City of Corpus Christi

Pesticide Discharge Management Plan

Environmental Services Department

P.O. Box 9277

Corpus Christi, Texas 78469-9277

(361) 826-3245

Prepared pursuant to the General Permit to Authorize Point Source Discharge of Biological Pesticides and Chemical Pesticides that Leave a Residue in Water – Texas Pollutant Discharge Elimination System General Permit No. TXG870000, effective November 2, 2011.

Revised 10/24/2016

Sharon Bailey Lewis, CHMM, CSI,CESCO

City of Corpus Christi
Pesticide Discharge Management Plan
Texas Pollutant Discharge Elimination System
General Permit No. TXG870000

Signature Page

I, **Margie C. Rose** Title: **City Manager**
(Typed or printed name)

Certify under penalty of law that this document and attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Signature: _____ Date: _____

Subscribed and Sworn to before me by the said _____
(Title)

on this _____ day of _____, 20_____

My commission expires on the _____ day of _____, 20_____.

_____
Notary Public [SEAL]

_____
County, Texas

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APPENDICES

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LIST OF ABBREVIATIONS

EPA	United States Environmental Protection Agency
NJLT	New Jersey Light Traps
NOI	Notice of Intent
PDMP	Pesticide Discharge Management Plan
PGP	Pesticide General Permit
TCEQ	Texas Commission on Environmental Quality
TDA	Texas Department of Agriculture
US	United States

1.0 INTRODUCTION

The Texas Commission on Environmental Quality (TCEQ) regulates the point source discharge of biological and chemical pesticides that leave a residue in water through General Permit No. TXG870000, also known as the Pesticide General Permit (PGP). The PGP became effective on November 2, 2011, and applies to entities that discharge pesticides to waters of the United States (U.S.).

In anticipation of the issuance of the PGP, the City of Corpus Christi (City) conducted an inventory of pesticide application activities to determine whether the pesticide application activities conducted by the City would be regulated by this permit. The results of the inventory indicated that the City's pesticide use patterns were subject to provisions in the PGP. In accordance with the PGP, the City is considered a Level IA operator. A Level IA operator must obtain permit authorization and comply with permit provisions. Authorization is obtained by submitting a Notice of Intent (NOI) to the TCEQ. Provisions in the PGP require Level IA operators to prepare and implement a Pesticide Discharge Management Plan (PDMP). The PDMP describes pesticide application activities and response procedures. It is a "living document" meaning it is subject to being updated as necessary in order to improve pesticide application procedures for activities regulated by this permit. In accordance with the PGP, the following elements must be included in a PDMP:

- Pesticide Discharge Management Team
- Problem Identification
- Evaluation and Selection of Pest Management Strategies
- Response Procedures

This PDMP satisfies requirements in the PGP and provides a tool for managing records of pesticide applications covered under the PGP. The PDMP may also serve as a records management tool for pesticide applications not required for coverage by the PDMP. The City applies pesticides, such as mosquito larvicides, that are applied to waters of the U.S., but in amounts that do not exceed thresholds listed in the PGP. Although inclusion of these pesticide applications in the PDMP is not required, records and other documentation may be filed along with this PDMP for logistical purposes.

This PDMP includes the following Appendices, which are referenced from time to time throughout this document:

APPENDIX A: General Location Map – This map indicates the Pest Management Area and Treatment Areas within the City.

APPENDIX B: Pesticide General Permit – This is a complete copy of the PGP for reference purposes.

APPENDIX C: Notice of Intent for Level 1A Operators – This is a copy of the current NOI that was submitted to the TCEQ Central office in order to obtain PGP permit coverage.

APPENDIX D: Acknowledgement Letter from Texas Commission on Environmental Quality – This is a copy of the TCEQ's acknowledgement that the NOI was submitted and has been accepted by the TCEQ.

APPENDIX E: Adverse Incident Notifications and Reports – Copies of any Adverse Incident Notifications and Reports are maintained in this appendix (See PGP Part III, Sections F.2 and F.3 for required information).

APPENDIX F: Spill or Leak Notifications and Reports – Copies of any spill or leak reports are maintained in this appendix (See PGP Part III; Sections F.4 and F.5 for required information).

APPENDIX G: Pesticide Application Log and Reports – A record of pesticide application events is maintained in this appendix. In addition, reports of changes made as a result of unauthorized releases or discharges are maintained in this appendix.

APPENDIX H: Pesticide Discharge Management Plan Modification Log – This appendix includes a record of changes made to the PDMP. The actual changes will be incorporated directly into the PDMP, where appropriate.

APPENDIX I: Other Noncompliance Reports – Any reports to the TCEQ of non-compliance are maintained in this appendix. (See PGP Part III, Section F.6 for required information).

APPENDIX J: Annual Reports – Copies of annual reports, as required by the PGP, are maintained in this appendix. (See PGP Part III, Section F.1 for required information)

APPENDIX K: Certifications and Licenses – Copies of pesticide applicator certifications and licenses currently held by the City are maintained in this appendix.

In accordance with Part III, Section D.3 of the PGP, a copy of this PDMP will be maintained at the address provided in the NOI and made immediately available to the TCEQ upon request.

2.0 PESTICIDE DISCHARGE MANAGEMENT TEAM AND RESPONSIBILITIES

Table 2-1 provides a list of the team members responsible for pesticide management activities within the City. The following satisfies requirements described in Part III, Section D.1.a. of the PGP.

