ENVIRONMENTAL MONITORING PLAN

For Applications of Malathion

Boll Weevil Eradication Program

Texas

United States Department of Agriculture

Animal and Plant Health Inspection Service

Plant Protection and Quarantine

Prepared by the Environmental Compliance Team

Effective date: March 2016

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PURPOSE OF THIS DOCUMENT

Boll weevils arrived in the United States from Mexico in 1892 and have resulted in billions of dollars in yield losses and control costs to the U.S. cotton industry. APHIS supplies equipment, technical and administrative support, and some funding for the Cooperative Boll Weevil Eradication Program. Because this is in part a federal program, the Program must follow specific environmental laws and regulations, including: the National Environmental Policy Act, the Endangered Species Act, the Federal Insecticide Fungicide and Rodenticide Act, and policies of the Animal and Plant Health Inspection Service (APHIS).

The guidance in this Environmental Monitoring Plan (EMP) is designed to improve environmental compliance. The EMP may be updated, based on input from the program or from NEPA or ESA documentation. Each organizational unit should implement this plan during the 2016 eradication season.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

NEPA requires consideration of possible impacts of federal programs on the environment and human health. Programs must use operational procedures and mitigations to reduce or eliminate these impacts, and Programs conduct environmental monitoring to show that mitigations are successful. Failure to comply with NEPA could result in suspension of the Program and loss of federal funding to the Program.

ENDANGERED SPECIES ACT (ESA)

ESA requires consideration of possible impacts on certain plants and animals in the United States and territories. Failure to comply with ESA could result in suspension of the Program and individual staff members or contractors can be fined or imprisoned. Under ESA, endangered species are in danger of extinction throughout all or a significant portion of their range, and threatened species are likely to become endangered within the foreseeable future. Other laws or regulations protect additional species. For example, bald eagles are no longer endangered but are federally protected under the Bald and Golden Eagle Protection Act. Programs must use protection measures to prevent harm to protected species.

CONTACTS AND RESPONSIBILITIES

APHIS PLANT PROTECTION AND QUARANTINE (PPQ) ENVIRONMENTAL COMPLIANCE TEAM (ECT)

Anastasia Bodnar; (301) 851-2188; Anastasia.L.Bodnar@aphis.usda.gov
4700 River Road, Unit 150, 4C-01.39; Riverdale, MD 20737

1. Prepare the EMP prior to treatment, balancing protection measures with available resources.
2. Provide training, clarification, and guidance on how to implement the EMP.
3. Maintain contact with field staff to assure monitoring is being conducted. Provide feedback to field staff in a timely manner so procedures can be modified, if needed.
4. Review and interpret field and pesticide residue data. Contact the sample collector for clarification if any data is incomplete or unclear.
5. Notify the Program immediately if any data indicates possibly harmful exposure to malathion.
6. Within 60 working days of receiving all field data and all residue data, submit a comprehensive report to the Program that includes a summary of data, conclusions, and any recommendations.
7. Assist with communicating risk to stakeholders as needed.

APHIS CENTER FOR PLANT HEALTH SCIENCE TECHNOLOGY (CPHST) BILOXI STATION

Robert Smith; (228) 385-9279; fax (228) 822-3137; Robert.D.Smith@aphis.usda.gov

1. Prepare and ship dye cards, sampling containers, and sample collection equipment to field staff.
2. Provide instructions on methods for collecting, preserving, and shipping samples.
3. Review analysis results and report to ECT.
4. Coordinate communication between ECT and laboratories.

AGRICULTURAL MARKETING SERVICE (AMS) NATIONAL SCIENCE LABORATORIES (NSL)

Roger Simonds; (704) 867-3873; Roger.Simonds@ams.usda.gov
801 Summit Crossing Place Suite B; Gastonia, NC 28054

1. Process routine monitoring samples in a timely manner, including dye cards, soil, water, vegetation, wipes, insects, or fish.
2. Provide laboratory results to CPHST.

APHIS CPHST AGRICULTURE QUARANTINE INSPECTION (AQI) LABORATORY

Lisa Mosser; (305) 278-4902; Lisa.K.Mosser@aphis.usda.gov
Building 63; 13601 Old Cutler Road; Coral Gables, FL 33158

1. Process priority and spill samples in a timely manner, including dye cards, soil, water, vegetation, wipes, insects, fish, and animals or animal tissue.
2. Provide laboratory results to CPHST.

APHIS AND COOPERATOR FIELD STAFF

1. Under the leadership of the Program Director, provide sufficient Program resources for completing the monitoring activities described in the EMP.
2. Coordinate with Federal and local wildlife officials to identify protected species and habitats that may be affected by Program activities, and implement protection measures.
3. Inform the ECT of protected species and locations, and implement required protection measures.
4. Identify all sensitive sites near cotton fields as described in the EMP.
5. Select sufficient monitoring sites for sample collection. Follow instructions in the EMP and referenced APHIS Standard Operating Procedures (SOPs) to develop a plan for sample collection and documentation, including:
    a. Collect the type and number of samples recommended in the EMP.
    b. Complete a separate form for each sample that is collected.
    c. Collect all additional information necessary to document the samples.
    d. Send samples and forms to the lab as soon as possible after collection.
    e. Send forms and all other supporting documentation to the ECT.
6. Notify the AQI lab prior to shipping any priority or spill samples.
7. Investigate any complaints or incidents promptly, and notify ECT as soon as possible.
8. Maintain contact with and share information with ECT, local agencies, and the public.

