Appendix C

WHCP Operations Management Plan

CALIFORNIA DEPARTMENT OF BOATING AND WATERWAYS

WHCP Operations Management Plan

June 2009

2009 Updated Manual
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APPENDICES **32**

A. INTRODUCTION

Senate Bill 1344 [1982] amended the California Harbors and Navigation Code to designate the Department of Boating and Waterways (DBW) as the lead agency to control water hyacinth (*Eichhornia crassipes*) in the Sacramento-San Joaquin Delta (Delta), and its tributaries. The DBW subsequently initiated the Water Hyacinth Control Program (WHCP), a chemical herbicide treatment program, in 1983.

DBW's Aquatic Weed Unit manages the WHCP. DBW staff assigned to the WHCP include the:

Aquatic Weed Unit Manager and office support staff

Field Supervisor

Assistant Field Supervisor (designee)

Environmental Scientists (ES)

Monitoring Crew

Aquatic Pest Control Specialist (certified)

Aquatic Pest Control Technicians (do not have to be certified).

An application crew is usually made up of a minimum of one Aquatic Pest Control Specialist and one Aquatic Pest Control Technician.

The primary goal of the WHCP is to control the growth and spread of water hyacinth in the Delta while minimizing impacts to non-target species and preventing environmental degradation. For the WHCP, the DBW currently uses the following three herbicides to control water hyacinth:

Herbicides

- 2,4-D, or Weedar® 64 [2,4-Dichlorophenoxyacetic acid, dimethylamine salt], EPA Registration Number 71368-1
- Glyphosate Herbicide: AquaMaster ® [Glyphosate: N-(phosphonmethyl) glycine in the form of isopropylamine salt], EPA Registration Number 524-343

Adjuvants

- Agridex® [active ingredients: paraffin base petroleum oil, polyol fatty acid esters, and polyethoxylated polyol fatty acid ester emulsifier], California State Registration 5905-50094-AA.

This WHCP Protocol and Procedures Manual is generally written for new WHCP staff, but also should be used as a reference for more experienced WHCP staff. The manual explains general program requirements, application protocols, and best management practices. As part of its adaptive management

approach[1], the DBW will revise this manual over time to reflect improvements in WHCP management approach and new permit requirements.

Best management practices (BMPs) are referenced throughout this manual and are included within the body of the text (shown italicized) as well as in appendices. A total of three (3) BMPs are included, numbered sequentially beginning with BMP # WH1. BMPs are separate modules intended to provide the reader with standard, effective, practices related to a particular WHCP operations topic.

Additionally there are a total of 16 appendices to this manual.

B. GENERAL REQUIREMENTS

1. Herbicide Applicator Responsibilities

a. Certification

All DBW application and contracted crews, who apply aquatic herbicides for the WHCP and EDCP, must have at least one person who has obtained a Qualified Applicators Certificate (QAC). The California Department of Pesticide Regulation (DPR) is responsible for examining and licensing QACs. All Aquatic Pest Control specialists must have a QAC. Aquatic Pest Control technicians also are encouraged to work toward obtaining a QAC.

The QAC signifies proficiency in:

- ❑ Reading and understanding pesticide labels
- ❑ Proper methods of mixing and applying pesticides
- ❑ Handling and disposing of pesticides and pesticide containers
- ❑ Recognizing pesticide poisoning symptoms
- ❑ Proper use of protective equipment

To obtain a QAC, an individual must pass the Qualified Applicator Certificate examination, category “F” (Aquatic), administered by the DPR. To assist an applicant with the examination, the DPR website provides suggested study materials and applicable laws and regulations. Information on QAC testing and requirements, see the DPR website at www.cdpr.ca.gov/docs/license/qacinfo.htm.

[1] Adaptive management refers to improving the program over time as new and better information is available about the program.

To pass the Qualified Applicator Certificate examination, category "F" (Aquatic), applicators must demonstrate proficiency in:

Principals of limited area application

Water use situations and potential for downstream effects

Secondary effects caused by incorrect formulations and faulty applications

Competency, practical knowledge, and understanding of pesticide impacts to:

- Plants
- Fish
- Birds
- Beneficial insects
- Other organisms present in aquatic environments.

To retain possession of a QAC, the certificate holder must complete at least 20 hours of continuing education every two years (four hours covering the topic of pesticide laws and regulations). Information on continuing education is provided on the web at http://www.cdpr.ca.gov/docs/license/conted.htm. The DPR accredits, and posts the schedule for, continuing education classes.

The DBW will retain copies of each QAC's card, and continuing education records, on file at the DBW Headquarters' office in Sacramento. These records will be updated yearly prior to the beginning of each spray season.

b. Understanding Herbicide Labels

Application crews are responsible for reading, understanding, and following herbicide label requirements. Management is responsible for providing the training to ensure employees have the tools necessary to achieve these goals. Current copies of herbicide labels and Material Safety Data Sheets (MSDS) are included for the two herbicides and adjuvant currently used: 2,4-D (**Appendix A**), Glyphosate (**Appendix B**), and Agridex (**Appendix C**).

Application crews should use the following guidelines related to understanding herbicide labels:

- ❑ **Consult the Field Supervisor, or Assistant Field Supervisor (designee),** for clarification on herbicide label requirements, use and storage, and safety procedures. Please also feel free to call Department of Pesticide Regulation (DPR) or the local Agricultural Commissioner if further clarification is needed.
- ❑ **Ask questions and obtain clarification on application protocols well before a planned application.**
- ❑ **Ask questions before an application starts** if any part of the application protocol or the Pest Control Recommendation is not completely understood.

- Do not use herbicides of any kind other than those currently authorized for the WHCP by DBW (i.e., 2,4-D, Glyphosate, and Agridex). Especially in situations where use is deemed impractical. i.e. where certain crops occur.

Labels and MSDSs may be revised over time. The DBW Aquatic Weed Unit Manager and Field supervisor shall ensure that this manual is updated to reflect the most current labels and MSDS prior to use by DBW application crews.

c. Proper Herbicide Application Methods

Applications shall be made according to registered herbicide label specifications and California Code of Regulations requirements. Together, these requirements are detailed in the following documents:

- 2,4-D label and MSDS (Appendix A)
- Glyphosate label and MSDS (Appendix B)
- Agridex label and MSDS (Appendix C)
- Pest Control Recommendations (see sample in **Appendix D**).

d. Contracted Applicators

If the DBW uses other agencies or private companies to perform herbicide applications for the WHCP, explicit and formal agreements (i.e., contracts) outlining roles and responsibilities will be made between DBW and the other agency or private company. These agreements will specify, for example, that personnel from contracted agencies or private companies must be QACs or have an advisor's license for recommendations.

e. Environmental Mitigation

Each application crew will be responsible for following environmental protocols required by applicable permits from the following agencies:

- U.S. Fish and Wildlife Service (USFWS), Biological Opinion, including Incidental Fish Take Provision **(Appendix E)**
- National Marine Fisheries Service (NOAA Fisheries), Biological Opinion, including Incidental Fish Take Provision **(Appendix F)**
- Central Valley Regional Water Quality Control Board (CVRWQCB), National Pollutant Discharge Elimination System (NPDES) Permit **(Appendix G)**.

All personnel involved in the WHCP will receive required annual worker environmental awareness training provided by an ES. This training will be provided prior to the start of the treatment season. This training is designed to identify special status species. Each trainee will receive *Species of Concern* identification pages in the OMP. The *Species of Concern* manual includes:

- Detailed color photographs of special status species (**see Appendix R**)

The training also will include a review of avoidance, minimization, and mitigation measures for Federal and State listed threatened and endangered species and the procedures for handling "take" (i.e., a species killed during an application). Trainees also will be provided a "take" kit which includes a:

Whirlpac (to hold species taken)

Blank chain-of-custody form (to record possession of take)

Protocol for collection and notification of take

Telephone list for whom to contact following a take.

Field crew members (i.e., Field Supervisor, Assistant Field Supervisor, ES, Aquatic Pest Control Specialists, and Aquatic Pest Control Technicians) also will receive maps of giant garter snake habitat within the WHCP treatment area.

2. Herbicide Handling Requirements

All field staff (including Field Supervisors, Assistant Field Supervisor, Aquatic Pest Control Specialists, and Aquatic Pest Control Technicians) shall follow requirements for storage, transport, mixing, loading applications, and container disposal. These requirements are described below in **BMP # WH1**.

BMP# WH1 – Herbicide Handling Requirements

All personnel involved with the application of WHCP herbicides will be trained in herbicide handling in accordance with Food and Agriculture Code and Title 3 Code of Regulations pertaining to Pesticides and Pest Control Operations.

Storage

All WHCP herbicides will be stored in a secured warehouse in accordance with the California Food and Agriculture Code and Title 3 Code of Regulations. All herbicides obtained from the storage area will be recorded in the storage area logbook as well as in the individual treatment crew's daily log.

Transport

Herbicides will be delivered by truck or boat to specific treatment sites on the day of treatment. They will be transported in their original containers, securely fastened to the truck or boat, in a manner that will prevent spillage onto or off of the vehicle or vessel.

Mixing, Loading and Applications

DBW staff shall use undiluted herbicides from containers of 5 gallons or less; only the herbicide containers being used will be opened at the application site. All mixing, loading, and application operations will be conducted in

accordance with all label requirements and will be performed by licensed pesticide applicators.

Disposal of Herbicide Containers

Herbicide containers will be triple rinsed and disposed of according to the Food and Agriculture Code.

The Field Supervisor, or an entity designated by the Field Supervisor as qualified will provide herbicide handling training to all field staff in accordance with Title 3, Food and Agriculture, Division 6, of the California Code of Regulations, titled, "Pesticides and Pest Control Operations." Copies of these regulations are included in **Appendix H**. Specifically, the following regulations should be understood and followed by the field staff:

- ❑ Storage, Transportation and Disposal (Chapter 3, Subchapter 2, Article 4)
  - Container control
  - Delivery of pesticide containers
  - Container requirements
  - Transportation
  - Rinse and drain procedures.
- ❑ General Safety Requirements (Chapter 3, Subchapter 3, Article 2)
  - Handler training
  - Emergency medical care
  - Medical supervision (not applicable at this time)
  - Working alone
  - Change area
  - Handler decontamination facilities
  - Coveralls
  - Personal protective equipment
  - Adequate light
  - Safe equipment
  - Equipment maintenance
  - Closed systems.

Each application crew will have a two-way radio and / or a cellular telephone to use to communicate with the Aquatic Weed Unit Manager, Field Supervisors, ES, and to use in case of emergencies. A list of medical emergency telephone numbers, including local hospital contacts, is provided in **Appendix I**. In case of injury, the field crew should immediately contact the hospital within the County that the injury

occurred. Field crew members should assure that these contact telephone numbers are on their possession.

3. Herbicide Application Equipment Calibration Requirements

All field staff shall follow equipment calibration procedures for each type of herbicide. These procedures are provided in **BMP # WH2** below. Calibration will occur at a minimum of once per week, when a pump is changed, or each time a different herbicide is used.

BMP #WH2 – Spray Equipment Maintenance and Calibration

Spray equipment used for the WHCP shall be calibrated on a weekly basis. The date of the last spray equipment calibration is recorded on the Daily Log under "Last Calibration."

The boats used by the DBW have a 30-gallon holding tank on the boat that is used to store Delta water. The boats use a two-pump system. One pump draws water from the Delta into the 30-gallon holding tank. Another pump draws the aqueous chemical from the herbicide container.

A tube from each pump meets at the sprayer where the Delta water and the herbicide are mixed. An orifice on the Walbro or Shureflow pump can be adjusted to vary the application rate.

