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Service

# **Mexican Fruit Fly Cooperative Eradication Program**

## **Lower Rio Grande Valley, Texas**

### **Environmental Assessment April 2015**

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**Environmental Assessment,  
April 2015**

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# I. Need for the Proposal

The Mexican fruit fly (Mexfly), *Anastrepha ludens* (Loew), is native to central Mexico and is a major pest of agriculture throughout many parts of the Western Hemisphere. Commercial and homegrown produce attacked by the pest is unfit to eat because the larvae tunnel through the fleshy part of the fruit, damaging it and subjecting it to decay from bacteria and fungi. Adult Mexflies are long lived (up to 11 months), highly fertile, strong fliers, and highly mobile (UFL, 2012). Because of its wide host range (over 40 species of fruits including varieties of citrus) and its potential for damage, a permanent infestation of Mexfly would be disastrous to agricultural production in the United States. In the past, eradication programs have been implemented successfully to prevent the pest from becoming established on the U.S. mainland.

In April 2015, a new Mexfly outbreak was confirmed in the Lower Rio Grande Valley (LRGV) in the State of Texas (APHIS, 2015a). The LRGV is a four-county region (Cameron, Hidalgo, Starr, and Willacy) in the southernmost part of Texas located on the northern bank of the Rio Grande, a river separating the United States from Mexico. On March 30, one adult mated female was detected on a citrus host in a residential area of Hidalgo County in McAllen, Texas. As a result of this find, the McAllen Quarantined Area<sup>1</sup> was established: 69 square miles that contain commercial agriculture, undeveloped land and properties in a mixed residential/urban area of Hidalgo County, encompassing areas of McAllen and Granjeno, Texas (see appendix A) (APHIS, 2015a).

On April 2, 2015, another adult mated female Mexfly was detected on a sour orange host in a residential area in Rangerville, Texas, in Cameron County (see Appendix A). The current Rangerville Quarantined Area covers 75 square miles. There are 149 acres of commercial citrus inside of the 75 square mile quarantine area, and none of these acres are in the core. Commercial citrus harvest in this area is ongoing for 2015 (APHIS, 2015b).

On April 6, 2015 a third adult mated female Mexfly was captured from a grapefruit host in a residential area in Mission, Texas, in Hidalgo County. This resulted in an expansion of the McAllen Quarantined Area (now called the McAllen/Mission Quarantined Area. This 122-square-mile quarantine area contains 923 acres of commercial citrus, although no commercial citrus occurs within the core areas. Delimitation surveys continue around the detection sites in both quarantine areas.

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<sup>1</sup> For the purposes of this document, and unless specified otherwise in the text, the terms "Quarantined Area" and "program area" signify the same place. A core area is where program chemical treatments may be applied.

In addition to these new quarantined areas, there is an ongoing Mexfly quarantine in the Brownsville area in Cameron County, Texas (see Appendix B). The Brownsville quarantine was initially triggered in June 19, 2014 and has expanded since then.

Because it is likely additional Mexfly infestations will be discovered in the LRGV in 2015, the potential environmental impacts of a Mexfly program anywhere in Hidalgo, Willacy, and Cameron Counties—the major citrus producing areas in the LRGV—will be considered in this environmental assessment (EA).

Mexfly outbreaks have occurred repeatedly in southern Texas due to the proximity of the infested areas to Mexico. In 2013, an expanding Mexfly infestation resulted in a coordinated pest control response over Hidalgo, Cameron, and Willacy Counties (APHIS, 2013). The tri-county program was successful, and the LRGV Mexfly quarantine was lifted on September 16, 2013. In January 2014, two areas were quarantined for Mexfly (Weslaco Quarantined Area, in Hidalgo County and Lyford Quarantined Area, in Willacy, Hidalgo and Cameron Counties) (APHIS, 2014a). Mexfly eradication was completed in both areas and the quarantines were lifted on August 26, 2014 and February 23, 2015, respectively (TDA, 2015).

The State of Texas has posted Mexfly intrastate quarantine information at <https://www.texasagriculture.gov/RegulatoryPrograms/PlantQuality/PestandDiseaseAlerts/MexicanFruitFly.aspx>. APHIS is initiating a parallel interstate quarantine. Following Mexfly program protocols for eradication in Texas, releases of sterile Mexflies continue year round at a rate of 900 flies per acre in designated at-risk counties. Program officials have approved the following emergency actions:

- Application of the organic insecticide, spinosad, in core areas as a ground-based eradication treatment to Mexfly host plants in a 500-meter radius around the affected properties;
- Notification to impacted property owners and citrus industry of the quarantine boundaries and requirements;
- Juicing or fumigation of all commercial citrus inside each of the core areas;
- Delimitation trapping in host species located outside Mexfly detection sites; and
- Surveys in order to detect larval infestations, and to plan chemical treatments.