GENERAL INFORMATION

SAMPLE DOCUMENTATION

Complete a separate form for each sample at the time of sampling. If possible, enter information directly into the web-based system developed by the Program. Otherwise, record information on a printed data collection form or similar document, then transfer to the web-based system when you return to the field.

Be sure to fill in all applicable fields on the form. Not every field is needed for every type of sample. For example, water details are not needed for soil samples. Always include the date/time of sampling; date/time of the most recent treatment; wind speed and direction during the most recent treatment (not during sampling); general observations; and any unusual occurrences. Mark all regular monitoring samples as *routine*. Only mark samples as *priority* if they are from complaint investigations, spill incidents, potential human health issues, or are of very high importance.

Draw a clear map of each sensitive site, where each sample is collected, and where treatment was applied. You can mark locations using a Geographic Information System (GIS) such as ArcGIS or Google Maps, or draw a map on a piece of paper. You can also use an aerial photo of the area, if available. If you are collecting multiple samples from the same site, you may submit one map for the site, as long each sample is clearly marked on the map.

MONITORING REPORTS

Prepare an annual report that includes, at minimum, the types of treatments used (chemical and non-chemical), the number of applications for each treatment block, and the quantity of pesticide used. Include comparisons with previous years' pesticide use and with weekly or monthly boll weevil detections. The annual report should assess Program success. Describe any problems or complaints, including a summary of findings and resolution. Provide copies of the report to anyone who submits a written request.

SUPPLIES

CPHST in Mississippi provides some monitoring supplies, including shipping labels. A checklist for ordering supplies is located on page 12. The lab prefers faxed supply orders. Note that CPHST does not provide general office supplies; the Program should obtain these locally.

SHIPPING OF SAMPLES

Ship routine monitoring samples to the NSL in North Carolina. Ship priority samples to the AQI lab in Florida, and be sure to notify the AQI lab by phone or email before shipment. Ship spill samples separate from other priority samples, due to the potentially high concentration of malathion in spill samples. See the Monitoring for Incidents or Complaints section for more information.

Use overnight delivery to ship all samples as soon as possible after collection. Overnight delivery allows the sample to stay frozen or at least cold. Delays in shipping can ruin the sample. The labs are closed on weekends and federal holidays, so do not ship samples on Fridays, and check the federal holiday calendar. Call the AQI lab before shipping any priority, spill, or unusual samples so they can prepare as needed.

With the exception of pure pesticide, freeze all samples and ship in a cooler box (not cardboard). For all samples other than water, use dry ice to keep samples cold, since it does not turn to liquid when warmed and will not ruin forms or samples. For water samples, do not use dry ice, since the extreme cold will cause the sample containers to crack. If dry ice is not available, use reusable ice packs. If ice packs are not available, you may seal regular ice in two layers of plastic zipper bags. Unsealed ice will melt and leak during shipment, causing unnecessary concern during transit or when received at the laboratory.

CONTACT WITH THE PUBLIC

In the course of Program duties, including implementation of this EMP, you may come into contact with the media or interested members of the public. Always be courteous, helpful, and refer people up your chain of command or to other appropriate Program staff. Do not dismiss a concern or fear that someone may have, no matter how unfounded it may seem. Be careful with what you say and do not be afraid to say that you do not know an answer. Accidentally providing incorrect information, however well intended, can result in increased concern by members of the public.

STANDARD OPERATING PROCEDURES (SOPS)

In addition to the instructions in this Environmental Monitoring Plan, CPHST has developed several SOPs that must be followed for sample collection and shipping. You can find links to relevant SOPs below. Also, the Program has created short training videos, which you can find on the Program intranet.

The following SOPs are of particular relevance to the boll weevil eradication Program:

- EM-01 Collection of Dye Card Samples http://go.usa.gov/cnnY3
- EM-03 Collection of Water Samples http://go.usa.gov/cnNve
- EM-09 Priority (Emergency) Sampling http://go.usa.gov/cnUxR
- EM-10 Preparation of Control Samples and Collection of Purity Samples http://go.usa.gov/cnnxB
- EM-12 Using a Field Log Book http://go.usa.gov/cUxkj
- EM-17 Packaging and Shipping of Samples http://go.usa.gov/cnNwh
- National Bald Eagle Management Guidelines http://go.usa.gov/cUxrd
- Guidelines for Managing Pesticide Spills (pages 7-3-1 to 7-3-18) http://go.usa.gov/cnzne

Other SOPs that may be helpful include:

- EM-06 Collection of Soil Samples http://go.usa.gov/cUxnF
- EM-07 Collection of Vegetation Samples http://go.usa.gov/cnnfw
- EM-08 Collection of Insect Samples http://go.usa.gov/cUxRz
- EM-13 Taking Measurements for the APHIS Form 2060 http://go.usa.gov/cUxR4
- EM-22a Guidelines for Selecting Environmental Monitoring Sites http://go.usa.gov/cUxRk
- EM-22b Sensitive Site Selection Worksheet http://go.usa.gov/cUxQ3

MINIMUM SAMPLE SIZES

Sample type	Minimum sample	Minimum sample for re-analysis
Dye Cards	1 dye card	not applicable
Water	600 mL	2,400 mL
Soil	120 grams	480 grams
Vegetation	12 grams	48 grams
Insects	3 grams	12 grams
Birds, fish, or animals	12 grams	48 grams
Technical formulations	10 mL	10 mL

MONITORING FOR HUMAN HEALTH

OBJECTIVES

Monitoring for potential human exposure is designed to:

1. Demonstrate the effectiveness of operational procedures in excluding or minimizing exposure of the public to Program-applied malathion;
2. Collect data which can be used to evaluate whether assumptions used in the Environmental Assessments are valid estimates of potential exposure to Program-applied malathion by:
    a. Monitoring for aerial spray drift;
    b. Testing crops and water bodies that might be used for human consumption to investigate the potential for exposure to malathion through ingestion;
3. Ensure that quality assurance and quality control procedures were followed; and,
4. Conduct additional monitoring to investigate any Program-related complaints or reports of adverse effects on public health, environmental quality, or non-target species.

METHODS

OUTREACH

The following procedures are designed to reduce human exposure to Program-applied malathion. For all areas, provide advance written or telephonic notification of the approximate times and dates of treatments to area residents within 500 feet of the cotton fields before treatment. In addition, the procedures below are recommended for all program areas, but are required for the Lower Rio Grande Valley.

1. Notify residents within ¼ mile of treatments and any nearby residents who formally request special notification (providing their name, address, and telephone number).
2. Notify growers of treatment dates so that growers may provide timely and appropriate notice of treatments and protective measures to employees or residents on their properties who could be exposed to pesticides.
3. Establish a central telephone hotline for the public to provide information in English and Spanish during the time the Program is operational. The hotline will provide people with approximate times and places of treatment, Program information, and emergency referrals.
4. Maintain in each Program office copies of the programmatic EIS and the EA, with the EA in both English and Spanish.
5. Provide data from Program environmental monitoring efforts to the public, upon written request.

SENSITIVE SITE MONITORING

Sensitive sites are areas where people congregate, including permanent and temporary residences, schools, medical facilities, day cares, nursing homes, parks, and churches. The Program uses dye cards to monitor all sensitive sites near treated fields. Program staff are encouraged to be present at all treatments near sensitive sites, but must be present during all treatments near colonias.

Before treatments begin, list all sensitive sites within 500 feet of any field that the Program might treat. Describe each site and its location relative to nearby cotton fields. Email the list, descriptions, and any maps to ECT. A list of sensitive sites is not required for weevil-free areas, but if treatment is needed in a weevil-free area, create a list with descriptions and email to ECT before treating.

DYE CARD SAMPLING

Use dye cards to monitor potential pesticide drift. Before leaving for the field to set up dye cards, hang a clean dye card from the rear-view mirror of the Program vehicle used during sampling. This is a control card; leave it in place throughout the day.

Shortly before treatment begins, place three dye cards between the cotton field and each sensitive site. Place cards at the edge of the sensitive site, with approximately 30 feet between cards. Ensure dye card placement is representative of nearby vegetation; for example, if there is tree cover, you may place some cards under the trees, but if there is limited brush, do not place the cards under the brush. Draw a map of card positions relative to the treated field and sensitive site. Label the location of each card on the map.

Collect the cards within two hours after the treatment is completed. Place each card into the plastic bag it was shipped with, and label according to its location on the map. Do not write on the dye card.

If any dye card for a site has visible spots, submit all of the cards from the site (including the control and any cards without spots) to the lab for analysis. Complete separate forms for each card (for example, three cards with three forms). Fill out each form completely, and indicate whether each dye card was spotted.

If none of the dye cards in a set has a visible spot, you do not need to send them to the lab. Fill out a single form, noting the number of cards and that none of the cards had spots, and send a copy of the form to ECT. Occasionally send a set of unspotted dye cards (including the control card) to the lab for quality control.

DRINKING WATER MONITORING

Before treatments begin, list all reservoirs, cisterns, and other water bodies that might be used for human consumption or for livestock that are within 500 feet of any cotton field that the Program might treat with malathion. Describe each site and its location relative to nearby cotton fields. Email the list, descriptions, and any maps to ECT. In recent years, there have been few surface drinking water sources near treatment areas, but survey all expected treatment areas in case anything has changed.