Operators should calibrate the spray equipment so that it mixes the water from the Delta with the herbicide at the required concentrations. Based on the Pest Control Recommendations, these concentrations are as follows:

2,4-D: 2 to 4 quarts (64 oz. to 128 oz.) Weedar 64 per 200 gallons of water

AquaMaster: 2 ½ to 3 quarts (80 oz. to 96 oz.) AquaMaster per 100 gallons of water.

The spray equipment is calibrated as follows:

1. *Make sure that each of the pumps is primed. To do this the operator should run water through them for approximately two (2) minutes*
2. *The 30-gallon holding tank should be marked at the 25-gallon level (for ease of conversion)*
3. *Fill the 30-gallon holding tank with 25-gallons of water*
4. *Pour the water into a 32-oz. cup. The amount to pour into the 32-oz. cup will vary depending on the herbicide as follows:*
    a. *For 2,4-D, the operator should pour 8 oz. to 16 oz. of water into the 32-oz. cup. The 8 oz. to 16 oz. range per 25 gallons of water is exactly 1/8th of the 64 oz. to 128 oz. per 200 gallons of water requirement noted above.*

b. *For AquaMaster, the operator should pour 20 oz. to 24 oz of water into the 32-oz. cup. The 20 oz. to 24 oz. per 25 gallons of water is exactly 1/4th of the 80 oz. to 96 oz. per 100 gallons of water requirement noted above.*

5. *The operator should turn both pumps on and begin the spray process*
6. *If the spray equipment is properly calibrated the 25-gallons of water in the holding tank and the herbicide in the 32-oz. cup should be completely gone at the same time. If the spray equipment is not properly calibrated either the 25-gallons of water, or the water in the 32-oz. cup, will be gone before the other is*
7. *The operator may need to adjust the orifice size on the pumps to allow the pumps to draw chemical at a slower or faster rate.*
8. *For the adjuvant Agridex, the operator should make sure that the appropriate amount is added per the Pest Control Recommendation. For Agridex, the amount is 1 quart per 100 gallons. The result is that the 2,4-D or AquaMaster is applied using a smooth coating (not droplets or beading). If the application results in beading the operator should add more adjuvant to the mix*.

4. Hazmat and Spill Contingency Requirements

In the event of an aquatic or terrestrial spill, all application crew members shall follow the Spill Contingency Plan outlined in **BMP # WH3** below. This BMP includes procedures for spill prevention, cleanup, and notification.

BMP# WH3 – Spill Contingency Plan

All herbicide spills will be treated as emergencies. Concentrated herbicide spills are more dangerous than herbicides diluted with water, and will be treated seriously and immediately. While spills can occur during transporting, storing, or while using herbicides, the DBW will apply the following preventive measures to reduce the potential for a serious spill:

- *For boats – herbicides will be securely fastened to floats in their original, watertight containers. Each boat shall carry a marker buoy with an attached anchor line with which to mark any herbicide, and water movement from the spill site, in the event of a spill. In case of a spill, materials and tools used for spill cleanup should be transported with the chemical.*

- *For vehicles – herbicides will be transported in their original, watertight containers, in a manner that will prevent spillage onto the vehicles or off the vehicle. In case of a spill, materials and tools used for spill cleanup should be transported with the chemical.*

Only herbicide containers being used at the time of application will be open.

Reporting Spills

The Aquatic Pest Control Specialist will have a cellular phone in his/her possession and the telephone numbers of the California Department of Fish and Game (Office of Spill Prevention and Response), California Regional Water Quality Control Board, State Office of Emergency Services, County Agricultural Commissioners, County Sheriff's Office, the California Highway Patrol, County Health Departments, and DBW management and staff. **Appendix J**, the *Spill Emergency Contact Telephone Numbers, provides a list of emergency telephone numbers to use in case of a spill.*

Large herbicide spills will immediately be reported to the Office of Emergency Services.

Smaller spills not on public roadways, that do not pose a serious threat to the public or the environment, will be reported by the person in charge, at the earliest convenience, to the appropriate agencies on the "Spill Emergency Contact Telephone Number" list. Reporting for these smaller spills may be limited to the County Agricultural Commissioners of the appropriate County. ***The Aquatic Weed Unit manager and Field Supervisor will make the determination as to whether the spill meets this "smaller" criterion.***

Spills on Land

If a spill occurs on a public roadway, the California Highway Patrol, the California Office of Emergency Services and the County Agricultural Commissioner will immediately be notified.

In the event a spill occurs, it is of paramount importance that the discharge is stopped at its source and that the spilled material be contained. DBW and contracted personnel will have access to supersorb or common cat litter that will be used for immediate containment of the spilled material. The following actions will be taken as necessary to contain a spill on ground:

- *Stopping the spill at its source.*
- *Diking in pools as appropriate.*
- *Using materials such as soil, supersorb, or cat litter to absorb pooled material.*

Contaminated soil or absorbent material will be placed in a sealable disposable container suitable for transporting. The container will be labeled with its contents, including herbicide name and signal word. It will then be disposed of in accordance with the label and all applicable laws and regulations.

When possible the spill and its clean up will be documented with photos and the date/time registered. Copies of these photos will be attached to any spill reports filed.

Spills in Water

In the event of a spill in water the following procedures will be employed:

- *The location of the spill will be marked*
- *The Aquatic Weed Unit Manager will be immediately notified*
- *The amount of herbicide spilled will be assessed*
- *The Office of Emergency Services will be immediately notified. The Office of Emergency Services will take charge of coordinating the cleanup and protecting the public.*
- *The County Agricultural Commissioners Office will be notified*
- *All other appropriate agencies on the "Spill Emergency Contact List" will be notified.*

The spill location will be marked with a marker buoy and an approximate bearing with any permanent land markers. A GPS reading will be taken. Photographs of the spill will be taken. DBW personnel, the Office of Emergency Services, and appropriate state and federal agencies will perform an inspection of the spill location to determine the amount of herbicide spilled and the potential environmental impacts. If deemed necessary the area will be monitored for herbicide residues and environmental impacts.

5. County Agricultural Commissioner Notification

Before an application can occur, the DBW Aquatic Weed Unit shall file Pesticide Use Recommendations (PUR) and a Notice of Intent (NOI) with the appropriate County Agricultural Commissioner (CAC) office. If necessary, the DBW Aquatic Weed Unit also shall obtain a Restricted Use Permit (RUP) from all appropriate CACs.

a. Pesticide Use Recommendations (PUR)

For each season, a licensed Pest Control Advisor (PCA) shall write the PURs for all application areas. DBW may have a pesticide manufacturer representative write a PUR as long as the representative is a PCA and the PUR is reviewed and approved by a licensed PCA DBW staff member.

DBW may write PURs for contract applicators that are hired to apply restricted pesticides. Contract applicators will operate under all WHCP permits and this WHCP Protocol and Procedures Manual. Contract applicators also will be responsible for using all equipment and aquatic herbicides legally, and for filing Daily Logs, weekly NOIs, and monthly Pesticide Use Reports with DBW.

Application crews shall:

- ❑ **Have a copy of the appropriate PUR with them at time of application.**
- ❑ **Understand the PUR before making an application**. If clarification is necessary, the Field Supervisor or Assistant Field Supervisor (designee) should be contacted.
- ❑ Follow PUR application rates, hazard and use restrictions, and application protocols.
- ❑ Record the PUR application rate on the Daily Log at the time of application.

Sample Pest Control Recommendations are provided in Appendix E.

b. Notice of Intent (NOI)

The NOI"s for each week will be done and submitted by the Aquatic Pest Control Field Supervisor. All sites will be submitted weekly in a manner designated by the Specialist who is assigned to his/her area. It is the Specialist's responsibility to notify the Field Supervisor if any changes are to be made for a designated week. The Specialists will also be responsible for communication with each other to plan for possible overlap in designated treatment zones .The following information will be submitted in a weekly N.O.I.

Application specialist name and program (i.e., WHCP or EDCP)

Site number

Spray dates

County/counties where spraying will occur

Herbicides and adjuvants used

Before NOI'ing application sites, the application crew should consult with the ES to determine if the presence of Endangered Species will prevent a scheduled application. See Section C.4 "Endangered Species Use Restriction Assessment" below to determine when it is necessary to contact the ES about upcoming applications.

Many factors influence whether a site can be treated. As a result, applications potentially can be cancelled up until, and including, the day of treatment. Where possible, alternative sites should be included on the list submitted to the DBW Central Office.

DBW Headquarters Office staff will prepare NOIs, submit them to the appropriate CACs, and send a copy to the field offices (i.e., Oakley and Stockton). A sample copy of a Notice of Intent to Operate Summary is provided in **Appendix K**.

c. Restricted Use Permit (RUP)

The CAC will review NOIs to determine whether the application is for a restricted use pesticide, and thus requires a restricted use permit (RUP). Currently there are no herbicides used for the WHCP that are restricted use pesticides that require a RUP to be carried on board with the applicator. The RUP is on file with the Sacramento office.

If the DBW begins to use a restricted use herbicide, the CAC may place conditions on a proposed application and notify DBW staff if additional provisions will apply to a particular treatment. In the event that a site borders two counties, and the two counties provide conflicting application requirements, the DBW shall use the more restrictive guideline(s).

Application crews shall be aware of, and implement, all RUP provisions. The Field Supervisor or Assistant Field Supervisor (designee) is responsible for communicating RUP provisions to application crews.

C. TREATMENT PLANNING PROTOCOL

Water hyacinth treatments will occur at up to 367 possible treatment sites throughout the Delta, based on where it is observed to be present. **To the best extent possible, water hyacinth treatments will be planned using a combination of current field observations, prior infestation history, and DBW staff knowledge.**

Aquatic Pest Control Specialists and Aquatic Pest Control Technicians will conduct field surveys or provide information on current field conditions prior and at the end of the current application season. These surveys may involve traveling to a site to visually assess the level of water hyacinth infestation and the locations of any drinking water intakes **(no treatment may occur within 1 mile of any drinking water intakes)(see Appendix Q for locations)**.

The DBW has divided the Delta into ten large zones (west, north, central, south). Annually, each application crew will be assigned one of these large areas. These large areas are further divided into “sites.” Sites vary in size, and may be between one and three miles in length.

The Field Supervisor and planning team (i.e., the Aquatic Weed Unit Manager and ES) will work together before each treatment season begins to identify which sites are heaviest in terms of water hyacinth infestation. A map showing the 367 possible treatment sites is provided in **Exhibit 1**.

The Field Supervisor may update, revise, or reprioritize the site list over the course of the treatment year based upon new information about the treatment sites. For example, the DBW receives telephone calls from the public regarding new water hyacinth infestations which may cause a reprioritization of the treatment sites. The

Field Supervisor also may reprioritize treatment sites to maximize efficacy based on new information on patterns of water hyacinth movement in the Delta. It is understood that the Field supervisor will communicate these changes to all parties involved.

Exhibit 1

Treatment date maps for Water hyacinth are located on the wall at HQ in Stockton.

To fulfill USFWS, NOAA Fisheries, and NPDES permit requirements, the DBW must conduct water quality following its WHCP treatments. Prior to conducting actual treatment, the Field Supervisor and ES will discuss which sites will be sampled for the upcoming year. Factors that will be considered when selecting sites for sampling include:

Sites in the top 25 percent of the use areas (as measured by the Pesticide Use Report)

Sites picked in prior years (to create time-series data)

Sites representative of the entire Delta

Sites representative of Delta water types (fast/slow moving, tidal, tidal/dead-end).

Water sampling is an integral part of the WHCP. The ES must plan to conduct its water sampling over the course of the year so that it samples for each of herbicide or herbicide combination in the three water types (fast/slow moving water, tidal, tidal/dead-end). Therefore, the ES must closely coordinate its sampling efforts with each application crew's treatment schedule. If the ES intends to collect water samples at a particular site, the ES will contact the application crew that treats that target site one week in advance of a planned treatment. The Aquatic Pest Control Specialist will make sure that target sites have been NOI'd. The ES also may request that several other sites are NOI'd in case conditions on the day of treatment (e.g., wind) restrict the DBW from treating the target site.