Table 2-1
Pesticide Discharge Management Team and Responsibilities

Decision-Maker: *Person responsible for managing pests in the pest management area*	
Department:	Animal Control
Title:	Program Manager
Name:	Captain William Broyles
Address:	2626 Holly Road
City, State, Zip Code:	Corpus Christi, Texas 78415
Telephone Number:	(361) 826-4602
Email Address:	Williambr@cctexas.com
PDMP Contact: *Person responsible for developing and revising the PDMP*	
Department:	Environmental Services
Title:	Environmental Program Specialist
Name:	Sharon Bailey Lewis
Address:	P.O. Box 9277
City, State, Zip Code:	Corpus Christi, Texas 78469-9277
Telephone Number:	(361) 826-4066
Email Address:	SharonL@cctexas.com
Corrective Actions Contact: *Person responsible for developing, revising, and implementing corrective actions and other effluent limitation requirements*	
Department:	Environmental Services
Title:	Environmental Program Specialist
Name:	Sharon Bailey Lewis
Address:	P.O. Box 9277
City, State, Zip Code:	Corpus Christi, Texas 78469-9277
Telephone Number:	(361) 826-4066
Email Address:	SharonL@cctexas.com
Pesticide Applicator(s): *Person(s) responsible for applying pesticides*	
Department:	Animal Control
Title:	Supervisor
Name:	Danni Alcantara
Address:	2626 Holly Road
City, State, Zip Code:	Corpus Christi, Texas 78415
Telephone Number:	(361) 826-1304
Email Address:	DanniA@cctexas.com
Additional Team Members	
Responsibility:	Name:
1. Pesticide Applicator	Blas Sanchez
2. Pesticide Applicator	Jose “Tony” Pantoja
3. Pesticide Applicator	Benny Alaniz

3.0 PROBLEM IDENTIFICATION

This section describes the pest problem, provides action thresholds for pest management, lists any pesticide water body impairments, and provides procedures to determine target pest densities. The following satisfies requirements described in Part III, Section D.1.b. of the PGP. The following terms are used in this section and throughout the PDMP:

- Pest management area – A contiguous area of land where the permittee is responsible for and is authorized to conduct pest management activities under the PGP. In this case, the term "land" includes waters of the U.S.
- Treatment area – An area of land within the Pest Management Area where pesticides are being applied at a concentration adequate to control the targeted pests.
- Action Threshold – The point at which pest populations cannot be tolerated for economic, human health, aesthetics, or other reasons. Reaching an Action Threshold necessitates the implementation of "action threshold procedures" including pest control actions aimed at mitigating the pest problem.
- Pesticide use patterns – A description of the type of pests being controlled and/or the location and method of pesticide application.
- Adverse Incident – An incident involving pesticides covered under the PGP in which there is evidence that a person or non-target organism has probably been exposed to the pesticide; and in which the affected person or non-target organism suffered a toxic or adverse effect.

Additional discussion of these terms may be found in Appendix B, which is a copy of the Pesticide General Permit.

3.1 Pest Problem Description

The description of the pest problem includes identification of the geographic boundaries of the pest management area, discussion of the pesticide use patterns, and identification of target pests in the City.

3.1.1 Pest Management Area Geographic Boundaries

Corpus Christi, located in the coastal bend of Texas, consists of approximately 500 square miles of incorporated area. Approximately 160 square miles (or 30%) is land, and 340 square miles is water. Figure A-1 in Appendix A is a general location map of the designated area covered by the City's PGP. The figures in Appendix A illustrate that there are a number of water bodies within the City considered to be waters of the U.S. These include the classified receiving waters represented in Table 3-1 and Figure A-2 of Appendix A. The City also owns two reservoirs on the Nueces River, Choke Canyon Reservoir and Lake Corpus Christi. These water bodies are not within the corporate boundaries of the City, and because of limited pesticide application activities by the City, are not considered to be under jurisdiction of the

City's PGP. Although the City's drinking water reservoirs are outside the City limits, there are several classified water bodies within the City (Table 3-1 and Appendix A).

Table 3-1
Classified Receiving Waters within the City Limits of Corpus Christi

Receiving Water	Segment #
Nueces River Tidal	2101
Nueces River	2102
Corpus Christi Bay	2481
Nueces Bay	2482
Inner Harbor	2484
Oso Bay	2485
Oso Creek	2485(a)
Laguna Madre	2491
Gulf of Mexico	2501

Figures A-1 and A-2 of Appendix A demonstrate that waters of the U.S. are scattered throughout the City and range from small streams to major rivers and bays. Since there is such a predominance of water bodies throughout the area, potential mosquito pest problems cannot be isolated to one particular area. Therefore, the pest management area for aerial spraying of adult mosquito pesticides is defined as the corporate boundaries of the City of Corpus Christi.

3.1.2 Pesticide Patterns for Each Treatment Area

The treatment areas identified in Figures A-3 through A-34 in Appendix A are associated with pesticide use patterns for control of adult mosquitoes. Although the City may apply other types of pesticides for other treatment areas, applications are not conducted in amounts that exceed thresholds listed in the PGP. Therefore, their inclusion in this PDMP is not required. If the City commences new pesticide use patterns that require inclusion in the PGP, the PDMP will be modified accordingly.

3.1.3 Target Pests

In the City of Corpus Christi, mosquitoes can represent both a domestic pest problem and a vector-borne disease risk pest problem. The City's Vector Control Department addresses each of the pest problems separately, using pest management strategies tailored to each type of pest problem. Two pest management processes and protocols for identifying action thresholds exist for each of the pest problems. The following describes the two pest problems and respective Action Threshold procedures.