Mexfly has been introduced into the United States repeatedly since its first detection in Texas in 1927 (NAPIS, n.d.). The current Mexfly infestation in the LRGV represents a major threat to the agriculture and environment of Texas and other U.S. mainland States. APHIS and the Texas Department of Agriculture (TDA) are proposing a cooperative program to eradicate the Mexfly infestation in order to eliminate that threat. APHIS has cooperated with State departments of agriculture on a number of successful Mexfly programs in the past. Examples of such programs in Texas include the previously mentioned LRGV programs (APHIS, 2014a and 2013), as well as the “Mexican Fruit Fly Cooperative Eradication Program, Cameron, Hidalgo, and Willacy Counties, Texas” (APHIS, 2012), and the “Mexican Fruit Fly Cooperative Eradication Program, Brooks County, Texas” (APHIS, 2009).

APHIS’ authority for cooperation in the program is based upon the Plant Protection Act (Title 4 of the Agricultural Risk Protection Act of 2000). This Act authorizes the Secretary of Agriculture to carry out operations to eradicate insect pests, and to use emergency measures to prevent the dissemination of plant pests new to, or not widely distributed throughout, the United States.

This EA analyzes the environmental consequences of alternatives which have been considered for Mexfly eradication, and considers, from a site-specific perspective, environmental issues relevant to this particular program. Alternatives for Mexfly eradication have been discussed and analyzed comprehensively by APHIS and its cooperating partners since 1984.

APHIS first evaluated the environmental impacts of fruit fly control technologies in the “Fruit Fly Cooperative Control Program, Final Environmental Impact Statement—2001” (EIS1) (APHIS, 2001). APHIS reexamined its findings and introduced an additional tool for eradication in the “Use of Genetically Engineered Fruit Fly and Pink Bollworm in APHIS Plant Pest Control Programs, Final Environmental Impact Statement—2008” (EIS2) (APHIS, 2008). Both EIS1 and EIS2 consider fruit fly risks and mitigations at the programmatic level. This case-specific EA incorporates the findings of EIS1 and EIS2 by reference. The eradication measures being considered for this program have been discussed and analyzed comprehensively within the fruit fly chemical risk assessments (APHIS, 1998a and 1998b) and risk assessments for spinosad (APHIS, 2014b, 2003, 1999). These documents are also incorporated by reference and summarized within this EA.

## **II. Alternatives**

Alternatives considered for this proposed program include (A) no Federal action, (B) quarantine and commodity certification, and (C) the preferred alternative, eradication using an integrated pest management (IPM) approach. Component techniques of alternative C include the use of chemical pesticides to facilitate the timely elimination of the current Mexfly infestation.

### **A. No Action**

The no action alternative would involve no Federal effort to eradicate Mexfly or restrict its expansion from the infested areas. In the absence of a Federal effort, quarantine and control would be left to State government, grower groups, and individuals. Expansion of the infestation would be influenced by any controls exerted over it, by the proximity of host plants, and by climatic conditions. “No action” might be the only reasonable alternative for some sensitive sites; in such cases, lack of action could lead to a continuing and expanding infestation. An expansion of the infestation would likely result in substantial economic losses to growers in the United States, as well as the loss of U.S. export markets.

### **B. Quarantine and Commodity Certification**

This alternative combines a Federal quarantine with commodity treatment and certification. Regulated commodities harvested within a quarantined area would be restricted to movement within that area, unless treated with prescribed treatments and certified for movement to outside the area. For a large infestation, intensive quarantine enforcement activities might be necessary, including the safeguarding of local fruit stands, mandatory baggage inspection at airports, and judicious use of road patrols and roadblocks. The quarantine actions of this alternative would result in a reduction of human-mediated movement of Mexfly in host plant materials outside the quarantined area; however, the infestation could remain established within the quarantine boundaries. Any Mexfly eradication efforts would be managed by, and wholly under the control of, TDA.

Interstate movement of regulated commodities would require the issuance of a certificate, or limited permit, contingent upon commodity treatment, or the grower or shipper complying with specific conditions designed to minimize pest risk and prevent the spread of Mexfly. Control methods that may be used in this alternative include regulatory chemicals, cold treatment, vapor heat treatment, and irradiation treatment. Regulatory chemical treatments include fumigation with methyl bromide, and topical bait spray made of a mixture of spinosad or malathion with a protein

hydrolysate bait. (Refer to EIS1 (APHIS, 2001) for more detailed information about the chemicals and their uses.) Cold treatment, vapor heat treatment, or irradiation treatment of certain produce (as a requirement for certification and shipping) must be done in facilities that are inspected and approved by APHIS.