The ES will provide a calendar to the Aquatic Pest Control Specialist at the beginning of the year which shows the tentative schedule for water sampling. This schedule inevitably will be modified during the year to respond to any unforeseen changes in location of water hyacinth, weather conditions, and other factors.

While each application crew is responsible for treating sites in its area, based on permit conditions, some of these sites cannot be treated until a particular date. The ES will provide each application crew with a Delta map that specifies the date when treatment can begin at sites throughout the Delta. This map is provided in Exhibit 1.

The ES also will provide application crews with a map that identifies areas where the giant garter snake may be present. The application crew should use this map as a tool for performing pre-application visual inspections for the presence of giant garter snakes. Do we want to mention that this is available on their tablets too?

The ES and application crew have established a strategy of avoidance of elderberry bushes. To avoid elderberry bushes, the application crew will provide a 250-foot buffer between a treatment site and shoreline elderberry bushes.

The ES will survey a sample of elderberry shrubs, which can be potentially impacted by the WHCP herbicide application activities, at the beginning of the treatment season and at the end of the treatment season. The ES will compare the health of elderberry shrubs at control sites (i.e., with elderberry bushes not located

near sites treated during the year) with elderberry bushes located next to treatment sites treated during the year.

Prior to the treatment season, all application crews will be trained on the use of any new technology that has been integrated into the program for that year. These pieces of equipment may be used to take water quality and location measurements throughout the treatment season. Aquatic Weed Unit office staff is currently assigned the responsibility for this type of training. The application crews are responsible for understanding the technology and applications that are an accepted part of the program. If there are any concerns, field staff should contact office staff before the treatment season begins. Application crews should also contact office staff immediately if there are problems with the monitoring equipment. The problem will be noted on the daily for that day. The Field Supervisor will provide application crews with training on all other equipment.

To minimize potential impacts to sensitive species, the application crew should be familiar with the following:

Delta smelt avoidance (USFWS Biological Opinion, Appendix E)

Chinook salmon avoidance (NOAA Fisheries Biological Opinion, Appendix F)

Giant garter snake and valley elderberry avoidance measures. If the application crew launches a boat from an unimproved location on a levy, the application crew should use the Giant Garter Snake Habitat Evaluation Maps provided by the ES to identify whether the habitat is a giant garter snake habitat and then to visually check the site to identify whether snakes are present.

D. DAY OF TREATMENT BOAT AND HERBICIDE CHECKOUT AND RETURN

On the day of treatment, the application crew should back the truck down to the storage bay where the boat is stored on its trailer. The application crew should attach the boat and trailer to the truck's trailer hitch.

The application crew should review to make sure that the following equipment and gear is in the boat prior to leaving the dock or storage bay:

Personal protective gear

Lifejacket(s)

Coveralls (cotton and Tyvek)

Spray glasses (plus a back up pair)

Gloves (including disposables)

Nextel telephone

2-way radio

Water Resistant Footwear

First Aid Kit

Fire Extinguisher

Tools

Sunscreen

Mosquito Repellent

Waterproof gear bag which includes:

- Permits
- Written recommendations
- Maps

Take Kit

DO Meter and manual

Tablet

Camera

Wind Gauge

On the Daily Log, the application crew should complete the volume data information by first adding the amount of chemical, in gallons, checked out of the DBW warehouse to the amount of chemical, in gallons, remaining in the boat at the beginning of the day.

The application crew should travel to the launch site, launch the boat, and then boat to the site.

At the end of the day, the application crew should bilge the boat and check the bilge for contaminants, perform an overall visual inspection of the boat, check the boat for tightness (i.e., no leaks) and record boat hours for the day.

The application crew should load the boat onto the trailer and return the boat/trailer to the locked storage unit and record truck mileage on the truck log which is located in the glove compartment.

Trucks are left outside the storage unit. At night a “club” should be placed on the steering wheel of the truck to protect the vehicle.

The application crew should perform regular maintenance on the equipment as follows:

Boats

Every 50 hours, change pump oil on the lower unit of the outboard motor including grease in Zurk fittings (i.e. steering, trim plate)

Every 100 hours, replace the motor sparkplugs

Boat trailer

Check “buddy” bearing to make sure that it is grease-filled

Trucks

Every 4,000 miles have engine oil and filter replaced (e.g., at Jiffey Lube or Lube & Tune)

Every 24,000 miles have vehicle tune-up performed.

E. TREATMENT PROTOCOL

1. Pre-Treatment

The application crew will record the following information on the Daily Log:

- ❑ Date
- ❑ Crew (names)
- ❑ Boat number
- ❑ Hour meter (start)
- ❑ Date regular maintenance performed on boat (and answer associated questions in maintenance box)
- ❑ Site number
- ❑ County
- ❑ Hours (beginning time).

The application crew should perform a visual survey for the species of concern and complete the Environmental Observations Checklist. All boxes must be completed on the Environmental Observations Checklist. If no species is observed, the application crew should check "no" in the appropriate box on the form. Application crews will survey and document the applicable species of concern using the provided Species Identification pictures provided This is a brief survey that should normally take about 15 to 20 minutes in a known site. A sample of the Environmental Observations Checklist is provided in **Appendix L**. **If any sensitive species are present at the site, the application crew should not perform the treatment.**

The application crew should utilize the "Hach HQ10" dissolved oxygen monitor/meter to take dissolved oxygen and temperature readings and record the following information on the Daily Log:

Water temperature using the Hach (beginning of treatment)

Dissolved oxygen (DO) level using the Hach (beginning of treatment)

Beginning UTM using the explore iX ® GPS device

Date of last spray equipment calibration (box on bottom left of form).

The application crew should use the wind meter available on each boat to measure the wind speed and record this information in the Daily Log. **If the wind speed is greater than 10 mph or 7 mph in Contra Costa County, the application crew should not perform the treatment at point of application. On days where wind and weather could be a factor in worker safety, and compromises the effectiveness of an application, the Specialist will call the Field supervisor who will call off the application.**

Concurrent with completing the hard copy of the Daily Log, the application crew should also complete electronic data collection using the VESTRA electronic program. This program runs using a handheld computer which is connected to the various electronic equipment devices in the field. The program is based on "pull down" menus, and is used by application crews to record the following information:

Quantity of chemical – beginning of day

Quantity of chemical – end of day

Quantity of chemical used during the day

Date

Site number

Boat number

Personnel names

Herbicide used

Whether the herbicide is recorded in gallons

Herbicide rate and orifice size

UTM data

Coordinates of spray line

Dissolved oxygen

Temperature

Wind speed

Presence of elderberry shrubs

Presence of species of concern

Calibration information

Leak inspection notes,

Based on this pre-treatment data, the application crew should determine whether the application meets applicable NPDES permit conditions for a treatment. **No treatment can be performed when dissolved oxygen is between 3.0 mg/L and the basin plan limit (see D.O. maps).**

The application crew also should ensure that applications will meet applicable conditions specified in Memoranda of Understanding with other water agencies (copies of which are provided in **Appendix M**).

In cases where the treatment requires water sampling, the application crew should travel to the site with the Monitoring Crew. At the site, the Monitoring Crew and application crew should discuss how the site will be treated (based on tidal

factors). The application crew should flag both the start of the application area and the end of the application area. The Monitoring Crew will take a pre-treatment sample. For the WHCP, the application crew will spray the site for at least one hour. The Monitoring Crew will then take post-treatment samples at least one hour following the pre-treatment sample.

2. Treatment

The application crew will calibrate the spray equipment as needed and conduct the treatment. The treatment shall be conducted at labeled rates and consistent with the PUR. **No more than 2.75 acres may be treated at a given site in a given day.** If 3 acres are treated in a site, crews will skip adjacent sites. The application crew shall leave an adequate portion of a waterway open (i.e., without treatment) to allow for fish to pass the site.

3. Post-Treatment

The application crew will record the amount and type(s) of herbicides and adjuvants used during each application on the Daily Log. All application crews will complete a Daily Log at the end of the day that will include the following information:

- ❑ Hour meter (end)
- ❑ Water temperature using the Hach HQ10 LDO (end of treatment)
- ❑ Hours (ending time)
- ❑ Dissolved oxygen (DO) level using the Hach HQ10 LDO (end of treatment)
- ❑ Ending UTM using the Xplore x104C2 device (end of treatment)
- ❑ Total acres treated (each treatment)
- ❑ Amount of herbicide and adjuvant used and rate of application. 2,4-D is recorded in gallons. Glyphosate is recorded in gallons. Agridex is recorded in gallons. Consult each site PUR for rate information. An ounce to gallon conversion table to assist staff is provided in **Appendix N**.
- ❑ Orifice size.

A sample copy of a blank and completed Daily Log is provided in **Appendix O**.

Once the fieldwork is complete the application crews submit Daily Logs to Headquarters office. Headquarters office staff hand key enter the data into a Microsoft Excel file.

Headquarters will regularly (i.e., weekly) download field data collected using the Xplore devices. This data is currently compared with data from the Daily Logs for accuracy and integrity.

The Field Supervisor will assure the integrity and quality of the Daily Log information which is submitted to DBW Headquarters. The Field Supervisor, or the Assistant Field Supervisor, will review Daily Logs to assure all information is included

and the information is accurate and correct. They will sign off verifying that all information is accurate.

DBW Headquarters staff will prepare a Pesticide Use Report to the CAC that includes the amount of herbicide used, acreage, and number of applications. This report is submitted on a monthly basis. A copy of a Pesticide Use Report is provided in **Appendix P.**

Best Management Practices

BMP# WH1 – Herbicide Handling Requirements

All personnel involved with the application of WHCP herbicides will be trained in herbicide handling in accordance with Food and Agriculture Code and Title 3 Code of Regulations pertaining to Pesticides and Pest Control Operations.

Storage

All WHCP herbicides will be stored in a secured warehouse in accordance with the California Food and Agriculture Code and Title 3 Code of Regulations. All herbicides obtained from the storage area will be recorded in the storage area logbook as well as in the individual treatment crew's daily log.

Transport

Herbicides will be delivered by truck or boat to specific treatment sites on the day of treatment. They will be transported in their original containers, securely fastened to the truck or boat, in a manner that will prevent spillage onto or off of the vehicle or vessel. Spill kits and MSDS sheets will be on hand when traveling in **any** vehicle.

Mixing, Loading and Applications

DBW staff shall use undiluted herbicides from containers of 5 gallons or less; only the herbicide containers being used will be opened at the application site. All mixing, loading, and application operations will be conducted in accordance with all label requirements and will be performed by licensed pesticide applicators.

Disposal of Herbicide Containers

Herbicide containers will be triple rinsed and disposed of according to the Food and Agriculture Code.

BMP# WH2 – Spray Equipment Maintenance and Calibration

Spray equipment used for the WHCP shall be calibrated on a weekly basis. The date of the last spay equipment calibration is recorded on the Daily Log under "Last Calibration."

The boats used by the DBW have a 30-gallon holding tank on the boat that is used to store Delta water. The boats use a two-pump system. One pump draws water from the Delta into the 30-gallon holding tank. Another pump draws the aqueous chemical from the herbicide container.

A tube from each pump meets at the sprayer where the Delta water and the herbicide are mixed. An orifice on the sprayer can be adjusted to vary the application rate.