3.1.4 Domestic Pest Problem

Mosquitoes as domestic pests are considered a nuisance to humans because of their propensity to inflict uncomfortable bites. However, the nuisance mosquitoes do not carry disease. Seven nuisance mosquito species have been identified in the City. These species include:

- *Aedes aegypti*: The yellow fever mosquito is named for its ability to spread yellow fever and dengue fever in temperate areas; however, it is not known to carry disease in Texas. The species is active during the day and tends to prefer water-filled artificial containers for breeding, as may be found in outdoor areas around the City.

- *Aedes taeniorhynchus*: The black salt-marsh mosquito can be found breeding in marshes, ditches, yards, and wooded areas. The species is active during the day and can become abundant after high tides and/or heavy rains.

- *Aedes sollicitans:* The eastern salt-marsh mosquito is a fairly-large mosquito that can be a serious pest along the immediate coast. It is active during both daytime and nighttime periods, and can fly great distances from its original source.

- *Aedes albopictus*: The Asian tiger mosquito is an invasive species, first found in Houston in 1986. This species is an artificial container-breeding mosquito, and is commonly associated with more-urbanized areas. It is a fierce daytime biter and a major nuisance mosquito within the City.

- *Psorophora columbiae*: The dark rice field mosquito prefers livestock, but can also be found in urban areas. The species is commonly found in fields, yards, and large pastures. They are active during the day and can fly great distances from its original source.

- *Psorophora cyanscens:* This species is active during both daytime and nighttime periods. The species prefers wooded areas, but may be found in fields and yards.

- *Psorophora ciliala*: The species is commonly referred to as the "shaggy-legged" gaillinipper, and is the largest blood sucking mosquito in the U.S. They typically breed in fields, temporary ground pools and ditches and are active during daytime and nighttime periods.

The Vector Control Department monitors the densities of mosquitoes throughout the City and takes action to control mosquito populations, when necessary. A description of how mosquito densities are determined is provided in Section 3.2.

3.1.5 Vector-Borne Disease Pest Problem

There is only one mosquito species present in the City that is known to be a source of vector-borne disease. The *Culex quinquefasciatus* is commonly referred to as the "southern house mosquito." The species is prevalent in subdivisions because of their proclivity for storm drains and ditches. Transmitted diseases of concern include West Nile Virus, St. Louis Encephalitis and Eastern Equine Encephalitis. These diseases have been known to result in death in humans, domesticated mammals, and wildlife. The City monitors the presence of disease transmission in mosquitoes and takes action to control mosquito populations, when necessary. A description of how the City monitors for disease transmission is found in Section 3.2.

3.2 Action Threshold

An action threshold is the point at which pest populations or environmental conditions necessitate pest control action be taken based on economic, human health, aesthetic, or other effects. An action threshold may be based on current and/or past environmental factors that are or have been demonstrated to be conducive to pest emergence and/or growth, as well as past and/or current pest presence. Action thresholds are those conditions that indicate both the need for control actions and the proper timing of such actions. The Action Thresholds for mosquitoes as domestic pests and as vector-borne disease pests are described below.

3.2.1 Mosquitoes as Domestic Pests

Mosquitoes rely on standing water to complete the reproductive cycle, and are most prevalent after high tide or heavy rains. Therefore, a substantial rain event is the impetus for monitoring adult mosquito pest densities in the City. A substantial rain event is defined as a minimum of three inches of rain in a seven-day period, measured at rain gauges operated by the National Weather Service at the South Texas Botanical Gardens and Nature Center.

Following a substantial rain event, Vector Control staff install New Jersey Light Traps (NJLT) in nine locations throughout the City to collect adult mosquito samples. Staff manually count the number of adult mosquitoes captured in each NJLT. If the adult mosquito density is 50 or greater, then the City commences pest management strategies for mosquito population control. Therefore, the Action Threshold for adult mosquitoes as domestic pests is 50 individuals captured in a NJLT in 12 hours. This Action Threshold was determined based on years of experience and success in control using this method in the City of Corpus Christi.

Complaints from citizens may also be used as an Action Thresholds for Mosquitoes as Domestic Pests. In addition, based on a service request, limited area treatments may be conducted prior to special events or community functions.

3.2.2 Mosquitoes as Vector-Borne Disease Pests

Mosquitoes as vector-borne disease pests are monitored to ensure that action is taken if disease transmission is present in the City. Each year between May 1 and October 31, vector-borne disease surveillance is performed on a weekly basis. Gravid traps are deployed at approximately 30 designated sites throughout the City to collect live mosquito samples for laboratory analyses. Gravid traps use a liquid attractant to collect and contain live female *Culex quinquefasciatus* mosquitoes. After 24 hours of gravid trap deployment, City staff retrieve the traps and collect the live mosquito samples. These live samples are retained by City staff for less than 24 hours before being shipped via FedEx to the laboratory. The laboratory performs vector tests to analyze for the presence of viruses in mosquito tissue. Within one week and a half, the laboratory sends test results to City staff. If results indicate that a mosquito is a carrier of any of the viruses analyzed, then the City commences vector-borne disease risk pest management strategies for population control. Therefore, the Action Threshold for mosquitoes as vector-borne disease pests is the presence of a virus in the mosquito sample. This Action Threshold was determined based on years of experience and success in control using this method in the City of Corpus Christi.

3.3 Water Body Impairments

Of the nine classified water bodies within the City limits, five are listed as Category 5 in the *2010 Texas Integrated Report – Texas 303(d) List (Category 5)*. Impairments for the water bodies are for depressed dissolved oxygen, mercury in fish tissue, and bacteria. There are no impairments for pesticides or pesticide degradates.