At least one week before treatments begin, collect two pre-Program water samples from each water body. Within 24 hours prior to treatment, collect two pre-treatment samples (in addition to the pre-Program samples). Within two to four hours after each treatment, collect two post-treatment samples. Each time you collect water samples, collect from two different locations at the edge of the water body, with a separate form for each sample. Do not combine the two samples into a single sample.

VEGETATION MONITORING

When conducting vegetation monitoring, be sure to collect both pre- and post-treatment vegetation samples. In the Lower Rio Grande Valley, routine vegetation monitoring is required near sensitive sites. Vegetation monitoring is recommended in all zones when landowners are concerned about possible contamination of vegetation.

MONITORING FOR INCIDENTS OR COMPLAINTS

Report potential pesticide poisoning incidents to the Texas Department of Health, and inform the ECT. Complaints and incidents include potential harm from Program-applied malathion to human health and non-target species. Contact ECT immediately to collaborate on a sampling plan and notify AQI that samples are on the way. If an incident occurs on a weekend, start collecting samples right away, and contact ECT as soon as possible.

A quick response, thorough investigation, and good documentation are crucial. Key items are:

- Detailed incident report, including observations at the site, photographs, recordings or transcripts of interviews, and any other information that may be helpful in resolving the incident.
- Use a separate form for each sample, filled-out as completely as possible and marked “priority.” Include wind speed and direction during the most recent application of malathion.
- Map showing nearby treated cotton fields, sample locations, and other important information. Show distances between areas, building locations, indicate which direction is north, etc.
- If complaint is about drift, sample vegetation and soil, and take wipe samples if appropriate.
- For a fish kill, sample water, vegetation, fish (preferably living, with owner’s permission). Collect information about dissolved oxygen, fish species known in the pond, and fish species found dead.
- For a bee kill, sample bees (preferably living), and nearby vegetation.
- For other animals, contact a local veterinarian for advice if ECT is not immediately available. You may collect whole animals or animal tissue samples.

ECT may write an incident report using the sample results and information provided by the Program. The Program can share such reports with concerned residents as needed. ECT may use information from incidents to improve protective measures or monitoring, as necessary.

MONITORING MALATHION SPILLS

Monitor malathion spills, including accidents, improper disposal, aircraft crashes, etc. Take appropriate safety measures when gathering samples. Spill samples may contain enough malathion to ruin shipping containers and analytical equipment. Contact the AQI lab for guidance if a spill occurs. Label each sample and accompanying form as a ‘spill sample’.

QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)

Each unit must develop and follow an Operational Procedures and Mitigation Measures Checklist. A suggested checklist is on page 12. At the end of the treatment season, the checklist can be signed by the State Program Manager, State Environmental Monitoring Specialist, or other appropriate staff to indicate that all procedures and measures were followed. List any problems with corrective actions taken, and attach to the checklist. After Program operations conclude for the season, send a copy to ECT.

Designated APHIS or Program staff will collect and submit for testing pure (undiluted) malathion samples throughout the growing season from the distribution warehouses, airfield, or other storage areas. You may also sample pure malathion if you suspect a problem, such as contamination.

MONITORING FOR PROTECTED SPECIES

OBJECTIVES

Monitoring near habitat of protected species is designed to evaluate effectiveness of protection measures.

METHODS

INVENTORY OF PROTECTED SPECIES

Every year, before treatments begin, each Program unit must give ECT a list of counties where boll weevil treatments may occur. ECT will then give the Program a list of protected species and protection measures for those counties (from the Biological Assessment).

A list of all protected species known to occur in the treatment counties as of the writing of this document and their associated protection measures begins on page 19. ECT will communicate changes to the field if additional information becomes available.

The Program must contact the local U.S. Fish and Wildlife Service (FWS) office to determine the specific location of protected species and their habitats. Programs are strongly advised to contact FWS even if treatment is not expected in order to avoid delays if treatments become necessary.

Before treatments begin, send ECT documentation of your Program's annual contact with FWS, using the form on page 18 or a similar document. Include a list of fields that require protection measures, the specific protection measures that you will implement, and the name and position of the FWS staff that you spoke with. Once treatments begin, track how you implemented the protection measures. If a protected species is found that is not addressed in this document, contact ECT immediately.

PROTECTION MEASURES

If a protected species is near cotton fields, you must fully implement the protection measures for that species. Protection measures depend on the species and the ways they might be harmed. Potential measures include buffer zones and dye card, water, or run-off monitoring. Many species are excluded from monitoring because environmental analysis determined that the Program would not affect the species.

Several protection measures do not require monitoring. For example, measures for the northern aplomado falcon state: "No aerial use within 1 mile or ground use within ¼ mile of nesting sites or release stations." There are no sampling requirements for this species, but buffer zones must be implemented and documented in writing. You may use dye cards to monitor drift into buffer zones.