Operators should calibrate the spray equipment so that it mixes the water from the Delta with the herbicide at the required concentrations. Based on the Pest Control Recommendations, these concentrations are as follows:

2,4-D: 2 to 4 quarts (64 oz. to 128 oz.) Weedar 64 per 200 gallons of water

Agridex: 2 ½ to 3 quarts (80 oz. to 96 oz.) Agridex per 100 gallons of water.

The spray equipment is calibrated as follows:

1. Make sure that each of the pumps is primed. To do this the operator should run water through them for approximately two (2) minutes
2. The 30-gallon holding tank should be marked at the 25-gallon level (for ease of conversion)
3. Fill the 30-gallon holding tank with 25-gallons of water
4. Pour the water into a 32-oz. cup. The amount to pour into the 32-oz. cup will vary depending on the herbicide as follows:
   a. For 2,4-D, the operator should pour 8 oz. to 16 oz. of water into the 32-oz. cup. The 8 oz. to 16 oz. range per 25 gallons of water is exactly 1/8th of the 64 oz. to 128 oz. per 200 gallons of water requirement noted above.
   b. For Agridex, the operator should pour 20 oz. to 24 oz of Agridex into the 32-oz. cup. The 20 oz. to 24 oz. per 25 gallons of water is exactly 1/4th of the 80 oz. to 96 oz. per 100 gallons of water requirement noted above.
5. The operator should turn both pumps on and begin the spray process
6. If the spray equipment is properly calibrated the 25-gallons of water in the holding tank and the water in the 32-oz. cup should be completely gone at the same time. If the spray equipment is not properly calibrated either the 25-gallons of water, or the herbicide in the 32-oz. cup, will be gone before the other is

7. The operator may need to adjust the orifice size on the sprayer to allow the sprayer to draw chemical at a slower or faster rate.
8. For the adjuvant Agridex, the operator should make sure that the appropriate amount is added per the Pest Control Recommendation. For Agridex, the amount is 2 quarts per 100 gallons. The result is that the 2,4-D is applied using a smooth coating (not droplets or beading). If the application results in beading, the operator should add more adjuvant.

BMP# WH3 – Spill Contingency Plan

All herbicide spills will be treated as emergencies. Concentrated herbicide spills are more dangerous than herbicides diluted with water, and will be treated seriously and immediately. While spills can occur during transporting, storing, or while using herbicides, the DBW will apply the following preventive measures to reduce the potential for a serious spill:

For boats – herbicides will be securely fastened to floats in their original, watertight containers. Each boat shall carry a marker buoy with an attached anchor line which to mark any herbicide in the event of a spill.

For vehicles – herbicides will be transported in their original, watertight containers, in a manner that will prevent spillage onto the vehicles or off the vehicle. **MSDS labels and spill kits will be carried during transportation.**

Only herbicide containers being used at the time of application will be open.

Reporting Spills

The Aquatic Pest Control Specialist will have a cellular phone in his/her possession and the telephone numbers of the California Department of Fish and Game (Office of Spill Prevention and Response), California Regional Water Quality Control Board, State Office of Emergency Services, County Agricultural Commissioners, County Sheriff's Office, the California Highway Patrol, County Health Departments, and DBW management and staff. **Appendix J**, the Spill Emergency Contact Telephone Numbers, provides a list of emergency telephone numbers to use in case of a spill.

Large herbicide spills will immediately be reported to the Office of Emergency Services.

Smaller spills not occurring on public roadways, that do not pose a serious threat to the public or the environment; will be reported by the person in charge, at the earliest convenience, to the appropriate agencies on the "Spill Emergency Contact Telephone Number" list. Reporting for these smaller spills may be limited to the County Agricultural Commissioners of the appropriate County. The Aquatic Weed Unit Manager and Field Supervisor will make the determination as to whether the spill meets this "smaller" criterion.

Spills on Land

If a spill occurs on a public roadway, the California Highway Patrol, the California Office of Emergency Services and the County Agricultural Commissioner will immediately be notified.

In the event a spill occurs, it is of paramount importance that the discharge is stopped at its source and that the spilled material be contained. DBW and contracted personnel will have access to supersorb or common cat litter that will

be used for immediate containment of the spilled material. The following actions will be taken as necessary to contain a spill on ground:

Stopping the spill at its source.

Diking in pools as appropriate.

Using materials such as soil, supersorb, or cat litter to absorb pooled material.

Contaminated soil or absorbent material will be placed in a sealable disposable container suitable for transporting. The container will be labeled with its contents, including herbicide name and signal word. It will then be disposed of in accordance with the label and all applicable laws and regulations.

When possible the spill and its clean up will be documented with photos and the date/time registered. Copies of these photos will be attached to any spill reports filed.

Spills in Water

In the event of a spill in water the following procedures will be employed:

The location of the spill will be marked

The Aquatic Weed Unit Manager will be immediately notified

The amount of herbicide spilled will be assessed

The Office of Emergency Services will be immediately notified. The Office of Emergency Services will take charge of coordinating the cleanup and protecting the public.

The County Agricultural Commissioners Office will be notified

All other appropriate agencies on the “Spill Emergency Contact List” will be notified.

The spill location will be marked with a marker buoy and an approximate bearing with any permanent land markers. A GPS reading will be taken. Photographs of the spill will be taken. DBW personnel, the Office of Emergency Services, and appropriate state and federal agencies will perform an inspection of the spill location to determine the amount of herbicide spilled and the potential environmental impacts. If deemed necessary, the area will be monitored for herbicide residues and environmental impacts.

Appendices

Appendix A – Weedar 64 (2, 4-D) Label and MSDS

This appendix includes the label and Material Safety Data Sheet (MSDS) for Weedar 64 (2,4-D). This herbicide is manufactured by Nufarm. The EPA registration number is 71368-1. The applicator should read and become familiar with the entire contents of the label and MSDS. The applicator should pay particular attention to the following sections:

Label

User Safety Recommendations
Environmental Hazards
Storage and Disposal
Aquatic Weed Control (Water Hyacinth)

MSDS

Hazards Identification
First Aid Measures
Exposure Controls/Personal Protection.

APPENDIX B – AquaMaster (Glyphosate) Label and MSDS

This appendix includes the label and Material Safety Data Sheet (MSDS) for AquaMaster (Glyphosate). This herbicide is manufactured by Monsanto Company. The EPA registration number is 524-343. The applicator should read and become familiar with the entire contents of the label and MSDS. The applicator should pay particular attention to the following sections:

Label

Storage and Disposal
General Information
Weeds Controlled (Water Hyacinth)

MSDS

Hazards Identification
First Aid Measures
Handling and Storage
Exposure Controls/Personal Protection.

APPENDIX C – Agridex Label and MSDS

This appendix includes the label and Material Safety Data Sheet (MSDS) for Agridex. This adjuvant is manufactured by Helena Chemical Company. This adjuvant is not registered by the EPA. The applicator should read and become familiar with the entire contents of the label and MSDS.

APPENDIX D – Pest Control Recommendations

Pest Control Recommendations are written by a licensed Pest Control Applicator (PCA). Among other factors, Pest Control Recommendations specify:

Sites to be treated

Treatment acreage

Treatment conditions

Surrounding crop hazards

Hazards and restrictions.

Pest Control Recommendations are valid from the signature date until the “Good Until” date identified.

APPENDIX E – U.S. Fish and Wildlife Biological Opinion

This appendix includes relevant portions of the Biological Opinion prepared by the United States Fish and Wildlife Service (USFWS), and subsequent transmittals related to reinitiation of formal consultation with USFWS. The biological opinion is addressed to Dr. Lars Anderson with the United States Department of Agriculture, the DBW's federal nexus to USFWS.

The USFWS biological opinion addresses effects of the WHCP on federally threatened Sacramento splittail, giant garter snake, valley elderberry longhorn beetle, and delta smelt and its designated critical habitat. This appendix includes three letters:

APPENDIX F – National Marine Fisheries Service (NOAA Fisheries) Biological Opinion

The Biological Opinion provides a description of the WHCP, the WHCP monitoring program, the status of the endangered and threatened species, the environmental baseline, the effects of the WHCP on the species, and the incidental take statement, effect of take, reasonable and prudent measures, terms and conditions placed on the WHCP.

The April 4, 2006 NOAA Fisheries Biological Opinion specifies a number of conditions on the WHCP for Chinook salmon and Steelhead avoidance. Key aspects of this permit that field staff needs to be aware of that are not covered elsewhere in this manual are as follows:

1. Measures shall be taken to reduce impacts to juvenile Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, and North American green sturgeon from chemical control treatment and/or monitoring activities.

a. Restrictions to the timing and places of herbicide applications shall comply with the guidelines indicated in the project description for the WHCP as presented in section II (C)(5) of this biological opinion.

b. Any winter-run Chinook salmon, spring-run Chinook salmon, and steelhead trout mortalities found at or in the vicinity of a treatment site (i.e., within 400 meters) shall be collected, fork length measured and the body placed in a whirl-pak bag. The bag will be labeled with the time, date, location of capture, and a description of the near-shore habitat type and water conditions and frozen. NMFS, Sacramento office shall be notified as soon as possible of any mortalities at (916) 930-3600 and a representative of NMFS will collect the frozen specimen.

c. DBW staff and their assigned agents must follow all Federal and State laws applicable to the use of the herbicides and any adjuvants and apply them in a manner consistent with the product labeling, the current NPDES General Permit if granted, the Description of the Proposed Action, and determinations from the California Department of Pesticide Regulation.

d. The use of the adjuvant R-11 shall be reduced to minimize its toxic effects on aquatic organisms where practicable. The less toxic adjuvant, Agri-Dex, shall be used in its place. R-11 may be used in the following defined areas during the appropriate application windows. Within the sites on the San Joaquin River south of the intersection of Merced, Madera, and Fresno Counties (sites 900 to 929), R11 may be used as an adjuvant between June 1 and October 15. Within the Stone Lakes/Beach Lakes area (sites

221-239), R-11 may be used as an adjuvant between June 1 and October 15. R-11 may not be used as an adjuvant elsewhere in the WHCP application areas.

e. Fish passage shall not be blocked within treatment areas. Protocols shall be followed to ensure that WHCP operations do not inhibit passage of fish in each area scheduled for treatment or exceed limitations on contiguous treated acreage.

f. The DBW will provide a copy of each week's Notice of Intent to Jeffrey Stuart, Fishery Biologist, Protected Resources Division, 650 Capitol Mall, Suite 8-300, Sacramento, CA 95814, by the Friday prior to the treatment week. This notification will include the sites scheduled for treatment and a contact person for those sites.

g. Jeffrey Stuart will be the appointed NMFS representative on the Water Hyacinth Task Force (Task Force), and provide technical assistance to the Task Force along with carrying out the duties of a Task Force member. As part of the WHCP Task Force, the NMFS representative will be active in guiding decisions on prioritizing treatment sites in regards to the presence of salmonids.

2. Measures shall be taken to reduce the impact of DBW's WHCP boating operations on the designated critical habitat of Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and Central Valley steelhead.

a. USDA-ARS and DBW shall comply with the receiving water limitations of the General Permit issued for the WHCP in regards to oils, greases, waxes, floating material, or suspended material derived from the operation of program vessels or application activities.

b. The USDA-ARS and DBW shall ensure that any mixing of chemicals, or disinfecting and cleaning of any equipment shall be done in strict accordance with the operational protocols of the WHCP and that all equipment is in working order prior to engaging in application activities, including the operation of the program's vessels.

c. Operation of program vessels in shallow water habitats shall be done in a manner that causes the least amount of disturbance to the habitat. Operational procedures for vessels in these habitats should minimize boat wakes and propeller wash.

d. Operation of program vessels shall avoid or minimize to the greatest practicable extent dislodging portions of existing water hyacinth mats that

can drift into other areas. This will avoid or minimize new infestations of the weed due to drifting fragments.