### **C. Eradication Using an IPM Approach (Preferred Alternative)**

APHIS' preferred alternative for the LRGV Mexfly program is eradication using an integrated pest management (IPM) approach. This alternative combines quarantine and commodity certification with eradication treatments. Eradication efforts may include any or all of the following:

- chemical control;
- sterile insect technique (SIT);
- physical control;
- cultural control; and
- regulatory control.

APHIS' cooperative Mexfly programs in Texas have well-established procedures and treatments. The proposed program for Mexfly host plants will be conducted by APHIS-approved personnel on quarantined property using chemical formulations and ground-based treatment protocols approved by APHIS.

Program officials are delineating quarantine areas and are identifying regulated entities that may be affected by the program. Mexfly surveillance and trapping will be carried out in the areas surrounding a detection site. Quarantine boundary lines may be expanded should a new Mexfly detection occur outside the core areas or the established quarantine zone. Growers will be able to move their harvested fruit out of the quarantined area, under a limited permit, to enclosed facilities for packing or processing into juice, or after methyl bromide treatment at a packing shed. Should the Mexfly quarantine spread to federally-protected historical sites, wilderness areas, refuges, or tribal lands, program treatments will be restricted to those approved for the type of site in question.

An APHIS Mexfly eradication program can include ground applications of spinosad bait, targeted around each fly detection site. Where Mexfly larvae are found, spinosad bait treatments may take the form of foliar sprays to host plants around an infested property; eradication formulations are applied with hydraulic spray or hand spray equipment. For the McAllen/Mission and Rangerville Quarantined Areas, a spinosad ground-based treatment will be applied to Mexfly-host plants in a 500-meter radius around each fly find, and will be repeated every 7 to 10 days (APHIS, 2015a and 2015b).

Sterile fly release across south Texas counties, in conjunction with targeted bait treatments, has been successful in controlling Mexfly outbreaks (APHIS, 2010). SIT will be conducted at the rate of 900 flies per acre to achieve quarantine-protocol density over the regulated areas (APHIS, 2015a and 2015b). For more detailed information on the alternatives for Mexfly control and their component methods, refer to the previously mentioned fruit fly risk assessments (APHIS, 2003, 1999, 1998a, 1998b).

Before taking action, program officials are to inform the public and impacted industry via press releases, meetings, and other forms of communication appropriate for the recipients. Notification letters will be sent to trading partners as they are identified. Given the potential impacts to commercial production, grove owners, packing sheds, nurseries, vendors, and other citrus industry operations will be notified of the Mexfly quarantine location and treatment schedule.

### **III. Potential Environmental Consequences**

This EA analyzes the potential environmental consequences of alternatives which have been considered for Mexfly control, and considers, from a site-specific perspective, environmental issues that are relevant to this particular program.

#### **A. No Action**

It is possible that Federal support of Mexfly research could result in the discovery of improved methods of Mexfly control. In certain situations, however, lack of Federal control action could lead to a continuing and expanding infestation. An expansion of the infestation would likely result in substantial economic losses to growers in the United States, commodity scarcity and higher costs for U.S. consumers, and the temporary or permanent loss of U.S. export markets.

#### **B. Quarantine and Commodity Certification**

The quarantine actions of this alternative would result in a reduction of the human-mediated movement of Mexfly in host plant materials outside the quarantined area; however, the infestation could remain established within the quarantine boundaries. A specific comparison of potential impacts from initiation of this alternative, relative to the preferred alternative, is provided within the environmental consequences section on the preferred alternative.

## **C. Eradication Using an IPM Approach (Preferred Alternative)**

The preferred alternative, eradication, would involve an IPM approach which may employ any or a combination of the following:

- No action;
- Quarantine;
- Host fruit removal in core areas;
- Regulatory chemical application (fumigation and bait spray application);
- Eradication chemical applications (protein bait spray); and
- Cold treatment.

Alternatives for Mexfly control have been discussed and analyzed comprehensively within EIS1 and EIS2 (APHIS, 2001 and 2008), incorporated by reference, and summarized within this EA. The control measures being considered for this program have also been evaluated within the fruit fly chemical risk assessments (APHIS, 1998a and 1998b) and risk assessments for spinosad (APHIS, 2014b, 2003, 1999). These documents are incorporated by reference and summarized within this EA, as well. Environmental documentation for APHIS' fruit fly control programs may be viewed online via the following links: [APHIS fruit fly control program environmental documentation](#) and [APHIS GE control applications for plant health](#).

The LRGV's site-specific characteristics were considered with respect to the program's potential to affect human health, nontarget species (including threatened and endangered species), and environmental quality. Potentially sensitive areas have been identified, considered, and accommodated through special selection of control methods and use of specific mitigation measures.