3.4 Target Pest Densities

Procedures to establish target pest densities are based upon past experience and constant monitoring. The action thresholds for mosquitoes as domestic pests have been made based upon decades of pesticide application experience. This action threshold has been sufficient in controlling mosquito populations for years. Monitoring of pest densities in conjunction with receipt of phone calls from the public helps the City remain diligent in the monitoring of mosquito populations. If it is determined that the current action threshold is not sufficient, then the City will make changes accordingly.

The target pest density is zero viruses in the vector-borne disease pest sample, and is based on past experience. The target pest density for vector-borne disease pests is not likely to change.

4.0 EVALUATION AND SELECTION OF PEST MANAGEMENT STRATEGIES

The PGP requires the PDMP to include an evaluation and selection of pest management strategies. Strategies are selected that most-successfully minimize discharges resulting from application of pesticides, including the use of pesticide and non-pesticide methods. The evaluation must be based upon considerations such as impact to water quality, impact to non-target organisms, pest resistance, feasibility, and cost effectiveness. The following satisfies requirements described in Part III, Section D.1.c. of the PGP.

4.1 Evaluation of Pest Management Strategies

For a large municipality, several pest management strategies may be considered viable options for controlling mosquito populations. For each of these viable options, an evaluation of the selection of pest management strategies is described in the following sections.

4.1.1 No Action

The No Action Strategy, or delayed action, may be implemented by the City to control mosquito populations. However, No Action is only used in conjunction with more-comprehensive strategies. The City uses No Action as a strategy in the period between the use of other strategies, such as Biological Control Agents and Pesticide Applications. No Action may be taken when breeding sites are shallow and not conducive to mosquito larval activity, such as during extended dry weather conditions.

No Action has no adverse impact on water quality or resistance to pesticides. The use of solely No Action as a pest management strategy is not feasible and may not be cost-effective in the long-term. No Action has an impact to non-target organisms such as humans. By not attempting to control mosquito populations, domestic pests would become more prevalent and, therefore, more of a nuisance and the incidence of vector-borne disease could increase.

4.1.2 Prevention

Prevention of mosquitoes is an effective strategy on a small-scale basis, but is not likely to significantly reduce the prevalence of mosquitoes city-wide. Prevention strategies include (1) removal of sources of standing water to prevent female mosquitoes from laying eggs; and (2) mowing of grass around ponds to reduce mosquito habitat.

Prevention has no adverse impact on water quality, non-target organisms, or pest resistance. This strategy is ideal for homeowners and small businesses, who are encouraged to remove mosquito breeding sources around their property and keep lawns maintained. The City currently implements several prevention strategies in conjunction with more-comprehensive strategies, but Prevention as a sole strategy would not be feasible. Prevention is a cost-effective measure on a small scale, but would be costly and time-consuming for the City staff to identify and remove all potential sources of stagnant water or mow grass more often than already conducted. In addition, implementation of solely this strategy is not feasible since the City cannot access private property to implement Prevention measures.

4.1.3 Physical and Mechanical Methods

Physical or mechanical removal of mosquitoes is not a viable option for a large municipality since physical capture is simply not feasible on a scale that would be necessary to effectively control them. This strategy has no adverse impact on water quality. Non-target Dipterans (flies) and other insects could be affected if detained in a capture device. This strategy is not feasible and would not be cost-effective.

4.1.4 Cultural Methods

Similar to the previous two methods, Cultural Methods manipulate larval habitat to prevent favorable conditions for mosquitoes to complete their aquatic development. The strategy may include removal of stagnant water sources, allowing water sources to dry completely, and mowing lawns. Physical manipulation of environments is sometimes a quick and effective means to control mosquito populations on a localized level; however, it is not feasible on a large scale, city-wide level.

4.1.5 Biological Control Agents

The use of biological control agents is effective in the control of larval mosquitoes. Biological control agents rely on predation, parasitism, herbivory or other natural processes to control pests. The City uses larval mosquito biological controls containing the bacterium *Bacillus thuringiensis* (Bacillus T). A toxin produced by Bacillus T causes mosquito digestive cell lysis and eventual death, when ingested by mosquito larvae. The use of this biological control agent as a pest management strategy has minimal impact to non-target organisms, with the exception of other Dipterans, which can be similarly affected by Bacillus T. Pest resistance to Bacillus T is not likely since it is not known to occur in mosquitoes. This strategy has no adverse impact on water quality. Use of a biological control agent with Bacillus T is a cost-effective and feasible method of controlling mosquito populations, when used in conjunction with other pest management strategies.

4.1.6 Pesticide Application

The application of pesticides is an effective and viable pest management strategy implemented by the City. Pesticides are insecticides, herbicides, fungicides, rodenticides, and various other substances used to control pests. The City uses aerial spraying of a mosquito adulticide for controlling mosquito populations. The pesticide is used to control mosquitoes as domestic pests and also as vector-borne disease risk pests, as discussed previously.

Pesticides as a pest management strategy have the potential to affect water quality; however, there are no water bodies in or around the City that are currently considered by the TCEQ to be Category 4 or 5 for pesticides or any pesticide degradates. The use of pesticides as a pest management strategy may affect non-target organisms such as Dipterans and other flying insects. Pest resistance to pesticides such as those used by the City has been documented in other locations, but has not been observed in Corpus Christi. The use of pesticides is a feasible strategy since the City owns equipment effective at safely dispersing the aerial adulticide. Pesticides are also a cost-effective strategy since the City already owns the equipment needed

to effectively apply pesticides. Furthermore, the cost of purchasing the adulticide is reasonably low.