The protection measures specify when monitoring is required, the type of monitoring, and the distance between protected habitat and cotton fields that triggers required monitoring. For example, if a protection measure states, "No use within 60 feet of identified aquatic habitat. Monitor for run-off," then run-off

monitoring would be required for any cotton field within 60 feet of the habitat. In this example, if any portion of a cotton field extended into the 60-foot no-treatment buffer area, monitoring would be required even though no malathion would be applied within the buffer area.

OBSERVATION AND FIELD NOTES

Field notes are required for most monitoring, including monitoring of eagle nests. A sentence regarding general procedure is usually sufficient; for example, "nothing unusual noted during or after treatment." Note the time of treatment, and the presence or absence of any wildlife activity in or around the field. Submit photocopies of logbooks to ECT, or make notes directly into the "remarks" section of the form.

MONITORING FOR DRIFT

Use dye cards when a protection measure says to "Monitor for drift." Place dye cards at the edge of protected habitat. Follow the methods in the Monitoring for Human Health section starting on page 7.

MONITORING FOR RUN-OFF

Use water sampling when a protection measure says to "Monitor for run-off." Find the location where the field drains into protected habitat (usually a stream, river, or lake) and collect samples following the methods in the Drinking Water Monitoring section starting on page 8.

Monitor weather and cancel treatments if rain is expected within 8 hours. If it rains at a monitored field within five days after the last treatment, then collect two water samples within 12 hours of when the rain began. Collect one water sample upstream from where the field drains into the water, and collect one water samples downstream from where the field drains into the water.

MONITORING WATER

A few species require water sampling as a protection measure, but these species have not been in Program treatment areas in the recent past. If one of these species is reported to be near a treatment area this year, contact the ECT for information on appropriate methods to protect and sample the water body in question.

DISCRETIONARY MONITORING

Additional monitoring can be conducted at the discretion of Program managers. Although the monitoring in this plan should be adequate to meet the objectives, additional sampling may be necessary around particular sensitive sites. Examples might include sites where there have been problems or complaints in previous years, sites that are highly visible to the public or are politically sensitive, and sites where environmental monitoring might help prevent future concerns.

OPERATIONAL PROCEDURES AND MITIGATION MEASURES

These operational procedures and mitigation measures have been adapted for, and are an integral part of, the cooperative Boll Weevil Eradication Program. They were originally printed in the programmatic Environmental Impact Statement, and have been revised as needed.

TABLE 2-1 OPERATIONAL PROCEDURES

ALL METHODS OF CONTROL

1. Follow all applicable Federal, State, and local environmental laws and regulations during boll weevil control operations.
1. Identify sensitive areas adjacent to cotton fields (including water bodies, parks, and occupied dwellings, such as homes, schools, churches, hospitals, and recreation areas). Adjust the Program accordingly to ensure these areas are not negatively affected.
2. Conduct environmental monitoring in accordance with the environmental monitoring plan.
3. During the first year of the Program, treat all cotton fields after fields have reached “10 percent cracked boll” stage. Continue treatments until fields are non-hostable following harvest. In subsequent years, do not apply pesticide to a cotton field unless it has hostable fruit present and weevils are caught (trap triggers are exceeded), or a boll weevil infestation is detected by in-field inspection.
4. All Program staff involved in chemical applications will be instructed on the safe use of malathion, the safe use of equipment, and on operational procedures. Field supervisors will train field technicians, mist-blower operators, and high-clearance sprayer operators on operational procedures, and monitor their conduct during working hours.

AERIAL APPLICATIONS

1. Apply all pesticides in strict accordance with EPA- and State-approved label instructions.
2. Do not conduct aerial application of pesticides over sensitive areas.
3. Aircraft, spray equipment, and pilots must meet all contract requirements before being allowed to operate.
4. All APHIS employees who plan, supervise, recommend, or perform pesticide treatments must be certified under the APHIS pesticide certification plan. These employees are also required to meet any additional requirements of the State where they perform duties involving pesticide use. All Foundation staff involved in pesticide application must maintain State pesticide applicator certification as required by State law.
5. After treatment, Program staff will notify growers, who will advise their workers of the re-entry period.
6. Two-way radios or aircraft radio frequencies will be provided to Program staff who direct, coordinate, or observe pesticide applications, to facilitate communication with the pilot.
7. All APHIS field staff will have baseline cholinesterase tests before the first application and each spring and fall thereafter. Contract, State, and private staff are recommended to participate in this testing program.
8. The Program will only use certified aerial applicators who have been familiarized with local conditions.

9. To minimize drift and volatilization, do not apply pesticide when any of the following conditions exist in the treatment area: wind velocity exceeds 10 miles per hour (or less if required by State law); prevailing wind is blowing toward a nearby residence or other sensitive site; rain is falling or is imminent; fog is present, or air is turbulent enough to seriously affect the normal spray pattern; or temperature inversions exist that could lead to offsite movement of applied material.
10. Specify nozzle types and sizes, spray system pressure, and nozzle orientation will be specified in the program's aerial application contract or otherwise directed by Program staff.
11. In the Lower Rio Grande Valley, apply aerial applications of pesticides at a height of 5 feet or less above the cotton canopy, unless precluded by obstructions.