### **1. Affected Environment**

#### **a. Land Characteristics and Demographics**

The new Mexfly outbreaks in Texas (the first during 2015) and the existing quarantine in Brownsville extend over portions of Hidalgo and Cameron Counties. The infestations in McAllen/Mission and Rangerville, confirmed in April 2015, center on residential property in dooryard trees and in proximity to commercial citrus groves.

Local land use in the Mexfly-affected region of the LRGV is mainly agricultural, with rural residential neighborhoods, and scattered urban and light industrial districts. The LRGV is considered part of the South Texas Plains, which features a mixture of native grasses and scrub vegetation, mesquite, live oaks, and chaparral. The Texas citrus industry is almost totally located in the Lower Rio Grande Valley, with about 85 percent of the acreage in Hidalgo County, and the remainder in Willacy and Cameron Counties (Sauls, 2008).

The LRGV contains good quality agricultural land, primarily on delta and floodplain alluvial soils that vary from sandy and silty loam through loam to clay (Vigness and Odintz, n.d.). The local climate ranges from subtropical to semi-arid, tending to hot summers and mild winters. Willacy and Cameron Counties border the Gulf of Mexico where many different types of coastal natural hazards can occur, such as high winds, flooding, tornadoes, subsidence, coastal erosion, and sea-level incursion (GOMA, 2013).

Although located in a floodplain, the LRGV was experiencing surface water losses from severe drought at the time of its 2013 Mexfly program; the region has largely recovered and, at this time, there is no impact of drought on surface water in the Mexfly program areas (see figure 1). Precipitation in the LRGV can average 26 inches per year; the growing season lasts 320 days, from late January until mid-December (Garza, n.d. (1) and (2); Garza and Long, n.d.; TSHA, n.d.(1), (2), and (3)).

Hidalgo County has a land area of over 1,570 square miles. It is located in the Rio Grande Delta in southern Texas with an estimated population of 871,073 (USCB, 2015a). It is bordered on the north by Brooks and Kenedy Counties, on the west by Starr County, on the east by Willacy and Cameron Counties, and on the south by the Rio Grande and Mexico. The county seat, Edinburg, is located about 10 miles from the city of McAllen, which has the highest recorded population in the county—an estimated 136,639 in 2013 (USCB, 2015b). There are at least 943 recorded colonias<sup>2</sup> in Hidalgo County, of the more than 2,290 colonias in Texas (TX Secretary of State, n.d.).

The Hidalgo County Historical Corridor spans the southern portion of the county. There are local parks such as Estero Llano Grande State Park, and units of conservations areas such as the Santa Ana National Wildlife Refuge and the Las Palomas Wildlife Management Area (Garza, n.d. (1); TSHA, n.d. (1)).

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<sup>2</sup> “Colonias” are communities the Texas government defines as residential areas along the Texas-Mexico border that may lack some of the most basic living necessities, such as potable water and sewer systems, electricity, paved roads, and safe and sanitary housing (TX Secretary of State, n.d.)

The nearest population centers to the McAllen/Mission Quarantined Area in Hidalgo County are the cities of McAllen and Mission, Texas. McAllen has a land area of 48.34 square miles (USCB, 2015b). Mission, Texas has a population estimate of 81,050 (85.4 percent identifying as Hispanic or Latino) with a land area of 34 square miles (USCB, 2015c). The McAllen-Miller International Airport is within the quarantined area, as is the Palm View Golf Course.

Willacy County has a land area of slightly over 590 square miles, and a resident population estimated in 2014 to be 21,903 (USCB, 2015d). It is bounded on the north by Kenedy County, on the west by Hidalgo County, on the south by Cameron County, and on the east by the Gulf of Mexico.

Willacy County consists of flat coastal prairie sloping toward the Gulf of Mexico; the Padre Island National Seashore and a portion of the Texas Tropical Trail are protected areas, as are the county's salt lake and various parks and conservation areas, such as the Laguna Atascosa National Wildlife Refuge (Garza, n.d. (2); TSHA, n.d. (2)). Over a third of county residents live below the poverty level; many are less than fluent in English (USCB, 2015d). There are 16 listed colonias in the county (TX Secretary of State, n.d.).

Portions of Cameron County have been affected by Mexfly infestations in the past, and this is currently continuing. The county is bordered by the Gulf of Mexico on the east, by Hidalgo County on the west, by Willacy County on the north, and by the Rio Grande and Mexico on the south. It has a land area of over 890 square miles and reported a population of 420,392 in 2014 (USCB, 2015e). The county seat and its largest city is Brownsville. Over a third of county residents live below the poverty level; many lack fluency in English (USCB, 2015e). There are 31 listed colonias in the county (TX Secretary of State, n.d.).