4.2 Summary of Implemented Pest Management Strategies

Based on the evaluation of viable strategies, a combination of five pest management strategies may be implemented by the City for long-term control of mosquito populations: No Action (or delayed action), Prevention, Cultural Methods, Biological Control Agents, and Pesticide Applications. The City uses a combination of these five strategies in order to meet the technology-based effluent limitations outlined in the PGP. In an effort to minimize discharges to waters of the U.S. and reduce potential environmental effects, the City uses pesticides only as a last resort. When pesticides are applied, the amount and frequency are determined only in accordance with state law and the pesticide label. The City maintains records of pesticide applications that include the chemical name and amount, time, wind speed, wind direction, ambient humidity and temperature (See Appendix G). In order to minimize the total amount of pesticides applied, the City will continue to consider different application rates, frequencies or both to accomplish mosquito population control. Visual evaluations are required during and following pesticide applications to detect any possible or observable toxic or adverse effects.

5.0 RESPONSE PROCEDURES

The following satisfies requirements described in the PGP in Part III, Section D.1.d.

5.1 Spill Response Procedures

In accordance with Section D.1.d.(1) of the PGP, the City must take appropriate measures necessary to prevent spills or other unanticipated discharges of pesticides that threaten waters of the U.S. The City exercises caution in all pesticide activities, including those that do not threaten waters of the U.S. For purposes of this PDMP, the spill response procedures described following are specific to prevention of spills and clean-up of spills that threaten waters of the U.S. Additional procedures that address other potential spills are not included in this PDMP.

Applicable spill response procedures address the following issues:

- Procedures for stopping, containing and cleaning up spills.
- Equipment and training necessary to address spills and clean-up;
- Procedures and schedules to minimize potential for spills and leaks;
- Chain of command for notifications for spills; and
- State and Federal contacts.

For purposes of this PDMP, these procedures are specific to pesticide use and response to spills or leaks into or near waters of the U.S. The listed procedures address the requirements of the PGP.

5.1.1 Procedures for Stopping, Containing, and Cleaning up Leaks, Spills and Other Releases

The City is required to identify the procedures for stopping, containing, and cleaning up leaks, spills, and other releases into waters of the U.S. The following satisfies those requirements, contained in Section D.1.d.(1)(i) of the PGP.

If a pesticide spill occurs that threatens waters of the U.S., but is not immediately into waters of the U.S., field personnel at the scene will take the following actions, at a minimum:

1. Immediate steps will be taken to stop the leak from continuing. This may require stopping a pump, righting a container or sealing a hole, etc., depending on the source.
2. Leaked or leaking pesticide must be contained as quickly as possible. Spill containment devices such as absorbents, spill containment pillows, or shovels, will be used as appropriate to contain the spill. Spill control measures may include constructing a containment structure with spill containment pillows, soil, or other available materials. If necessary, secondary containment further downslope from the spill may be needed.

3. Once the leak has been stopped and contained, the incident will be reported by telephone in accordance with the chain of command for spills (see below).

4. The spill will be cleaned up using available equipment, including shovels or vacuums. If the volume of spill and clean up material is small enough to be placed in an available container (e.g., a 5-gallon bucket), then the clean-up material may be placed on the crew's vehicle. Disposal will be performed in accordance with applicable local, state, and federal laws and requirements.

5. If the volume of spill is too large to be placed in available containers, it will be necessary to call for assistance with larger equipment for cleaning up the spill and transporting it to a disposal site.

6. When the spill has been cleaned up, the status of the incident will be reported in accordance with the chain of command.

7. If there is evidence that, as a result of the spill, an "adverse incident" has occurred (i.e., a person or non-target organism has likely been exposed to the pesticide and that a toxic effect was suffered by the person or non-target organism), the Program Manager will notify the TCEQ Regional Office. Adverse incident notification must be provided within 24 hours of becoming aware of the incident. The Program Manager will follow up with an adverse incident report in accordance with the PGP.

8. Spills or leaks that are not deemed to be adverse incidents will be reported in writing to the TCEQ Regional Office within 14 days of becoming aware of the incident by the Program Manager.

If the spill is directly into or is flowing into waters of the U.S., the following additional procedures must be accomplished:

1. As soon as possible after the leak has been stopped, the incident will be reported, in accordance with the chain of command.

2. The Program Manager or his/her representative will immediately go to the scene of the spill to provide additional assessment of the situation and order additional support, if necessary.

3. If the spill is large, or if it cannot be readily stopped, the Program Manager will order a vacuum truck to the site to assist with the clean-up of the pesticide spill from waters of the U.S.

4. Although not all spills into waters of the U.S. will necessarily result in an adverse incident as defined by the PGP, all spills in which waters of the U.S. are impacted will be reported to the Regional office of the TCEQ by the Program Manager within 24 hours of becoming aware of the incident. The Program Manager will follow up with a written report to the Regional office.

5.1.2 Equipment and Training for Spills and Clean-ups

City staff associated with mosquito control using pesticides are provided appropriate equipment to manage spills and clean-ups. Each crew engaged in pesticide application has the following equipment for use in containing spills and clean-ups:

- Shovels, rakes, and brooms
- Spill containment pillows
- Absorbent clay (kitty litter)
- Spill containment boom devices

Other equipment may be added from time to time, according to need. Field crews will inspect the containment equipment regularly to ensure that it is available and in working order.