GROUND APPLICATIONS WITH MIST-BLOWERS OR HIGH-CLEARANCE SPRAYERS

1. Operators will be certified applicators, or will be in constant radio or cell phone contact with certified applicators.
2. Operate equipment from closed truck cabs with operators using re-circulated air.

TABLE 2-2 RECOMMENDED MITIGATION MEASURES

1. The Program will notify all required State and local authorities before treatments begin.
2. The notification will advise State and local authorities of the need for any assistance in identifying sensitive areas in proposed treatment areas.

PROTECTION OF WORKERS

1. Instruct application staff on emergency procedures for pesticide exposure.
2. Provide application staff with the equipment necessary for immediate washing procedures.

AERIAL APPLICATIONS

1. Advise pilots, loaders, and other staff handling pesticides to wear safety equipment and protective clothing.
2. Require Program staff observing malathion applications to wear protective clothing or remain inside a closed vehicle with re-circulating air, depending on the circumstances of the application.
3. Postpone application operations in fields in which people are working. Do not treat fields when workers are present.
4. Require GPS systems on all contract aircraft. Use GPS for pilot guidance, mapping fields to be treated, and assistance in locating fields and marking swaths.

GROUND APPLICATIONS WITH MIST-BLOWERS OR HIGH-CLEARANCE SPRAYERS

1. Operators will be certified applicators, or will be in constant radio or cell phone contact with certified applicators.
2. Operators will wear appropriate safety equipment when loading or servicing the unit and will receive specific training as needed for the equipment.
3. Operate equipment from closed truck cabs with operators using re-circulated air.

PESTICIDE HANDLING PRECAUTIONS

1. To the extent possible, deliver and briefly store malathion in 260-gallon returnable, refillable totes (mini-bulk containers). Pump malathion directly from these containers into the spray equipment. This will minimize the potential for leaks or spills and will prevent prolonged exposure to heat.
2. Store pesticides in accordance with label instructions and Federal, State, and local regulations.
3. Load and unload pesticides within a containment area where an accidental spill will not contaminate a stream or other body of water.
4. In the event of an accidental spill, follow procedures in the PPQ Treatment Manual, chapter 7, pages 7-3-1 through 7-3-18, entitled, "Guidelines for Managing Pesticide Spills" at http://go.usa.gov/cnzne.
5. Return all empty insecticide totes (mini-bulk tanks) and drums to the distributor for reconditioning.
6. In the Lower Rio Grande Valley, use only malathion, the least toxic of available organophosphate insecticides.

PROTECTION OF THE PUBLIC

1. Avoid direct spraying of residences, garden plots, and adjacent crops at all times.
2. Immediately cease spraying operations if members of the public are observed within 100 feet of the treatment area.

PROTECTION OF BEES

Before beginning treatment with malathion, notify all registered apiarists in or near the treatment area of the date and approximate time of treatment.

PROTECTION OF WILDLIFE

1. Conduct all control operations with appropriate concern for potential impacts protected species identified in this document.
2. Use oil-sensitive dye cards to monitor application efficacy, including spray deposition in the target area and droplet size.
3. APHIS has prepared a biological assessment for protected species found within all U.S. cotton-producing counties from species information provided by the U.S. Department of the Interior, Fish and Wildlife Service (FWS) and State wildlife agencies.
4. Before operations begin, APHIS will obtain concurrence from the U.S. Fish and Wildlife Service on required protection measures for endangered and threatened species and their critical habitats. Specific biological and distributional data for species is gathered in discussions between APHIS, local FWS offices, State wildlife agencies, and the Foundation. Adequate protection measures are developed for protected species through the Endangered Species Act, section 7, formal and informal consultations with FWS.
5. Address species and habitats protected by State laws in site-specific assessments as needed.

OPERATIONAL PROCEDURES AND MITIGATION MEASURES CHECKLIST

Work Unit/District/Zone/Program: _____

Modify this checklist as needed for each work unit, district, zone, or Program area. At the end of 2016 pesticide applications, sign this form and submit to the ECT: Anastasia.L.Bodnar@aphis.usda.gov or Anastasia Bodnar, 4700 River Road, Unit 150, 4C-01.39, Riverdale, MD 20737.

ENVIRONMENTAL MONITORING

_____ Retained copies of data collection forms for all collected samples.

_____ Labeled dye card bags with field number, date, and time of application. Send spotted cards to the designated laboratory for analysis.

_____ Maintained a list of trapped cotton fields, dates traps were checked, and dates fields were treated.

_____ Documented all local contacts with U.S. Fish and Wildlife Service concerning protected species habitat and protection measures.

_____ Identified sensitive sites in each field unit and applied appropriate protective measures to avoid negative impact. Program staff reviewed sensitive sites with field unit supervisors each spring prior to pesticide application, assess the sites for environmental monitoring sampling, and provide appropriate seasonal review.

_____ Reviewed Tables 2-1 and 2-2 in the Operational Procedures and Recommended Mitigation Measures with all appropriate staff. Distributed copies as appropriate.