Protected areas in Cameron County include Palo Alto Battlefield National Historic Site, Resaca de la Palma Site State Park, Port Isabel Lighthouse State Historic Structure, Brazos Island State Scenic Park, as well as other cultural and conservation sites. Hunting and fishing, both recreational and commercial, are possible throughout the year (Garza and Long, n.d.; TSHA, n.d. (3)).

Rangerville, located in Cameron County, has an estimated population of approximately 300, with 93 percent living in poverty (City-Data, 2015). The nearest population center to the Rangerville Quarantined Area is Harlingen, approximately 6 miles away from Rangerville. Harlingen has an estimated population of 65,655 (USCB, 2015f). There are also several areas of the Lower Rio Grande National Wildlife Refuge within the Rangerville Quarantined Area.

Economic drivers in the LRGV include agriculture, trade, manufacturing, service industries, and hydrocarbon production (Combs, n.d. (1)). Texas is the nation's fourth-largest producer of sugarcane, and all of it is grown in the South Texas region, primarily in Hidalgo, Willacy and Cameron Counties (Combs, n.d. (2)). Major sources of income near the LRGV program areas are farming, ranching, and tourism, including nature tourism, recreational hunting, and freshwater and marine fishing. The area's mineral and oil deposits have led to the development of related commercial enterprises. Coastal and inland aquaculture of shellfish and finfish are also important industries (Garza, n.d. (1); (2); Garza and Long, n.d.; TSHA, n.d. (1), (2) and (3)). Agribusiness is the mainstay of the economy in the program areas; Cameron, Hidalgo, and Willacy Counties historically form the center of Texas' commercial citrus production (Vigness and Odintz, n.d.). Citrus and other potential Mexfly hosts are also widely grown by residents in all three counties.

## **b. Water Resources**

All three program counties contain “economically distressed areas” lacking sufficient water resources, as determined by the Texas Water Development Board (TWDB, 2015). The LRGV relies on ground and surface water for most drinking and irrigation needs. Although drought conditions are not affecting surface water in the three counties (see figure 1), water use is limited in several public water systems in Cameron and Hidalgo Counties to avoid water shortages (TCEQ, 2015). Several irrigation districts in the LRGV have notified agricultural producers that water deliveries may be suspended, including Cameron County Irrigation District #2 and Hidalgo and Cameron Counties Irrigation District #9 (RGRWA, 2015).

There are two major natural waterways in the region—the Rio Grande, which defines much of the international border between the United States and Mexico, and the Arroyo Colorado. Both river systems border or run through the current quarantine areas. The Arroyo Colorado is an ancient channel of the Rio Grande River, extending from southern Hidalgo County across Cameron County and into Willacy County; portions of it are impaired, as defined under section 303(d) of the Clean Water Act. The U.S. Environmental Protection Agency (EPA) defines impaired waters as a “waterbody (i.e., stream reaches, lakes, waterbody segments) with chronic or recurring monitored violations of the applicable numeric and/or narrative water quality criteria” (EPA, 2012a). The tidal segment of the Arroyo Colorado that connects to the Gulf of Mexico is defined as a coastal natural resource area and a coastal wetland under the Coastal Coordination Act (TAMU, 2011).

Several reservoirs are located in the Rangerville Quarantine Area (Reservoirs No. 1 and 2, Adams Gardens Reservoir, Dixieland Reservoir,

and La Feria Reservoir). Reservoirs are also located within the McAllen/Mission Quarantine Area (e.g., Boeye Reservoir, City Reservoir). Ground water and surface water resources in the region continue to be adversely affected by drought conditions, water impairment, and/or ongoing residential population expansion (Combs, 2014).