Training is provided when pesticide applicators obtain certification. In addition, the Texas Department of Agriculture (TDA) requires annual continuing education courses be taken in order to retain certification. For the most part, these continuing education courses include spill response procedure training. In addition, crews are regularly trained in the use of equipment.

5.1.3 Procedures and Schedules to Minimize Potential for Spills and Leaks

The City is required to document the procedures and schedules for maintenance activities to minimize potential for leaks, spills, and unintended or accidental release of pesticides from pesticide containers. The following satisfies those requirements, contained in Section D.1.d.(1)(iii) of the PGP. The City performs daily and weekly inspections of chemical storage buildings, pumping machinery, vehicles, and transfer lines and tubing. In addition, the City uses a software program that maintains maintenance and cleaning schedule records for pesticide application equipment. The computer program allows the City to organize and keep up-to-date with maintenance activities, as required by the PGP.

5.1.4 Internal Chain of Command for Spill Notifications

The Chain of Command for spill notifications is as follows:

- The Program Manager is notified of any spill or leak as described above.
- The Program Manager is responsible for providing appropriate spill or leak notification to the Assistant Chief of Police to whom he/she reports and to Environmental Services.
- The Assistant Chief of Police will notify the Chief of Police of any spill or leak that is considered to be an adverse incident. Spills or leaks that are not considered adverse incidents, as defined by the PGP and do not reach waters of the U.S. do not require notification of Chief of Police.
- Notification of spills or leaks to the City Manager are at the discretion of the Assistant City Manager and/or the Chief of Police.

- Notification of spills or leaks to other City officials or to the public are at the discretion of the City Manager.

Important contact information, such as internal contacts, state and federal contacts and emergency medical facility contacts are included in Table 5-1.

5.2 Equipment Maintenance Schedules and Procedures

In accordance with Section D.1.d.(2) of the PGP, the City must document the schedules and procedures for maintaining the application equipment in proper operating condition, including calibrating, cleaning, and repairing equipment. It is important to regularly maintain pesticide application equipment in order to minimize the risk of leaks that would threaten waters of the U.S. Application equipment is calibrated on at least an annual basis to ensure that application rates are appropriate. Application equipment is cleaned after each use. Repairs are made as soon as practical after a problem is observed. Application equipment is not used if it is in disrepair.

5.3 Adverse Incident Response Procedures

In accordance with Section D.1.d.(3) of the PGP, the City must take appropriate measures necessary to respond to adverse incidents. The PGP defines an adverse incident as an unusual or unexpected incident, where a person or non-target organism has likely been exposed to the pesticide; and in which the affected person or non-target organism suffered a toxic or adverse effect. Due to the nature of adverse incidents, procedures for responding to such an incident are varied and must be customized to the situation based on the organism affected, number of individuals affected, severity of the incident, location and duration of exposure, and other factors. If an adverse incident affecting human health or non-target organisms occurs, response procedures can be summarized as follows:

1. If a person is exposed to a pesticide and suffers a toxic or adverse effect, the Program Manager or his/her representative will immediately seek appropriate medical attention for the affected individual. The Program Manager will provide material safety data sheets for any suspected pesticides to medical providers as soon as possible.

2. The Program Manager or his/her representative will immediately go to the scene of the adverse incident to provide additional assessment of the situation and order additional support, if necessary.

3. Field personnel must take necessary actions to ensure that no other individuals or non-target organisms are exposed to similar circumstances. This may include barring further use of pesticides until the cause of the adverse incident is known, containing an area to prevent further human exposure to the pesticide, or cleaning up the area of pesticide application.

4. Any potential adverse incident must be reported to the TCEQ Regional Office within 24 hours of becoming aware of the potential incident. The Program Manager will follow up with a written report to the TCEQ Regional Office within 14 days of becoming aware of the adverse incident.

Important contact information, such as internal contacts, state and federal contacts and emergency medical facility contacts are included in Table 5-1. The Chain of Command for adverse incident notifications is as follows:

- The Program Manager is notified of any potential adverse incident, as described above.
- The Program Manager is responsible for providing appropriate adverse incident notification to the Assistant Chief of Police to whom he/she reports and to Environmental Services.
- The Assistant Chief of Police will notify the Chief of Police of any adverse incident.
- Notification of adverse incidents to the City Manager are at the discretion of the Assistant City Manager and/or the Chief of Police.
- Notification of adverse incidents to other City officials or to the public are at the discretion of the City Manager.

Important contact information, such as internal contacts, state and federal contacts and emergency medical facility contacts are included in Table 5-1.

5.4 Visual Evaluations

Visual observations of treatment areas will be performed by field personnel before and after pesticide application events. For the visual observation prior to treatment, field personnel will observe the following:

- Determination of whether the target pest action thresholds have been met
- Determination of expected weather conditions at the planned time of pesticide application and observations of whether conditions are conducive to proper application, including the following:
    - Identification of weather conditions that support development of target pest populations
    - Identification of weather conditions that support target pest control activities

For visual observations after treatments, field personnel responsible for pesticide application will perform spot checks of areas in and around treatment areas within 24 hours after a pesticide application within the treatment area. Any observable adverse or toxic impact that may possibly be related to the recent use of pesticides in the treatment area will be documented. Corrective actions for any observed problems will be implemented immediately.