_____ Documented and retained copies of complaints, investigations, and resolutions. Referred complaints involving alleged pesticide misuse to appropriate authorities. Submitted copies of all incident documentation to the Environmental Compliance Team.

PESTICIDE SAFETY

_____ Retained copies of pesticide certifications for all staff, including contractors, who apply or supervise the application of pesticides, prior to initial pesticide application.

_____ Reviewed all pesticide certifications twice per year.

_____ Tested each employee involved with pesticide use for blood acetyl cholinesterase levels as necessary. Retained copies of cholinesterase tests in each employee's folder.

_____ Had each employee involved in pesticide application sign a safety equipment check-off list. Retained copies of the signed check-off list in each employee's folder.

_____ The Program safety manual, including pesticide safety, was available to all employees.

_____ All persons involved with pesticide application carried pesticide labels in their vehicle.

_____ Returned empty pesticide containers to the distributor.

TRAINING

_____ Issued instructions for operational procedures to each employee as appropriate:

- _____ Trapper Guide and Trapper Agreement
- _____ Mist-Blower Operational Guide
- _____ Hi-Boy Operational Guide
- _____ Airplane Observer Duties
- _____ Airport Recorder Duties
- _____ BWEP Safety Manual

_____ Familiarized all applicators with applicable operational procedures, mitigation measures, and protection measures.

_____ Conducted mist-blower and hi-boy operator training. Had each employee sign a statement that they received training. Retained copies of signed statements in each employee's folder.

_____ Program supervisory staff monitored at least one mist-blower operator or hi-boy operator each week during the control season. Noted dates of monitoring in the equipment log book.

AIRCRAFT

_____ All aircraft had global positioning systems (GPS) that generate a record of pesticide application.

_____ Maintained two-way radio contact between pilots and ground observers.

_____ Kept a record of meteorological conditions during treatments.

_____ Airplane check-in procedures certified nozzle type, size and number, spray system pressure, nozzle orientation, etc. Retained a check-in list and subsequent seasonal inspections in the work unit, district, or Program area office for each aircraft used in the Program.

_____ Program supervisory staff monitored a minimum of one aerial application operation each week for each contractor. Noted dates of monitoring on flight records.

NOTICE TO OTHER AGENCIES (AS NEEDED)

_____ The following agencies were notified before initiation of Program operations:

- _____ State Department of Agriculture or similar agency
- _____ State Conservation and National Resources Agency or similar agency
- _____ State Forestry Commission or similar agency
- _____ State Department of the Environment or similar agency
- _____ Local governmental and county agencies. (List specific agencies as appropriate.)

_____ Notification letters included a request for assistance in identifying potential sensitive sites.

Any corrective actions or pesticide incidents have been documented. A short summary of each incident:

_____

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These procedures were performed during the 2016 season. Minor deviations were corrected when observed.

_____ _____

Signature Date

ENVIRONMENTAL MONITORING SUPPLIES CHECKLIST

Use this form to indicate the number of items to take to the field or the number of items being ordered. To order supplies, indicate the quantity of each item needed. Send your completed form to Robert Smith of APHIS-CPHST via fax (228) 822-3137 or email Robert.D.Smith@aphis.usda.gov.
CPHST may not be able to fill orders for large quantities of materials.

Program: _____ Requested by: _____

Date: _____ Phone: _____

Address: _____

General supplies		**Dye cards**	
Monitoring plan/SOP's	From ECT	Oil-sensitive dye cards (one card per package)	
Field log notebook		Water-sensitive dye cards (two paired cards per package)	
2060 monitoring forms		5' bamboo poles/stakes	Obtain locally
Indelible marker	Obtain locally	Paper/alligator clips	Obtain locally
12" x 12" resealable plastic bags		Tacks/nails	Obtain locally
Styrofoam coolers for mailing		Tweezers	Obtain locally
Shipping label to NSL or AQI lab		Nitrile gloves (box of S,M,L,XL)	Indicate size
Packing/strapping tape		**Vegetation, fish, insect, and animal samples**	
Ice chest and dry or blue ice	Obtain locally	Pruning shears/scissors	Obtain locally
Soil samples		Tweezers/forceps	Obtain locally
Hand trowel	Obtain locally	Packing/strapping tape	
10" x 14" foil envelopes		10" x 14" foil envelopes	
Pure chemical samples		**Water samples**	
Amber glass bottle (2 ounce size)		Cubitainer (gallon size)	
Disposable pipette and bulb		Cubitainer (liter size)	
Small mailing tubes		Sodium sulfate (small vials)	
Protective eyewear		pH paper (0-14 range)	
Nitrile gloves (box of S,M,L,XL)	Indicate size	Acid or base (in a squeeze bottle)	Obtain locally

PROTECTED SPECIES REPORTING FORM

Use this or a similar form to document annual contact with the U.S. Fish and Wildlife Service (FWS). For each species near fields that will be treated, describe the fields and what protection measures will be implemented. Use additional space as needed. Before starting treatments, return completed forms to the APHIS Environmental Compliance Team: Anastasia Bodnar Anastasia.L.Bodnar@aphis.usda.gov or 4700 River Road, Unit 150, 4C-01.39, Riverdale, MD 20737.