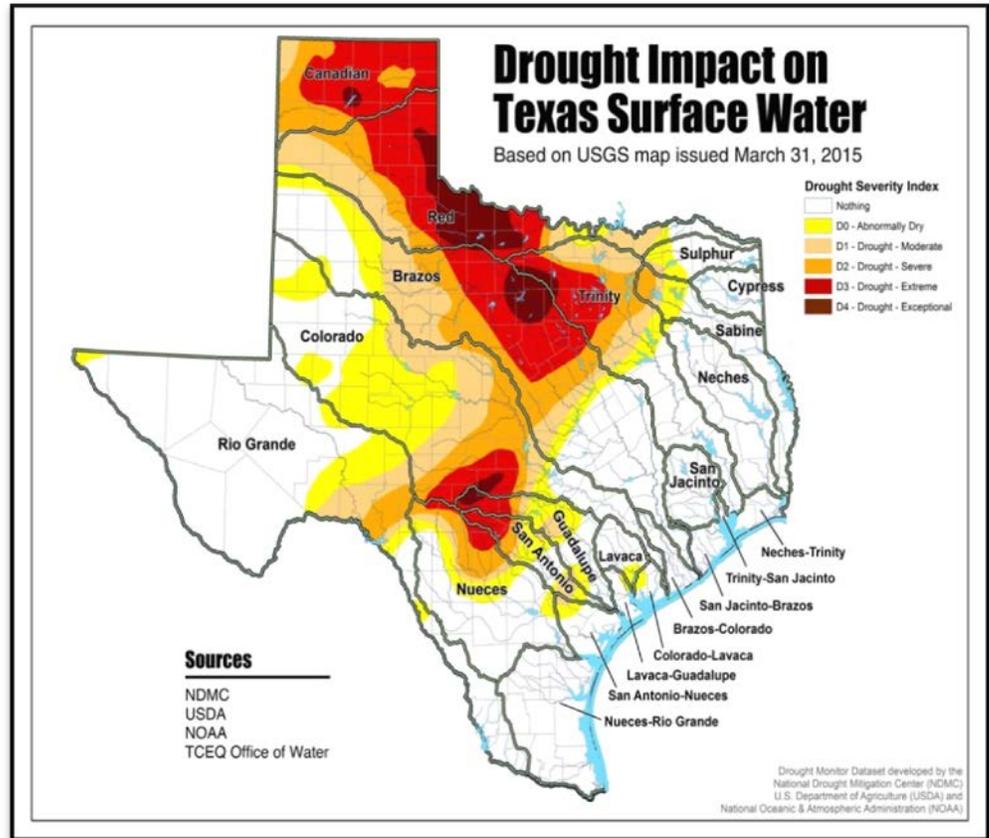


Figure 1. Surface water conditions in Texas as of March 31, 2015. (TCEQ, 2015.)

The three counties are part of the Nueces-Rio Grande Basin, one of eight designated coastal basins in Texas (see figure 2). The Nueces-Rio Grande Basin is bounded on the north by the Nueces River Basin, on the south by the Rio Grande Basin, and by bays or other outlets to the Gulf of Mexico (TWDB, n.d.).

Hidalgo County is located within four Texas watersheds, including Central Laguna Madre, South Laguna Madre, Los Olmos, and the Lower Rio Grande (EPA, 2012b). The Rio Grande forms the county’s southern border, and is the county’s main source of potable and irrigation water. Water is stored in regional reservoirs, and then sent to local water treatment plants for disinfection and purification (LRGVDC, 2009).

Willacy County crosses two Texas watersheds—Central Laguna Madre and South Laguna Madre (EPA, 2012b). Potable water and water for irrigation

and recreational purposes in Willacy County are obtained primarily from the Rio Grande via neighboring Cameron County. The water is stored in reservoirs and lakes, and then sent to treatment plants.

Cameron County is located within two Texas watersheds—South Laguna Madre and Lower Rio Grande (EPA, 2012b). The Rio Grande forms part of the county’s southern border and is the county’s main source of potable and irrigation water.