3. Measures shall be taken by DBW to monitor the operations of the WHCP and the ambient Delta hydrologic conditions.

a. The USDA-ARS shall ensure that the DBW follows a comprehensive monitoring plan designed to collect project operational information. The monitoring plan shall adhere to the requirements of the General Permit and have at a minimum those water quality criteria stated in Attachment B of the permit, i.e. data on water temperatures, DO, pH, turbidity, water hardness, electrical conductivity, and chemical concentrations in the application areas as well as other criteria stated in the attachment. Chemical concentrations (including both herbicides and adjuvants) shall have at a minimum, a pre- and post-application water sample taken at the furthest down current site of the application zone. Additional tests, if required by other Federal and State agencies, shall be conducted and the information made available to NMFS. The results of this monitoring program will be used to determine if the DBW is affecting Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, or Central Valley steelhead to an extent not previously considered.

b. The USDA-ARS, in coordination with the DBW, shall provide bimonthly (i.e., every other month) monitoring reports of the hydrologic conditions and the amounts of chemical discharges to Jeffrey Stuart, NMFS, Sacramento Field Office. These reports shall also include information on the following parameters:

    i. Pre-treatment and post-treatment measurements on chemical residues, pH and turbidity levels as well as water temperatures and DO concentrations at selected sites in the Delta. These sites shall be reflective of the different water types found in the range of application sites and will be determined by DBW as part of their NPDES permit conditions.

    ii. Receiving water temperatures and DO levels and resultant changes in those conditions resulting from WHCP operations during each month.

    iii. Amounts, types, and dates of application of herbicides and adjuvants applied at each site.

    iv. Visual assessment of pre- and post-treatment conditions of treated sites to determine the efficacy of treatment and any effects of

chemical drift on downstream habitats immediately adjacent to the treated sites.

v. Operational status of equipment and vessels, including repairs and spraying equipment calibrations as needed.

c. The USDA-ARS, in coordination with the DBW, shall summarize the above bimonthly reports into an annual report of the DBW project operations, monitoring measurements and Delta hydrological conditions for the previous treatment year for submission to NMFS by January 31 of each year. The annual report of DBW operations shall also include:

i. A description of the total number of winter-run and spring-run chinook salmon or steelhead observed taken, the manner of take, and the dates and locations of take, the condition of the Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, or Central Valley steelhead taken, the disposition of fish taken in the event of mortality and a brief narrative of the circumstances surrounding the take of the fish. This report shall be sent to the address given below.

ii. Listed salmonids or other fish species that are observed to be behaving in an erratic manner shall be reported (see Appendix A).

d. All bimonthly reports and the annual report shall be submitted by mail or Fax to:
e. NMFS Sacramento Field Office Attn: Supervisor 650 Capitol Mall, Suite 8-300, Sacramento, California 95814Fax: (916) 930-3629

4. Pending the listing of the southern population of North American green sturgeon, the USDA-ARS and their agents will implement additional measures to avoid, minimize, and monitor incidental take of North American green sturgeon from the actions of the WHCP.

a. The USDA-ARS will monitor the take of green sturgeon, and record such information for their reports to NMFS required under term and condition 3(C), above.

b. If necessary, USDA-ARS and DBW will coordinate with NMFS to alter herbicide application plans to avoid or minimize take of green sturgeon if field observations indicate that take is occurring.

APPENDIX G – National Pollutant Discharge Elimination System (NPDES) Permit

This appendix includes a copy of the National Pollutant Discharge Elimination System (NPDES) permit approved by the State Water Resources Control Board dated March 20, 2006. The NPDES permit specifies.

Compliance with waste discharge requirements, including:

- Receiving water limitations (e.g., dissolved oxygen levels)
- Groundwater limitations
- Other provisions

Use of a monitoring and reporting program

Other information related to the waste discharge requirements.

APPENDIX H – Herbicide Handling Regulations

Division 6 Pesticides and Pest Control Operations
Chapter 3. Pest Control Operations
Subchapter 2. Work Requirements
Article 4. Storage, Transportation and Disposal

6670. Container Control.

Pesticides, emptied containers or parts thereof, or equipment that holds or has held a pesticide, shall not be stored, handled, emptied, disposed of, or left unattended in such a manner or at any place where they may present a hazard to persons, animals (including bees), food, feed, crops or property. The commissioner may take possession of such unattended pesticides or emptied containers to abate such hazard.

NOTE: Authority cited: Sections 11456, 12976 and 12981, Food and Agricultural Code.

Reference: Sections 11501, 12981 and 14102, Food and Agricultural Code.

6672. Delivery of Pesticide Containers.

(a) No person shall deliver a container that holds, or has held, a pesticide to a property unless he stores it in an enclosure or closure complying with the requirements of this Section or delivers it to a person in charge of the property or his agent, or a pest control operator or his employee. The person receiving the container shall control access to it in accordance with this Section.

(b) Each person who controls the use of any property or premises is responsible for all containers or equipment on the property that holds, or has held, a pesticide. Unless all such containers are under his personal control so as to avoid contact by unauthorized persons, he shall:

(1) Provide a person responsible to him to maintain such control over the containers at all times; or

(2) Store all such containers in a locked enclosure, or in the case of liquid pesticides in a container larger than 55 gallons in capacity, the container shall have a locked closure. Either shall be adequate to prevent unauthorized persons from gaining access to any of the material.

NOTE: Authority cited: Sections 11456, 12976 and 12981, Food and Agricultural Code.

Reference: Sections 11501, 12981 and 14102, Food and Agricultural Code.

6674. Posting of Pesticide Storage Areas.

Signs visible from any direction of probable approach shall be posted around all storage areas where containers that hold, or have held, pesticides required to be labeled with the signal words "warning" or "danger" is stored. Each sign shall be of such size that it is readable at a distance of 25 feet and be substantially as follows:

DANGER

POISON STORAGE AREA

ALL UNAUTHORIZED PERSONS KEEP OUT

KEEP DOOR LOCKED WHEN NOT IN USE

The notice shall be repeated in an appropriate language other than English when it may reasonably be anticipated that persons who do not understand the English language will come to the enclosure.

NOTE: Authority cited: Sections 11456, 12976 and 12981, Food and Agricultural Code.

Reference: Sections 11501, 12981 and 14102, Food and Agricultural Code.

6676. Container Requirements.

Except as provided in the Food and Agricultural Code pertaining to service containers, any container that holds, or has held, any pesticide, when stored or transported, shall carry the registrant's label. All lids or closures shall be securely tightened except when the procedure described in Section 6684 has been followed. This Section shall not apply to measuring devices that are not used to store or transport a pesticide.

NOTE: Authority cited: Sections 11456, 12976 and 12981, Food and Agricultural Code.

Reference: Sections 11501, 12981 and 14102, Food and Agricultural Code.

6678. Service Container Labeling.

Service containers, other than those used by a person engaged in the business of farming when the containers are used on the property the person is farming, shall be labeled with:

(a) The name and address of the person or firm responsible for the container;

(b) The identity of the economic poison in the container; and

(c) The word "Danger," "Warning," or "Caution," in accordance with the label on the original container.

NOTE: Authority cited: Sections 11456, 11502, 12781 and 12859, Food and Agricultural Code.

Reference: Sections 11501 and 12859, Food and Agricultural Code.

6680. Prohibited Containers for Pesticides.

In no case shall a pesticide be placed or kept in any container of a type commonly used for food, drink or household products.

NOTE: Authority cited: Sections 11456, 12976 and 12981, Food and Agricultural Code.

Reference: Sections 11501, 12981 and 14102, Food and Agricultural Code.

6682. Transportation.

(a) Pesticides shall not be transported in the same compartment with persons, food or feed.

(b) Pesticide containers shall be secured to vehicles during transportation in a manner that will prevent spillage onto the vehicle or off the vehicle. Paper, cardboard, and similar containers shall be covered when necessary to protect them from moisture.

NOTE: Authority cited: Sections 11456, 12976 and 12981, Food and Agricultural Code.

Reference: Sections 11501, 12981 and 14102, Food and Agricultural Code.

6684. Rinse and Drain Procedures.

(a) Except for containers to be returned to the registrant, each emptied container that has held less than 28 gallons of a liquid pesticide that is diluted for use shall be rinsed and drained by the user at time of use as follows:

(b)(1) Use the following amount of water or other designated spray carrier for each rinse.

Size of container	*Amount of rinse medium*
Less than 5 gallons	1/4 container volume
5 gallons or over	1/5 container volume

(2) Place required minimum amount of rinse medium in the container, replace closure securely, and agitate.

(3) Drain rinse solution from container into tank mix. Allow container to drain 30 seconds after normal emptying.

(4) Repeat (2) and (3) above a minimum of two times so as to provide a total of three rinses; or

(c)(1) Invert the emptied container over a nozzle located in the opening of the mix tank which is capable of rinsing all inner surfaces of the container.

(2) Activate the rinse nozzle allowing the rinse solution to drain into the tank. The rinse shall continue until the rinse solution appears clear and a minimum of one-half of the container volume of rinse medium has been used. A minimum of 15 pounds pressure per square inch shall be used for rinsing; or

(d) Other rinse methods, at least equal in effectiveness to the above, approved by the director.

NOTE: Authority cited: Sections 11456, 12976 and 12981, Food and Agricultural Code.

Reference: Sections 11501, 12981 and 14102, Food and Agricultural Code.

6686. Exemptions.

(a) Sections 6672, 6674, 6682, and 6684 shall not apply to containers that hold or have held pesticides packaged, labeled, and used for home use when in the possession of a householder on his property.

(b) Sections 6670 and 6672(b) shall not apply to exempt materials specified in Section 6402 except where the commissioner, or the director in any county where there is no commissioner, determines that a hazard to public health and safety exists requiring the control specified in sections 6670 and 6672(b).

(c) Section 6684 shall not apply to outer shipping containers that are not contaminated with a pesticide.

(d) This article shall not apply to sanitizers, disinfectants, or medical sterilants.

NOTE: Authority cited: Sections 12976 and 12981, Food and Agricultural Code.

Reference: Sections 11501, 12981 and 14102, Food and Agricultural Code.

APPENDIX I – Worker and Safety Training

Division 6. Pesticides and Pest Control Operations
Chapter 3. Pest Control Operations
Subchapter 3. Pesticide Worker Safety
Article 2. General Safety Requirements

6720. Safety of Employed Persons.

(a) The requirements of this article shall be complied with by the employer for the safety of employees handling pesticides.

(b) When only vertebrate pest control baits, solid fumigants (including aluminum phosphide, magnesium phosphide, and smoke cartridges), insect monitoring traps or non-insecticidal lures are handled, the employer is exempt from the requirements of Sections 6730 (Working Alone), 6732 (Change Area), and 6736 (Coveralls).

(c) When antimicrobial agents, used only as sanitizers, disinfectants, or medical sterilants or pool and spa chemicals are handled, the employer is exempt from complying with the provisions of this subchapter, provided the employer instead complies with any applicable requirements in the following corresponding provisions of Title 8, California Code of Regulations. Where the word "None" appears in the Title 8 column, the employer does not have to comply with the corresponding regulations specified in the Title 3 column.