Table 5-1
Important Contact Information

Internal Notifications Contact Information	
Sharon Bailey Lewis, Environmental Program Specialist	(361) 826-4066 office (361) 762-2562 cell
Capt. Russell Sherman, Program Manager	(361) 826-4602 office (361) 944-5313 pager
Mark Schauer, Assistant Chief of Police	(361) 886-2833
Mike Markel, Chief of Police	(361) 886-2604
External Notifications Contact Information	
TCEQ, Region 14: Corpus Christi, Texas	(361) 825-3100
TCEQ, Austin: 24-hour Spill Reporting	(512) 463-7727
State Emergency Response Center/Environmental Release Hotline	(800) 832-8224
U.S. Environmental Protection Agency (EPA) Region VI: Dallas, Texas	(800) 372-7745
National Pesticide Telecommunications Network	(800) 858-7378
National Spill Response Center	(800) 424-8802 www.nrc.uscg.mil.nrchp.html
Nearest Emergency Medical Facilities: Multiple locations (see below) Emergency Phone: 911	
Northwest	Corpus Christi Medical Center Northwest Emergency Department 13725 Northwest Blvd. Corpus Christi, Texas 78410 (361) 767-4300
	CHRISTUS Spohn Health System Memorial Hospital 2606 Hospital Blvd. Corpus Christi, Texas (361) 902-4000
Central	CHRISTUS Spohn Health System South Hospital 5950 Saratoga Blvd. Corpus Christi, Texas 78414 (361) 985-5000

Table 5-1 Important Contact Information (continued)	
Central	CHRISTUS Spohn Health System Shoreline Hospital 600 Elizabeth St. Corpus Christi, Texas 78404 (361) 881-3000
Nearest Hazardous Chemical Responder:	
Corpus Christi Police Department 321 John Sartain Street Corpus Christi, Texas 78401 Emergency Phone: 911 Non-Emergency Phone: (361) 886-2600	
Corpus Christi Fire Department Multiple locations (see below) Emergency Phone: 911	
Fire Station 1 514 Belden St. Corpus Christi, TX 78401	Fire Station 10 1550 Horne Rd. Corpus Christi, TX 78416
Fire Station 2 13421 Leopard St. Corpus Christi, TX 78410	Fire Station 11 910 Airline Rd. Corpus Christi, TX 78412
Fire Station 3 1401 Morgan Ave. Corpus Christi, TX 78404	Fire Station 12 2120 Rand Morgan Rd. Corpus Christi, TX 78410
Fire Station 4 2338 Rodd Field Rd. Corpus Christi, TX 78414	Fire Station 13 1801 Waldron Rd. Corpus Christi, TX 78418
Fire Station 5 3312 Leopard St. Corpus Christi, TX 78408	Fire Station 14 5901 S Staples St. Corpus Christi, TX 78413
Fire Station 6 6713 Weber Rd. Corpus Christi, TX 78413	Fire Station 15 14202 Commodore St. Corpus Christi, TX 78418
Fire Station 7 3750 S Staples St. Corpus Christi, TX 78411	Fire Station 16 8185 Texas 361 Corpus Christi, TX 78373
Fire Station 8 4645 Kostoryz Rd. Corpus Christi, TX 78415	Fire Station 17 6869 Yorktown Corpus Christi, TX 78418
Fire Station 9 501 Navigation Blvd. Corpus Christi, TX 78408	Fire Station 18

6.0 PESTICIDE DISCHARGE MANAGEMENT PLAN MODIFICATIONS

The PDMP is a living document and subject to change from time-to-time as necessary to be protective of the environment and human health, and to remain in compliance with the PGP. The PDMP will be reviewed under the following conditions:

- Annually to ensure compliance with the PGP relevant to the problem description; evaluation and selection of pest management strategies; schedules and procedures; the adverse incident action plan; and visual evaluations.
- Whenever necessary to address any of the triggering conditions for corrective action or when a change in pest control activities significantly changes the type or quantity of pollutants discharged.

The PDMP will be modified and modifications will be implemented for any of the following reasons:

1. An unauthorized release or discharge occurs (e.g., spill, leak, or discharge not authorized by this or another permit);
2. Control measures described in the PDMP are determined by the TCEQ or by the City to be inadequate for the discharge to meet applicable water quality standards;
3. In order to address deficiencies observed by the TCEQ regarding pesticide amount and frequency of applications, maintenance activities for application equipment, or calibration, cleaning, and repair of equipment;
4. As directed by the TCEQ, in order to address effluent limits in the PGP;
5. When necessary to address a toxic or adverse effect caused by the application of pesticide covered under this PGP; or
6. When necessary to address new pesticide application activity or pesticide use patterns that are subject to coverage by the PGP and are required for inclusion in the PDMP.

If the PDMP must be revised due to an unauthorized release or discharge (i.e., item 1, above), the City will modify the PDMP and implement corrective actions, if practicable, before the next pesticide application that results in a discharge. If revisions cannot be made prior to the next pesticide application that results in a discharge, the City will document the reasons. Within five days of making and implementing the required change in the PDMP, a report of the change will be prepared documenting the following:

- Conditions triggering the need for corrective action;
- Circumstances of the situation;
- Date the problem was identified;
- Summary of the corrective action taken;
- Date corrective action was initiated;
- Date corrective action was completed; and
- Individual responsible for preparing the modification to the PDMP.

Copies of adverse incident reports are maintained in Appendix E, and the PDMP modification log is maintained in Appendix H.