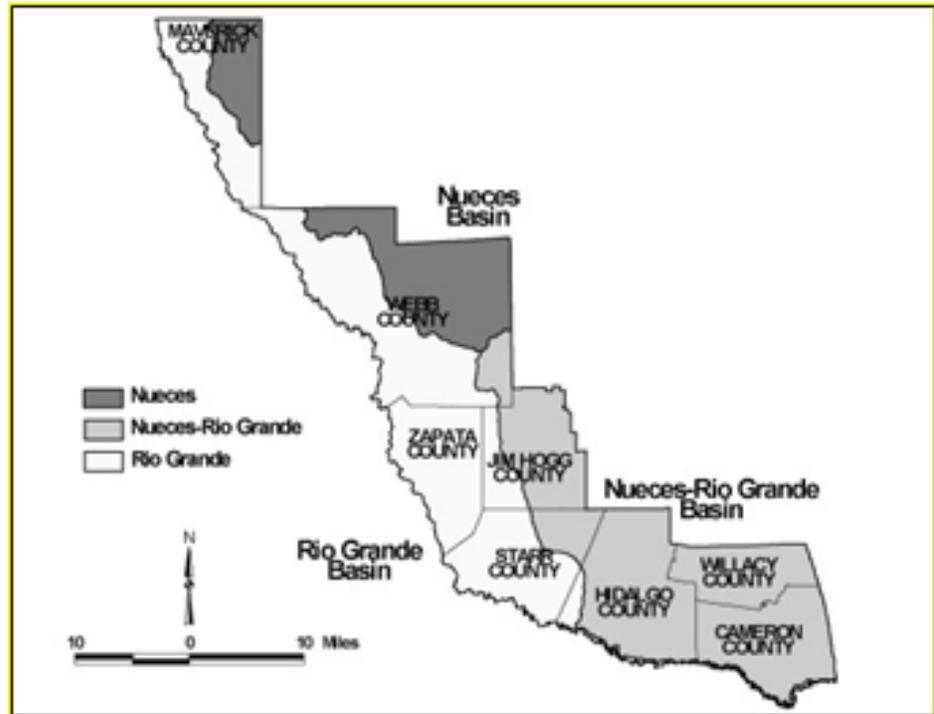


Figure 2. Rio Grande Region Water Planning Area (Region M). (State of Texas, 2010.)

Abnormally dry conditions continue to result in mandatory water conservation, recycling, and restricted use throughout much of Texas. In southern Texas, the spread of invasive aquatic weeds, international treaty issues, and increased demand are also threatening long-term water availability (LRGVDC, 2009). The vast majority of the Rio Grande water available to the region—more than 94 percent—comes from supplies stored in the international Amistad and Falcon Reservoir System, owned by the United States and Mexico, and administered by the International Water and Boundary Commission (State of Texas, 2010).

**2. Human Health** The principal concerns for human health are related to the program use of chemical pesticides: specifically, spinosad bait for eradication treatments, and regulatory uses of malathion and methyl bromide (a fumigant). Factors that influence the human health risk associated with pesticide use include a pesticide’s toxicity and the amount of its exposure to humans; these factors

may in turn be influenced by the use pattern and environmental fate for a particular pesticide. While not taking Federal action would prevent public exposure to program pesticides, human health and safety could be indirectly affected by unrestrained non-Federal eradication activities. Similar indirect impacts are also expected to occur under the quarantine and commodity certification alternative. Each of the program pesticides of the preferred alternative is known to be toxic to humans; the preferred alternative includes mitigation measures to limit pesticide exposure to EPA-approved levels.

Exposure to program pesticides can vary, depending upon the pesticide and the use pattern. Potential human exposure is expected to be low for both malathion and methyl bromide, but higher for spinosad bait. However, spinosad bait spray is applied only to host plants within 500 meters of a Mexfly detection site, reducing the potential for exposure of the general public. Exposure and risk for program workers are not expected based on the proper use of personal protective equipment. The data and analyses in EIS1 and EIS2 and the associated human health risk assessments indicate that exposures to pesticides used in accordance with label instructions from normal program operations are not likely to result in substantial adverse human health effects. (Refer to EIS1 and EIS2 (APHIS, 2001 and 2008) and the supporting human health risk assessments (APHIS, 2014b, 1999, 1998a) for more detailed information relative to human health risk.)

Another mitigation measure that is designed to minimize exposure of humans to program pesticides is the requirement for public notification. The public will be kept informed of the Mexfly eradication program via written notices and news releases to the media, and by spoken and translated communication, as appropriate. Residents and property owners will be notified prior to treatment or fruit removal and will be provided access to information regarding Mexfly program locations, activities, and treatments. The information will include a schedule to indicate the timing of program activities and treatments, and will provide harvest protocols for producers and the general public in Mexfly-infested areas. Guidelines for post-treatment protocols will also be provided.

APHIS recognizes that a portion of the population may have unusual sensitivity to certain chemicals and that the Mexfly program treatments may pose a greater danger for these individuals. Special communication strategies have been developed that will mitigate this risk, and are discussed in detail in appendix C of EIS1 (APHIS, 2001).

Potential human exposure associated primarily with surface water is not expected, although there are multiple water bodies in the program areas. This conclusion is based on the following elements of the Mexfly program:

- Use pattern—spinosad bait is only applied via foliar application with hand equipment to host trees within the 500-meter radius of a known Mexfly detection site; malathion use is also targeted and is permitted only for regulatory treatments; methyl bromide fumigation is only to be conducted in enclosed areas where residues would not be able to drift or runoff;
- Program pesticides and their degradation products are not persistent in the environment, as discussed in the Environmental Quality section later in this document; and
- There are label requirements for surface water protection when applying the pesticides.

In general, a well-coordinated eradication program using IPM technologies is expected to result in the least usage of chemical pesticides overall, and to have the least potential to adversely affect human health. The no action alternative or quarantine and commodity certification alternative would not eliminate Mexfly as readily or as effectively as the eradication alternative. Over a protracted time period, there would likely be broader and more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse impacts to human health.