Title 3, CCR	*Title 8, CCR*
6700	3200 and 3202
6702	3200 and 3203
6704	None
6706	None
6710	None
6720	As indicated in this Subsection
6723	3203, 3204, and 5194
6724	3203 and 5194
6726	3400
6728	None
6730	None

6732	3367
6734	3363 and 3366
6736	3383
6738	3380 through 3385, and 5144
6740	3317
6742	5141
6744	3203 and 5194
6746	None
Article 3	None
Article 4	None
Article 5	None
Article 6	None

(d) The provisions of Sections 6734 and 6768 (Decontamination), 6726 and 6766 (Emergency Medical Care), 6736 (Coveralls), 6738(b)-(i) (Personal Protective Equipment), and 6770 (Field Reentry) do not apply to licensed agricultural pest control advisers and registered professional foresters, or employees under their direct supervision, while performing, after the application is completed, crop adviser tasks, including field-checking or scouting, making observations of the well-being of the plants, or taking samples provided:

(1) They have been trained equivalent to the requirements of Section 6724 (licensed agricultural pest control advisers are considered trained for the purposes of this exception); and

(2) The licensed agricultural pest control adviser or registered professional forester responsible for the direct supervision has:

(A) Made specific determinations regarding appropriate personal protective equipment, needed decontamination facilities, and how to safely conduct crop adviser tasks;

(B) Informed each employee under his or her direct supervision of the pesticide product and active ingredient(s) applied, method and time of application, the restricted entry interval, and determinations made pursuant to (A) above; and

(C) Instructed each employee under his or her direct supervision regarding which tasks to perform and how to contact him or her if the need arises.

(e) The provisions of this Subchapter do not apply to employees handling consumer products packaged for distribution to, and use by, the general public, provided that employee use of the product is not significantly greater than the typical consumer use of the product.

NOTE: Authority cited: Section 12981, Food and Agricultural Code.

Reference: Sections 11501, 12973, 12980 and 12981, Food and Agricultural Code.

6722. Age.

NOTE: Authority cited: Sections 407 and 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

6723. Hazard Communication for Pesticide Handlers.

(a) Before employees are allowed to handle pesticides, the employer shall display a copy of a completed written Hazard Communication Information for Employees Handling Pesticides in Agricultural Settings (Pesticide Safety Information Series leaflet A-8) or Hazard Communication Information for Employees Handling Pesticides in Noncrop Settings (Pesticide Safety Information Series leaflet N-8), as applicable, at a central location in the workplace. Upon request, the employer shall read to the requesting employee, in a language understandable to that employee, Pesticide Information Series leaflet A-8/N-8. Pesticide Information Series leaflet A-8/N-8 shall be written by the Department of Pesticide Regulation in English and Spanish. Pesticide Information Series leaflets is available from the department.

(b) The employer shall maintain, at a central location at the workplace accessible to employees who handle pesticides the following:

(1) Pesticide use records as specified in Section 6624 (b), (c), and (e) for pesticides that have been handled by his or her employees;

(2) Copies of available Pesticide Safety Information Series leaflets which are applicable to the pesticides and handling activities listed in the pesticide use records referred to in subsection (b) (1); and

(3) A Material Safety Data Sheet (MSDS), as specified by Title 8 California Code of Regulations, Section 5194, for each pesticide listed in the pesticide use records referred to in subsection (b) (1). If the MSDS is not provided by the registrant of a pesticide, the employer shall:

(A) Within seven working days of a request for a MSDS from an employee, employee representative or employee's physician, make written inquiry to the registrant of the pesticide, asking that a MSDS be

sent to the employer. If the employer has made written inquiry within the last twelve months as to whether the pesticide is subject to the requirement for a MSDS or the employer has made a written inquiry within the last six months requesting new, revised or later information on the MSDS, the employer need not make additional written inquiry. A copy of the written inquiry shall immediately be sent to the person requesting the MSDS;

(B) Notify the requester of the availability of the MSDS or provide a copy of the MSDS to the requester within fifteen days of receipt of the MSDS from the registrant; and

(C) If a response has not been received from the registrant within twenty-five working days of the date the inquiry was made; send the department a copy of the inquiry with a notation that no response has been received. The employer is not precluded from obtaining and providing the MSDS utilizing other more expedient methods in lieu of those provided in this subsection.

(c) The employer shall inform employees, before they are allowed to handle pesticides and at least annually thereafter, of the location and availability of the records and other documents listed in this Section or relating to employee training, monitoring, and potential exposure. If the location of the records and other documents change, an employer shall promptly inform his or her employees of the new location.

(d) The employer shall provide, upon request of his or her employee, employee representative, or employee's physician, access to any records or other documents required to be maintained pursuant to this chapter. Access shall be granted as soon as possible and not to exceed forty-eight hours from the date of the request.

INFORMATIONAL NOTE: Other requirements relating to hazard communication can be found in Sections 6602, 6618, 6619, 6724, 6726, 6738, 6744, 6764, 6766, 6770, and 6776.

NOTE: Authority cited: Section 12980, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agriclutural Code; and 29 Codes of Federal Regulations, Part 1910.1200.

6723.1. Application-Specific Information for Handlers.

(a) The operator of property used for the commercial or research production of an agricultural plant commodity shall display, at a central location, the following application-specific information while employees are employed to handle pesticides:

(1) Identification of the treated area;

(2) Time and date of the application;

(3) Restricted entry interval; and

(4) Product name, EPA registration number, and active ingredients.

(b) The information shall be displayed within 24 hours of the completion of an application and include all applications that have been made to any treated field on the agricultural establishment within 1/4 mile of where employees will be working. Once displayed, the information shall remain displayed until the area no longer meets the definition of a treated field or handler employees will no longer be on the establishment, whichever occurs earlier.

(c) The original or copies of documents otherwise required to be maintained by this chapter may be used to meet the requirements of this Section provided they contain the information required by this Section.

NOTE: Authority cited: Section 12981, Food and Agricultural Code.

Reference: Sections 11501, 12973, 12980, and 12981, Food and Agricultural Code.

6724. Handler Training.

The employer shall assure that employees who handle pesticides have been trained pursuant to the requirements of this Section and that all other provisions of this Section have been complied with for employees who handle pesticides.

(a) The employer shall have a written training program. The training program shall describe the materials (e.g., study guides, pamphlets, pesticide product labeling, Pesticide Safety Information Series leaflets, Material Safety Data Sheets, slides, video tapes) and information that will be provided and used to train his or her employees and identify the person or firm that will provide the training. The training program shall address each of the subjects specified in subsection (b) that is applicable to the specific pesticide handling situation. The employer shall maintain a copy of the training program while in use and for two years after use, at a central location at the workplace.

(b) The training shall cover, for each pesticide or chemically similar group of pesticides, to be used:

(1) Format and meaning of information, such as precautionary statements about human health hazards, contained in pesticide product labeling;

(2) Hazards of pesticides, including acute and chronic effects, delayed effects, and sensitization, as identified in pesticide product labeling, Material Safety Data Sheets, or Pesticide Safety Information Series leaflets;

(3) Routes by which pesticides can enter the body;

(4) Signs and symptoms of overexposure;

(5) Emergency first aid for pesticide overexposure;

(6) How to obtain emergency medical care;

(7) Routine and emergency decontamination procedures, including spill clean up and the need to thoroughly shower with soap and warm water after the exposure period;

(8) Need for, limitations, appropriate use, and sanitation, of, any required personal protective equipment;

(9) Prevention, recognition, and first aid for heat-related illness;

(10) Safety requirements and procedures, including engineering controls (such as closed systems and enclosed cabs) for handling, transporting, storing, and disposing of pesticides;

(11) Environmental concerns such as drift, runoff, and wildlife hazards;

(12) Warnings about taking pesticides or pesticide containers home;

(13) Requirements of this chapter and chapter 4 relating to pesticide safety, Material Safety Data Sheets, and Pesticide Safety Information Series leaflets;

(14) The purposes and requirements for medical supervision if organophosphate or carbamate pesticides with the signal word "DANGER" or "WARNING" on the labeling are mixed, loaded, or applied for the commercial or research production of an agricultural plant commodity;

(15) The location of the written Hazard Communication Information For Employees Handling Pesticides (Pesticide Safety Information Series leaflet A-8), other Pesticide Safety Information Series leaflets, and Material Safety Data Sheets;

(16) The employee's rights, including the right;

(A) To personally receive information about pesticides to which he or she may be exposed;

(B) For his or her physician or employee representative to receive information about pesticides to which he or she may be exposed; and

(C) To be protected against retaliatory action due to the exercise of any of his or her rights.

(c) The training shall be in a manner the employee can understand, be conducted pursuant to the written training program, and include response to questions.

(d) Training shall be completed before the employee is allowed to handle pesticides, continually updated to cover any new pesticides that will be handled, and repeated at least annually thereafter. Initial training may be waived if the employee submits a record showing that training meeting the requirements of this Section and covering the pesticides and use situations applicable to the new employment situation was received within the last year. A certified applicator is considered trained for the purposes of this Section.

(e) The date and extent of initial and annually required training given to the employee and the job to be assigned shall be recorded. This record shall be verified by the employee's signature and retained by the employer for two years at a central location at the workplace accessible to employees.

(f) The person conducting the training for employees who will be handling pesticides for the commercial or research production of an agricultural plant commodity shall be qualified as one of the following:

(1) A California certified commercial applicator;

(2) A California certified private applicator;

(3) A person holding a valid County Biologist License in Pesticide Regulation or Investigation and Environmental Monitoring issued by the Department of Food and Agriculture;

(4) A farm advisor employed by the University of California Extension Office;

(5) A person who has completed an "instructor trainer" program presented by one of the following:

(A) The University of California, Integrated Pest Management Program after January 1, 1993; or

(B) Other instructor training program approved by the Director;

(6) A California licensed Agricultural Pest Control Adviser;

(7) A California Registered Professional Forester; or

(8) Other trainer qualification approved by the Director.

NOTE: Authority cited: Section 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

6726. Emergency Medical Care.

(a) Emergency medical care for employees handling pesticides shall be planned for in advance. The employer shall locate a facility where emergency medical care is available for employees who will be handling pesticides.

(b) Employees shall be informed of the name and location of a facility where emergency medical care is available. The employer shall post in a prominent place

at the work site, or work vehicle if there is no designated work site, the name, address and telephone number of a facility able to provide emergency medical care whenever employees will be handling pesticides and, if the identified facility is not reasonably accessible from that work location, procedures to be followed to obtain emergency medical care.

(c) When there is reasonable grounds to suspect that an employee has a pesticide illness, or when an exposure to a pesticide has occurred that might reasonably be expected to lead to an employee's illness, the employer shall ensure that the employee is taken to a physician immediately.

NOTE: Authority cited: Sections 11456 and 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

6730. Working Alone.

(a) An employee mixing, loading, or applying a pesticide in toxicity category one for production of an agricultural commodity may not work alone during daylight hours unless personal, radio, or telephone contact is made to a responsible adult at intervals not exceeding two hours.

(b) An employee mixing, loading, or applying a pesticide in toxicity category one for production of an agricultural commodity may not work alone during nighttime hours unless personal, radio, or telephone contact is made to a responsible adult at intervals not exceeding one hour.

(c) A pilot, mixer-loader, and/or flagger team shall be considered as working together. In the case of two ground applicators working in the same field, no additional person is necessary if they can see each other or each other's application vehicles.

NOTE: Authority cited: Sections 11456 and 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

6732. Change Area.

For any employee who regularly handles pesticides with the signal word "DANGER" or "WARNING", and for all employees who handle any pesticides for the commercial or research production of an agricultural plant commodity, the employer shall assure that there is, at the place where employees end their exposure period and remove their personal protective equipment, an area where employees may change clothes and wash themselves. Clean towels, soap, and sufficient water shall be available to allow for thorough washing. The employer shall provide a clean, pesticide-free place where employees may store any personal clothing not in use while at work handling pesticides.

NOTE: Authority cited: Section 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

6734. Handler Decontamination Facilities.

(a) The employer shall assure that sufficient water, soap and single use towels for routine washing of hands and face and for emergency eye flushing and washing of the entire body are available for employees as specified in this Section.

(1) This water shall be of a quality and temperature that will not cause illness or injury when it contacts the skin or eyes or if it is swallowed, and shall be stored separate from that used for mixing with pesticides unless the tank holding water for mixing with pesticides is equipped with appropriate valves to prevent back flow of pesticides into the water.