Appendix A

General Location Map

Appendix B

Pesticide General Permit

Appendix C

Notice of Intent for Level 1A Operators

Appendix D

Acknowledgement Letter from the Texas Commission on Environmental Quality

Appendix E

Adverse Incident Notifications and Reports

Appendix E

City of Corpus Christi
Pesticide Discharge Management Plan
Adverse Incident Notification Form

Date and Time Adverse Incident Occurred	Date and Time of Being Informed of Adverse Incident	Manner of Being Informed (i.e. telephone call from the public, visual observations by staff, etc.)
Pesticide Product	**Location of the Adverse Incident**	
Description of Circumstances of Adverse Incident		
Steps Taken to Correct, Repair, Remedy, Cleanup or Otherwise Address any Adverse Effects		

NOTIFICATIONS MADE					
	Yes	**No**	**Person/Entity Contacted**	**Office Phone**	**Alternate**
Internal			Sharon Bailey Lewis, Environmental Program Specialist	(361) 826-4066	(361) 765-2562
External			TCEQ, Region 14: Corpus Christi, Texas	(361) 825-3100	
External			TCEQ, Austin: 24-hour Spill Reporting	(512) 463-7727	
External			State Emergency Response Center/Environmental Release Hotline	(800) 832-8224	
External			U.S. Environmental Protection Agency (EPA) Region VI: Dallas, Texas	(800) 372-7745	
External			National Pesticide Telecommunications Network	(800) 858-7378	
External			National Spill Response Center	(800) 424-8802	

Note: This form is to assist in the notification of an adverse incident. The PGP requires an Adverse Incident Written Report to be submitted to the TCEQ Regional Office within fourteen (14) days of becoming aware of an adverse incident. Adverse Incident Written Reports are maintained in this appendix.

Appendix F

Spill or Leak Notifications and Reports

Appendix F

City of Corpus Christi
Pesticide Discharge Management Plan
Spill or Leak Notification Form

Date and Time Spill or Leak Occurred	Date and Time of Being Informed of Spill or Leak	Manner of Being Informed (i.e. telephone call from the public, visual observations by staff, etc.)
Pesticide Product	**Location of the Spill**	**Water Body Threatened**
Description of the Spill or Leak Identified		
Steps Take to Contain the Spill or Leak		

NOTIFICATIONS MADE					
	Yes	**No**	**Person/Entity Contacted**	**Office Phone**	**Alternate**
Internal			Sharon Bailey Lewis, Environmental Program Specialist	(361) 826-4066	(361) 765-2562
External			TCEQ, Region 14: Corpus Christi, Texas	(361) 825-3100	
External			TCEQ, Austin: 24-hour Spill Reporting	(512) 463-7727	
External			State Emergency Response Center/Environmental Release Hotline	(800) 832-8224	
External			U.S. Environmental Protection Agency (EPA) Region VI: Dallas, Texas	(800) 372-7745	
External			National Pesticide Telecommunications Network	(800) 858-7378	
External			National Spill Response Center	(800) 424-8802	

Note: This form is to assist in the notification of a spill or leak to waters of the U.S. The PGP requires a Spill or Leak Written Report to be submitted to the TCEQ Regional Office within fourteen (14) days of becoming aware of a spill or leak. Spill or Leak Written Reports are maintained in this appendix.

Appendix G

Pesticide Applications Log and Reports

Pesticide application logs or record keeping should be maintained in this appendix.

Appendix H

Pesticide Discharge Management Plan Modification Log

Attachment H

City of Corpus Christi
Pesticide Discharge Management Plan
Pesticide Discharge Management Plan Modification Log

PDMP Contact: Sharon Bailey Lewis, Environmental Program Specialist
(361) 826-4066– office
SharonL@cctexas.com

Date Modification Initiated	Date Modification Completed	Description of the Modification	Reason for Modification and Date Problem Identified	Amendment Prepared by [Name(s) and Title]

Date Modification Initiated	Date Modification Completed	Description of the Modification	Reason for Modification and Date Problem Identified	Amendment Prepared by [Name(s) and Title]

Appendix I

Other Noncompliance Reports

Appendix I

City of Corpus Christi
Pesticide Discharge Management Plan
Other Noncompliance Report Form

Date and Time of Other Noncompliance	Date and Time of Being Informed of Other Noncompliance	Manner of Being Informed (i.e. telephone call from the public, visual observations by staff, etc.)
Pesticide Product	**Location of Other Noncompliance**	**Water Body Threatened**
Description of the Other Noncompliance		
Steps Take to Remedy the Other Noncompliance		

NOTIFICATIONS MADE					
	Yes	**No**	**Person/Entity Contacted**	**Office Phone**	**Alternate**
Internal			Sharon Bailey Lewis, Environmental Program Specialist	(361) 826-4066	(361) 765-2562
External			TCEQ, Region 14: Corpus Christi, Texas	(361) 825-3100	
External			TCEQ, Austin: 24-hour Spill Reporting	(512) 463-7727	
External			State Emergency Response Center/Environmental Release Hotline	(800) 832-8224	
External			U.S. Environmental Protection Agency (EPA) Region VI: Dallas, Texas	(800) 372-7745	
External			National Pesticide Telecommunications Network	(800) 858-7378	
External			National Spill Response Center	(800) 424-8802	

Note: This form is to assist in the notification of other noncompliance. The PGP requires that a noncompliance Written Report be submitted to the TCEQ Regional Office within 24 hours of becoming aware of the noncompliance. A written submission of this information must be provided within five (5) working days. Other Noncompliance Written Reports are maintained in this appendix.

Appendix J

Annual Reports

Annual reports or annual report forms should be maintained in this appendix.

Appendix K

Certifications and Licenses

Copies of pesticide applicator certifications and/or licenses should be maintained in this appendix.