List the start and end date of proposed aquatic algaecide and aquatic herbicide application event.
- **D.** List the name(s) and type(s) of adjuvants that will be used.

The Discharger must submit a new NOI if any information stated in this section will be changed. If the Discharger plans to use an algaecide and aquatic herbicide product not currently covered under its Notice of Applicability (NOA), and the algaecide and aquatic herbicide product may be discharged to a water of the United States as a result of algaecide and aquatic herbicide application, the Discharger must receive a revised NOA from the State Water Board's Deputy Director of the Division of Water Quality before using that product.

Section VI – Aquatic Pesticide Application Plan

The Coalition or Discharger must prepare and complete an Aquatic Pesticide Application Plan (APAP). The minimum contents of APAP are specified in the permit under Section VIII.C, Limitations and Discharge Requirements, of the General Permit. The Discharger must ensure that its applicator is familiar with the APAP contents before algaecide and aquatic herbicide application.

If an APAP is not complete at the time of application, enter the date by which it will be completed.

Section VII – Notification

Indicate if you have notified potentially affected public and governmental agencies, as required under item VIII.B of the General Permit.

Section VIII – Fee

The amount of Annual fee shall be based on Category 3 discharge specified in section 2200(b)(9) of title 23, California Code of Regulations. Fee information can be found at http://www.waterboards.ca.gov/resources/fees/docs/fy1112fee_schdl_npdes_prmt.pdf.

Check the YES box if you have included payment of the annual fee. Check the NO box if you have not included this payment. **NOTE:** You will be billed annually and payment is required to continue coverage.

Section IX– Certification

- **A.** Print the name of the appropriate official. The person who signs the NOI must meet the signatory and certification requirements stated in Attachment B Standard Provisions item V.B.
- **B.** The person whose name is printed above must sign and date the NOI.
- **C.** Enter the title of the person signing the NOI.

Attachment F – Notice of Termination

WATER QUALITY ORDER NO. 2013-0002-DWQ
GENERAL PERMIT NO. CAG990005

STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR RESIDUAL AQUATIC PESTICIDE DISCHARGES TO WATERS OF THE UNITED STATES FROM ALGAE AND AQUATIC WEED CONTROL APPLICATIONS

I. WDID

WDID# _____

II. DISCHARGER INFORMATION

A. Name			
B. Mailing Address			
C. City	D. County	E. State	F. Zip
G. Contact Person	H. E-mail address	I. Title	J. Phone

III. BASIS FOR TERMINATION

IV. CERTIFICATION

"I certify under penalty of law that 1) I am not required to be permitted under this General Permit No.CAG990005, and 2) this document and all attachments were prepared under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. Additionally, I understand that the submittal of this Notice of Termination does not release an algaecide or aquatic herbicide applicator from liability for any violations of the Clean Water Act."

A. Printed Name: _____

B. Signature: _____ **Date:** _____

C. Title: _____

V. FOR STATE WATER BOARD USE ONLY

☐ **Approved for Termination** ☐ **Denied and Returned to the Discharger**

A. Printed Name: _____

B. Signature: _____

C. Date: _____

NOT Effective Date: / /

Attachment G – Exception List

LIST OF PUBLIC AGENCIES AND MUTAL WATER COMPANIES GRANTED AN EXCEPTION PURSUANT TO STATE WATER RESOURCES CONTROL BOARD POLICY FOR IMPLEMENTATION OF TOXICS STANDARDS FOR INLAND SURFACE WATERS, ENCLOSED BAYS, AND ESTUARIES OF CALIFORNIA

The public entities and mutual water companies listed herein have prepared Initial Studies, Negative Declarations (ND), Mitigated Negative Declarations (MND), and Notices of Determination for the discharge of algaecides and aquatic herbicides in accordance with the California Environmental Quality Act (CEQA (Public Resources Code § 21000 et seq.)) to comply with the exception requirements of section 5.3 of the Policy. The boards of each public entity, as the lead agencies under CEQA, approved the Final ND/MND and determined that the discharge of algaecides and aquatic herbicides in their respective projects would not have a significant effect on the environment. These public entities and mutual water companies have determined that the water quality or related water quality impacts identified in the environmental assessments of the ND/MND are less than significant.

In addition to submitting the CEQA documentation, these public entities and mutual water companies have also complied with the other exception requirements of section 5.3 of the Policy.

As required in section 15096 of the CEQA Guidelines, the State Water Resources Control Board (State Water Board), as a Responsible Agency under CEQA, considered the ND/MND approved by the board of each public entity and finds that the projects will have less than significant water quality impact if the waste discharge requirements in this General Permit are followed. Accordingly, the public entities and mutual water companies listed herein are hereby granted an exception pursuant to section 5.3 of the Policy.

1. Byron-Bethany Irrigation District
2. City of Antioch Department of Public Works
3. Contra Costa Water District
4. Contra Costa County Flood Control and Water Conservation District
5. Department of Food and Agriculture
6. Department of Water Resources
7. Friant Water Users Authority
8. Glenn-Colusa Irrigation District
9. Maine Prairie Water District
10. Marin Municipal Water District
11. Metropolitan Water District of Southern California
12. Modesto Irrigation District
13. Nevada Irrigation District

14. North Marin Water District
15. Oakdale Irrigation District
16. Placer County Water Agency
17. Potter Valley Irrigation District
18. Princeton-Cordora-Glenn Irrigation District
19. Provident Irrigation District
20. Reclamation District 1004
21. Santa Cruz Water Department
22. Solano Irrigation District
23. South Feather Water and Power Agency
24. South Sutter Water District
25. Tehama Colusa Canal Authority
26. Turlock Irrigation District
27. Woodbridge Irrigation District
28. Yolo County Flood Control and Water Conservation District