(2) One clean change of coveralls shall be available at each decontamination site.

(b) The decontamination site for employees handling pesticides for the commercial or research production of an agricultural plant commodity shall be at the mixing/loading site and not more than 1/4 mile (or at the nearest point of vehicular access) from other handlers, except that the decontamination site for pilots may be at the loading site regardless of distance from where the pilot is working. The decontamination site shall not be in an area being treated or under a restricted entry interval unless:

(1) The handlers for whom the site is provided are working in that area being treated or under a restricted entry interval;

(2) The soap, towels, and extra change of coveralls are in an enclosed container; and

(3) The water is running tap water or enclosed in a container.

(c) One pint of water for emergency eye flushing shall be immediately available (carried by the handler or on the vehicle or aircraft the handler is using) to each employee handling pesticides for the commercial or research production of an agricultural plant commodity if the pesticide product labeling requires protective eyewear.

(d) The decontamination site for employees handling pesticides for uses other than the commercial or research production of an agricultural plant commodity shall be within 100 feet of the mixing/loading site when they are handling pesticides with the signal word "DANGER" or "WARNING" on the label.

NOTE: Authority cited: Section 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

6736. Coveralls.

(a) The employer shall provide coveralls for each employee who handles any pesticide with the signal word "DANGER" or "WARNING" on the label except as provided in 6738(i).

(b) The employer shall assure that:

(1) Employees start each work day wearing coveralls whenever they handle pesticides with the signal word "DANGER" or "WARNING";

(2) Employees wear coveralls whenever they handle pesticides with the signal word "DANGER" or "WARNING" except as provided in 6738(i);

(3) Employees change out of their coveralls and wash at the end of the work day;

(4) Potentially contaminated coveralls removed at the worksite or headquarters are not taken home by employees; and

(5) Employees whose work day does not involve return to the employer's headquarters remove and store potentially contaminated coveralls in a sealable container outside of their own living quarters for later return to the employer.

(c) This Section does not apply to employees using fumigants unless the pesticide product labeling expressly requires the use of coveralls.

NOTE: Authority cited: Section 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

6738. Personal Protective Equipment.

(a) The employer shall:

(1) Provide all required personal protective equipment, provide for its daily inspection and cleaning (according to pesticide labeling instructions or, absent any instructions, washed in detergent and hot water), and repair or replace any worn, damaged, or heavily contaminated personal protective equipment. Leather gloves previously used to apply only aluminum phosphide or magnesium phosphide pesticides and which have been aerated for 12 hours or more shall be considered cleaned;

(2) Assure that all clean personal protective equipment, when not in use, is kept separate from personal clothing and in a pesticide free, specifically designated place;

(3) assure that appropriate measures are taken to prevent heat related illness when necessary;

(4) Assure that personal protective equipment is used correctly for its intended purpose;

(5) Discard any absorbent materials that have been drenched or heavily contaminated with a pesticide with the signal word "DANGER" or "WARNING";

(6) Keep and wash potentially contaminated personal protective equipment separately from other clothing or laundry;

(7) Assure that all clean personal protective equipment is either dried thoroughly before being stored or is put in a well ventilated place to dry;

(8) Assure that personal protective equipment remains the property of the employer and that pesticide handlers are not allowed or directed to take potentially contaminated personal protective equipment into their homes;

(9) Assure that any person or firm assigned or hired to clean or repair potentially contaminated personal protective equipment is protected and informed in accordance with the requirements of Section 6744 (Equipment Maintenance).

(b) The employer shall assure that:
(1) Employees wear protective eyewear when required by pesticide product labeling (except as expressly provided in this section) or when employees are engaged in:
(A) Mixing or loading, except as provided in 6738(i);
(B) Adjusting, cleaning, or repairing mixing, loading, or application equipment that contains pesticide in hoppers, tanks, or lines;
(C) Application by hand or using hand held equipment, except when:
1. Applying vertebrate pest control baits that are placed without being propelled from application equipment;
2. Applying solid fumigants (including aluminum phosphide, magnesium phosphide, and smoke cartridges) to vertebrate burrows;
3. Baiting insect monitoring traps; or
4. Applying non-insecticidal lures.
(D) Ground application using vehicle mounted or towed equipment, except when:
1. Injecting or incorporating pesticides into soil;
2. Spray nozzles are located below the employee and the nozzles are directed downward; or
3. Working in an enclosed cab; or
(E) Flagging, except when the flagger is in an enclosed cab.

(2) Whenever protective eyewear is required, one of the following types of eyewear is worn:
(A) Safety glasses that provide front, and supplemental brow and temple protection (Common eyeglasses, including sunglasses, do not meet this requirement);
(B) Goggles;
(C) Face shield;
(D) Full face mask used in conjunction with respiratory protection; or
(E) Visor (for aircraft operation only).

(c) The employer shall assure that:
(1) Gloves are worn when required by the pesticide product labeling (except as expressly provided in this section) or (unless the pesticide product labeling specifies that gloves must not be worn), when employees are engaged in:
(A) Mixing or loading, except as provided in 6738(i);
(B) Adjusting, cleaning or repairing contaminated mixing, loading, or application equipment; and

(C) Application by hand or using hand-held equipment, except when applying vertebrate pest control baits using long handled implements that avoid actual hand contact with the bait or potentially contaminated areas of equipment.

(2) If a specific type of glove is not specified on product labeling for the pesticide being handled, gloves made of rubber, neoprene, or other chemical resistant material that provides equivalent or better protection are used. Gloves or glove linings of leather, cotton, or other absorbent materials shall not be worn unless expressly permitted by pesticide product labeling. If chemical resistant gloves with sufficient durability and suppleness are not available, leather gloves may be worn over chemical resistant glove liners. Once leather gloves have been used for this purpose, they shall not be worn in any other situation.

(d) The employer shall assure that:

(1) When chemical resistant footwear is specified by the pesticide product labeling, one of the following types of footwear is worn:

(A) Chemical resistant shoes;

(B) Chemical resistant boots; or,

(C) Chemical resistant coverings worn over boots or shoes.

(2) For aircraft operation, chemical resistant footwear need not be worn.

(e) The employer shall assure that when chemical resistant headgear is specified by the pesticide product labeling, either a chemical resistant hood or a chemical resistant hat with a wide brim is worn. For aircraft operation, a helmet may be substituted for chemical resistant headgear.

(f) The employer shall assure that when a chemical resistant apron is specified by the pesticide product labeling, a garment that covers the front of the body from mid-chest to the knees is worn.

(g) The employer shall assure that:

(1) When pesticide product labeling or regulations specify a chemical resistant suit, waterproof or impervious pants and coat or a rain suit, a chemical resistant suit that covers the torso, head, arms, and legs is worn.

(2) If the ambient temperature exceeds 80^{o}F during daylight hours or 85^{o}F during nighttime hours (sunset to sunrise) pesticides requiring a chemical resistant suit are not handled by employees unless they are handled pursuant to exceptions and substitutions permitted in (i) or employees use cooled chemical resistant suits or other control methods to maintain an effective working environment at or below 80^{o}F during daylight hours or 85^{o}F during nighttime hours (sunset to sunrise).

(h) The employer shall assure that:

(1) Employees use approved respiratory protective equipment when pesticide product labeling or regulations require respiratory protection or when

respiratory protection is needed to maintain employee exposure below an applicable exposure standard found in Title 8, California Code of Regulations, and Section 5155.

(2) Respiratory protection required by these regulations or labeling is currently approved by the National Institute for Occupational Safety and Health (NIOSH) and/or the Mine Safety and Health Administration (MSHA) for the specific chemical and exposure condition. Proper selection of respirators shall be made following pesticide product labeling, or absent specific instruction, according to the guidance of National Standard Practices for Respiratory Protection: Z88.2-1980, or the American National Standard Practices of Respiratory Protection During Fumigation: Z88.3-1983.

(3) Written operating procedures for selecting, fitting, cleaning and sanitizing, inspecting and maintaining respiratory protective equipment are adopted.

(4) Employees with facial hair that prevents an adequate seal are not assigned work requiring them to wear a respirator unless they are provided a respirator that does not rely on a face-to face piece seal for proper operation.

(5) Respirators maintained for stand-by or emergency use is inspected monthly or before use if occasions for possible use are more than one month apart. A record of the most recent inspection shall be maintained on the respirator or its storage container.

(6)(A) Employees are informed, prior to beginning work that certain medical conditions may interfere with wearing a respirator while engaged in potential pesticide exposure situations. A statement in substantially the following form shall be on file for each employee assigned to work that requires wearing a respirator.

> To the best of my knowledge, I have_____, have no_____ medical conditions which would interfere with wearing a respirator while engaged in potential pesticide exposure situations. I understand that heart disease, high blood pressure, lung disease or presence of a perforated ear drum are examples of conditions that require specific medical evaluation by a physician before safe use of a respirator can be determined.
>
> _____
> Name
>
> _____
> Date

(B) If an employee checks that he or she has such a condition, a physician's report of evaluation and approval for respirator use is on file before work

requiring respirator use is allowed. The following or substantially similar statement from a physician is acceptable.

On_____, I examined _____.
Date Patient's name

At this time there is no medical contraindication to the employee named above wearing a respirator to allow working in potential pesticide exposure environments. (Other comments)

_____
_____
_____
_____
_____
_____
_____
_____
_____
Physician

Date

(7) Compressed air used in Self Contained Breathing Apparatus (SCBA) or for air-line type respirators meets or exceeds the requirements for Grade D breathing air as described in the Compressed Gas Association Commodity Specification G-7.1 (ANSI Z86.1-1973).

(8) When air purifying-type respirators are required for protection against pesticides, the air purifying elements or entire respirator, if disposable, are replaced according to pesticide product labeling directions or respiratory equipment manufacturer recommendations, whichever provides for the most frequent replacement, or, absent any other instructions on service life, at the end of each day's work period. At the first indication of odor, taste, or irritation, the wearer leaves the area and checks the respirator for fit or function concerns or air purifying element replacement.

(i) The following exceptions and substitutions to personal protective equipment required by pesticide product labeling or regulations are permitted:

(1) Persons using a closed system to handle pesticide products with the signal word "DANGER" or "WARNING" may substitute coveralls, chemical resistant gloves, and a chemical resistant apron for personal protective equipment required by pesticide product labeling;

(2) Persons using a closed system to handle pesticide products with the signal word "CAUTION" may substitute work clothing for personal protective equipment required by pesticide product labeling;

(3) Persons using a closed system that operates under positive pressure shall wear protective eyewear in addition to the personal protective equipment listed in (1) or (2). Persons using any closed system shall have all personal

protective equipment required by pesticide product labeling immediately available for use in an emergency;

(4) Persons properly mixing pesticides packaged in water soluble packets are considered to be using a closed (mixing) system for the purposes of this subsection;

(5) Persons occupying an enclosed cab (including cockpit) may substitute work clothing for personal protective equipment required by pesticide product labeling. If respiratory protection is required it must be worn, except in an enclosed cockpit;

(6) Persons occupying an enclosed cab acceptable for respiratory protection may substitute work clothing for personal protective equipment required by pesticide product labeling;

(7) Persons working in an enclosed cab, as specified in (5) and (6), other than an aircraft, shall have all personal protective equipment required by pesticide product labeling immediately available and stored in a chemical resistant container, such as a plastic bag. Labeling-required personal protective equipment shall be worn if it is necessary to work outside the cab and contact pesticide treated surfaces in the treated area. Once personal protective equipment is worn in the treated area, it shall be removed and stored in a chemical resistant container, such as a plastic bag, before reentering the cab;

(8) A chemical resistant suit may be substituted for coveralls and/or a chemical resistant apron; and

(9) Pest control aircraft pilots are not required to wear gloves during operation but gloves shall be worn by any person entering or exiting an aircraft contaminated with pesticide residues. While in the cockpit, gloves shall be carried in a chemical resistant container, such as a plastic bag.