Work Unit/District/Zone/Program: _____

FWS contact name and position: _____

Species	**Field number(s), size (acres), and location (GPS coordinates)**	**Distance from habitat to field**	**Protection measures**

PROTECTION MEASURES FOR PROTECTED SPECIES

The following is a list of endangered, threatened, proposed, and other protected species and their expected protection measures for the following 25 counties only: Atascosa, Brooks, Cameron, Dimmit, Duval, Frio, Gonzales, Hidalgo, Jim Hogg, Jim Wells, Karnes, Kenedy, Kinney, Kleberg, La Salle, Live Oak, Maverick, Medina, Starr, Uvalde, Webb, Willacy, Wilson, Zapata, and Zavala. If additional counties might be treated, contact ECT as soon as possible.

KEY
Status: **E**=Endangered; **E,CH**=Endangered w/ Critical Habitat; **T**=Threatened; **T,CH**=Threatened w/ Critical Habitat; **PE**=Proposed Endangered; **PT**=Proposed Threatened w/Proposed Critical Habitat; **PE,PCH**=Proposed Endangered w/Proposed Critical Habitat; **XN**=Experimental Population; **BGE**=Federally protected under the Bald and Golden Eagle Protection Act.
Protection measures: **NE**=APHIS determines that the Boll Weevil Program will have No Effect on populations of this protected species.
Changes: Shaded rows indicate additions or changes to the protection measures table from previous years. Shaded protection measure boxes are proposed but generally represent measures already agreed upon.

Species common name	**Species scientific name**	**Status**	**Protection measures**
		MAMMALS	
Jaguarundi, Gulf Coast	*Herpailurus (=Felis) yagouaroundi cacomitli*	E	Monitor drift at habitat edge if field is within 300 feet of habitat.
Manatee, West Indian	*Trichechus manatus*	E, CH	NE – Excluded by habitat
Ocelot	*Leopardus (=Felis) pardalis*	E	Monitor drift at habitat edge if field is within 300 feet of habitat.
		BIRDS	
Crane, whooping	*Grus americana*	E, CH, XN	Trained observer at site prior to each treatment. If crane is present, postpone treatment.
Cuckoo, yellow-billed (Western U.S. DPS)	*Coccyzus americanus*	T, PCH	
Eagle, bald	*Haliaeetus leucocephalus*	BGE	During the nesting season, no aerial applications within 1,000 feet of eagle nests, no ground applications within 660 feet of nests, and no pesticide use within 60 feet of large water bodies (25 feet across) within a one mile radius of nests.
Eagle, golden	*Aquila chrysaetos*	BGE	During the nesting season, no aerial applications within 1,000 feet of eagle nests, no ground applications within 660 feet of nests, and no pesticide use within 60 feet of large water bodies (25 feet across) within a one mile radius of nests.
Knot, red	*Calidris canutus rufa*	T	NE – Excluded by habitat
Falcon, northern aplomado	*Falco femoralis septentrionalis*	E	No aerial use within 1 mile or ground use within ¼ mile of nesting sites or release stations.
Plover, piping	*Charadrius melodus*	T, CH	NE – Migratory and excluded by habitat

Species common name	Species scientific name	Status	Protection measures
Tern, least (Interior)	*Sterna antillarum*	E	No aerial or ground use within 300 feet of a colony and no use within 60 feet of the water's edge for 2.5 mile radius around the colony. Monitor for run-off.
Vireo, black-capped	*Vireo atricapillus*	E	From March 1 to Sept 1 implement the following measures: Avoid drift into potential habitat. Monitor drift if cotton fields within 500 feet of potential habitat. No fly-over habitat. Swaths parallel to habitat edge.
Warbler, golden-cheeked	*Dendroica chrysoparia*	E	From March 1 to August 1 implement the following measures: Avoid drift into potential habitat. Monitor drift if cotton fields within 500 feet of potential habitat. No fly-over habitat. Swaths parallel to habitat edge.
REPTILES			
Sea turtle, green	*Chelonia mydas*	E, T, CH	NE – Excluded by habitat
Sea turtle, hawksbill	*Eretmochelys imbricata*	E, CH	NE – Excluded by habitat
Sea turtle, Kemp's ridley	*Lepidochelys kempii*	E	NE – Excluded by habitat
Sea turtle, leatherback	*Dermochelys coriacea*	E, CH	NE – Excluded by habitat
Sea turtle, loggerhead (Northwest Atlantic Ocean DPS)	*Caretta caretta*	T, CH	NE – Excluded by habitat
FISH			
Minnow, Devil's River	*Dionda diaboli*	E, CH	No aerial use within 100 feet and no ground use within 60 feet of identified aquatic habitat. Monitor for drift and run-off.