INFORMATIONAL NOTE FOR Section 6738(e): ANSI Z86.1 specifies in summary: Oxygen 19.5 to 23.5%, Hydrocarbons less than 5 mg/m^3 at normal temperature and pressure, Carbon Monoxide less than 20 ppm, no pronounced odor, Carbon Dioxide less than 1000 ppm.

NOTE: Authority cited: Sections 11456 and 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

6740. Adequate Light.

Whenever natural light in a mixing/loading area is not adequate to allow an employee to read the label and work in a safe manner, artificial light shall be provided in such areas that are sufficient to perform these activities.

NOTE: Authority cited: Sections 11456 and 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

6742. Safe Equipment.

(a) The employer shall assure that equipment used for mixing, loading, transferring, or applying pesticides is inspected before each day of use and equipment with any safety defect is repaired or altered to remove the hazard before further use.

(b)(1) All openings on tanks used for mixing or applying pesticides shall be equipped with covers that will prevent splashes and spills.

(2) Flexible hoses carrying liquid pesticides in toxicity categories one or two under pressure shall not pass unshielded through the cockpit of an airplane or helicopter.

(3) Shut-off devices shall be installed on the exit end of all hoses carrying liquid pesticides in toxicity categories one or two from mixing tanks that are adequate to prevent splashes onto the employee doing the loading when filling operations are stopped and the filler hose is removed from the inlet to the tank of the application vehicle. As an alternative, a reversing action pump, or similar system, may be used that will empty the hose and eliminate dripping of liquid from the end of the hose when the filling operation is stopped.

(4) Each tank, with a capacity of more than 49 gallons, that is used to mix or apply any liquid mixture derived from a pesticide in toxicity categories one or two, shall have either:

(A) A properly functioning means to indicate externally the internal liquid level in the tank such as a sight gauge; or

(B) The tank or the filler hose nozzle shall have a device that will automatically stop the filling operation before the pesticide liquid mixture spills over the top.

NOTE: Authority cited: Section 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

6744. Equipment Maintenance.

Persons who own or operate pesticide mixing, loading, or application equipment shall inform each employee under their control who may be involved in the cleaning, servicing or repair of that equipment of the hazards of the pesticides that a person may encounter, and the methods of protecting against personal injury. If such cleaning, servicing or repairing is to be performed by persons not under the control of the owner or operator of the equipment, he/she shall so notify the person in charge of performing these services. Employees who clean, service, or repair mixing and application equipment shall be provided with any necessary protective equipment or clothing by their employer, and shall be instructed and supervised in the maintenance operation in a manner that will reduce work hazards.

NOTE: Authority cited: Sections 11456 and 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

6746. Closed Systems.

(a) Employers shall provide closed systems for employees who mix or load liquid pesticides in toxicity category one, or load diluted liquid mixes derived from dry pesticides in toxicity category one, for the production of an agricultural commodity. No employee shall be permitted to transfer, mix, or load these pesticides except through a closed system. The system's design and construction shall meet the director's closed-system criteria.

(b) The requirements of this Section do not apply to:

(1) Employees who handle a total of one gallon or less of pesticides in toxicity category one per day exclusively in original containers of one gallon or less; or

(2) Regulatory personnel collecting samples of pesticides according to official sampling procedures.

NOTE: Authority cited: Sections 11456 and 12981, Food and Agricultural Code.

Reference: Sections 12980 and 12981, Food and Agricultural Code.

APPENDIX J – Medical Emergency Contact Telephone Numbers

SACRAMENTO COUNTY Mercy General Hospital 4001 J Street, Sacramento (916) 453-4545	**NORTH DELTA** Lodi Memorial Hospital 975 S. Fairmont, Lodi (800) 323-3360
MIDDLE DELTA, San Joaquin C	
US Health Works 3663 E. Arch Road, Ste. 400, Stockton (209) 943-2202	Dameron Hospital 525 W. Acacia, Stockton (209) 944-5550
St. Joseph's Hospital 1800 North California Street, Stockton (209) 943-2000	San Joaquin General 500 West Hospital Road, French Camp (209) 468-6000
WEST DELTA, CONTRA COSTA COUNTY	
Sutter Delta Medical Center 3901 Lonetree Way, Antioch (925) 779-7200	Kaiser Foundation 3400 Delta Fair Boulevard, Antioch (925) 779-5000
SOUTH DELTA TRACY	
Sutter Tracy Community Hospital 1420 North Tracy Boulevard, Tracy (209) 835-1500	Doctor's Hospital 1205 East North, Manteca (209) 823-3111
MODESTO, CERES, AND SOUTH	
Memorial Hospital 1700 Coffee Road, Modesto (209) 526-4500	Doctor's Medical Center 1441 Florida Avenue, Modesto (209) 578-1211
Stanislaus Medical Center – Urgent Care 830 Scenic Drive, Modesto (209) 558-7212	Stanislaus Medical Center 1900 Memorial Drive, Ceres (209) 541-2929
MERCED COUNTY Merced Community Medical Center 301 E. 13th Street, Merced (209) 385-7000	**FRESNO COUNTY** St. Agnes Hospital 1303 E. Herndon Avenue, Fresno (559) 450-3000

APPENDIX J(1) – Medical Emergencies (American Red Cross)

APPENDIX J(2) – Spill Emergency Contact Telephone Numbers

State Agencies/Departments		
Contact Agency	Contact Name	Telephone Number
1. California Department of Fish and Game, Office of Spill Prevention and Response		(916) 445-9338 *24-Hour Response* (916) 445-0045
2. California Regional Water Quality Control Board (Central Valley)	Rudy Schnagl	(916) 255-3101
3. California Office of Emergency Services		(916) 464-3230

Local Government Agencies/Departments				
County	Agricultural Commissioners Office	Sheriff's Office	California Highway Patrol	Health Services Department
Contra Costa	(925) 646-5250	(925) 335-1500	(925) 646-4980	(925) 646-2286
Fresno	(559) 456-7510	(559) 488-3121	(559) 441-5441	(559) 445-3357
Kings	(559) 582-3211 X 2831	(559) 582-3211 X 2790	(559) 582-0231	(559) 584-1411
Sacramento	(916) 875-6603	(916) 874-5115	(916) 338-6710	(916) 875-8484
San Joaquin	(209) 468-3300	(209) 468-4570	(209) 943-8666	(209) 468-3420
Solano	(707) 421-7465	(707) 421-6330	(707) 428-2100	(707) 784-8600
Stanislaus	(209) 525-4730	(209) 525-7216	(209) 545-7440	(209) 558-7000
Yolo	(530) 666-8140	(530) 666-6612	(530) 622-4685	(530) 666-8646

Department of Boating and Waterways			
Name	Title	Telephone	Cellular Telephone
Field			
Paul Ryan	Field Supervisor	(916) 263-8143	(916) 416-6981
Terri Ely	Office Supervisor (Designee)	(916) 263-8138	(916) 416- 9284
Office			
Marcia Carlock	Aquatic Weed Unit Manager	(916) 263-8142	(916) 417-0075
Geoff Newman	Environmental Scientist	(916) 274-6126	(916) 240-8723
Carrie Holler	Daily Logs/Daily Recording/ NOIs	(916) 263-6676	(916) 240-8724
Terri Ely	Staff Environmental Scientist	(916) 416-9284	(916) 263-8138
Paul Ryan	Environmental Scientist	(916) 263-8143	(916) 416-6981
Doreene Smith	Electronic Data Problems, Mapping	(916) 263-6703	
Cate Schmeidt	NOI/Office Asst.	(916) 263-8135	

APPENDIX K – Notice of Intent to Operate (NOI)

This appendix includes a copy of a Notice of Intent to Operate (NOI) Summary for the week of October 15th, 2007. The NOI summary specifies the following information for the week:

NOI date and time
County (Contra Costa, Solano, Sacramento, San Joaquin, Stanislaus)
Intended sites to treat
Dates planned to treat
Applicator name and telephone number.

APPENDIX L – Environmental Checklists

This appendix includes a copy of a completed Environmental Observations Checklist. Staff should make sure to check boxes related to Fish Take (yes/no), **Giant Garter snake observed (yes/no)**, and number of Elderberry bushes observed (0, or a number). These boxes should be checked and a form completed even if none of these species are observed.

APPENDIX M – MOU with Water Agencies

This appendix includes a copy of the Memoranda of Understanding (MOU) that the DBW has with the following water agency:

- Contra Costa Water Department

The MOU identifies that applications within one mile of these water agency's water intakes cannot occur without concurrence from a district representative (noted in the MOU).

APPENDIX N – Ounce to Gallon Conversion Table

Ounce	Gallon	Ounce	Gallon	Ounce	Gallon	Ounce	Gallon
1	0.01	40	0.31	79	0.62	118	0.92
2	0.02	41	0.32	80	0.63	119	0.93
3	0.02	42	0.33	81	0.63	120	0.94
4	0.03	43	0.34	82	0.64	121	0.95
5	0.04	44	0.34	83	0.65	122	0.95
6	0.05	45	0.35	84	0.66	123	0.96
7	0.05	46	0.36	85	0.66	124	0.97
8	0.06	47	0.37	86	0.67	125	0.98
9	0.07	48	0.38	87	0.68	126	0.98
10	0.08	49	0.38	88	0.69	127	0.99
11	0.09	50	0.39	89	0.70	128	1.00
12	0.09	51	0.40	90	0.70		
13	0.10	52	0.41	91	0.71		
14	0.11	53	0.41	92	0.72		
15	0.12	54	0.42	93	0.73		
16	0.13	55	0.43	94	0.73		
17	0.13	56	0.44	95	0.74		
18	0.14	57	0.45	96	0.75		
19	0.15	58	0.45	97	0.76		
20	0.16	59	0.46	98	0.77		
21	0.16	60	0.47	99	0.77		
22	0.17	61	0.48	100	0.78		
23	0.18	62	0.48	101	0.79		
24	0.19	63	0.49	102	0.80		
25	0.20	64	0.50	103	0.80		
26	0.20	65	0.51	104	0.81		
27	0.21	66	0.52	105	0.82		
28	0.22	67	0.52	106	0.83		
29	0.23	68	0.53	107	0.84		
30	0.23	69	0.54	108	0.84		
31	0.24	70	0.55	109	0.85		
32	0.25	71	0.55	110	0.86		
33	0.26	72	0.56	111	0.87		
34	0.27	73	0.57	112	0.88		
35	0.27	74	0.58	113	0.88		
36	0.28	75	0.59	114	0.89		
37	0.29	76	0.59	115	0.90		
38	0.30	77	0.60	116	0.91		
39	0.30	78	0.61	117	0.91		

Other conversion factors:
# of Acres x 0.405 = # of Hectares
# of Hectares / 0.405 = # of Acres

APPENDIX O – Daily Log

This appendix includes a copy of a blank and completed daily log for the WHCP.

APPENDIX P – Pesticide Use Report

This appendix includes a copy of a Monthly Pesticide Use Report completed in October, 2008. The Pesticide Use Report includes:

The manufacturer and name of product
EPA/California registration number (from label)
Total product used
Number of applications
Code (chose code 100, see form for description)
Site treated
Acres treated.

Pesticide Use Reports currently are prepared at Headquarters Offices based on data accumulated by DBW administrative staff.

APPENDIX Q – Drinking Water Intake Locations

APPENDIX R – ENDANGERED SPECIES & OTHER SPECIES OF CONCERN

APPENDIX S – NEW INVASIVE SPECIES