### **3. Other Aspects of the Human Environment**

NEPA defines the human environment broadly: *“Human environment” shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment* (40 Code of Federal Regulations (CFR) § 1508.8). In addition to potential impacts on environmental quality, human health, plant and animal species (discussed elsewhere in this document), APHIS considered potential impacts to other aspects of the human environment, such as sensitive historic and cultural sites and local residents.

APHIS considered the potential environmental impacts of implementing the action alternatives on minority and/or low-income communities, tribal interactions, and historical and culturally sensitive sites in the program area. A lack of Federal action could result in adverse economic and health impacts on affected producers and consumers, such as decreased harvests, higher consumer prices, loss of local employment, reduced nutritional options, loss of market share, compromised mental and physical health, loss of property, and so on. These indirect impacts are expected to occur to a lesser extent under the quarantine and commodity certification alternative. Adverse effects to the human environment are not anticipated as a result of carrying out the preferred alternative’s surveillance activities, trapping, or program chemical applications.

### **a. Registered Historic Sites**

The National Historic Preservation Act of 1966, as amended (NHPA; 16 Code § 470 et seq.) requires Federal agencies to consider the impact on properties included in, or eligible for inclusion in, the National Register of Historic Places (36 CFR §§ 63 and 800). APHIS identified numerous places listed on the National Register within the LRGV quarantine areas. These structures would not be affected by activities conducted under any of the alternatives analyzed in this assessment because APHIS does not anticipate any disturbance of the ground or the facility. The surrounding landscape plants may have fruit removed by hand-picking. If treatments are needed, then where possible, bait stations would not be placed on the historic site's property. If any pesticide applications are deemed essential, then ground-based targeted host treatment methods would be used.

APHIS is initiating consultation with the State Historic Preservation Office (SHPO) for Texas. The Mexfly project area to be evaluated by the SHPO includes Hidalgo, Willacy and Cameron Counties. In February 2014, the SHPO evaluated the same program area and determined that historic properties would not be affected by the proposed action. There are 22 registered historic sites in Hidalgo County, 25 in Cameron County, and 2 in Willacy County (Texas Historical Commission, n.d.). All appear to be buildings except for: (a) the Louisiana--Rio Grande Canal Company Irrigation System, McAllen Ranch, Oblate Park Historic District, and Rancho Toluca in Hidalgo County; (b) Brownsville City Cemetery and Hebrew Cemetery, Garcia Pasture Site, Palmito Ranch Battlefield, Palo Alto Battlefield, the Resaca de la Palma Battlefield in Cameron County; and (c) King Ranch in Willacy County. Additionally, the Weslaco Cemetery is a non-registered historic property in Hidalgo County that opened in 1921 (Anon., 2013a). To ensure historic properties and archeological sites will not be adversely affected by the proposed action, surveillance trapping and fruit stripping by hand may occur. Targeted spraying with a handheld or backpack sprayer may be permitted after consultation with the SHPO. If needed, modifications of normal program activities would be designed to reduce pesticide release at these locations.

APHIS intends to restrict program treatments and activities to an as-needed basis to protect sensitive historic sites. The proposed action will not disturb the ground. If APHIS discovers any archaeological resources, the appropriate individuals will be notified.

### **b. Native American Considerations**

The Archaeological Resources Protection Act of 1979 (16 U.S. Code (U.S.C.) §§ 470aa-mm), secures the protection of archaeological resources and sites on public and tribal lands. Using the Native American Graves Protection and Repatriation Act Online Databases (NPS, 2013; 25 U.S.C. §§

3001 et. seq.), APHIS determined that there is only one federally-recognized tribe in the LRGV. The Kickapoo Reservation is located approximately 250 miles from the quarantine area in Hidalgo County. APHIS met with the Kickapoo Tribe on February 4, 2013 to review the Tribe's needs, interests, and concerns. During the discussion, the Tribal Administrator reiterated that the Kickapoo Tribe does not have any land holdings within the LRGV (Roberta Duhaime, pers. comm., 30 January, 2014).

### **c. Environmental Justice**

Federal agencies identify and address disproportionately high and adverse human health or environmental effects of its proposed activities as described in Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," and Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks." No adverse direct or indirect effects on vulnerable populations are expected to result with proper implementation of the LRGV Mexfly program and effective communication with program area residents.

There are numerous schools within the quarantine areas, and some may occur within each 500-meter radius treatment zone (e.g., Bonham Elementary School). APHIS will meet the following program requirements for Bonham Elementary School and any other schools that may require treatments. Maintenance of traps and any pesticide applications will occur when children are not present in the immediate area. The surrounding landscape plants may have fruit removed by hand-picking. Where possible, pesticide will not be applied on school property. If any pesticide applications are deemed essential, then a handheld or backpack sprayer would be used. Any exposure of children to applied products is negligible based on the program's application methods and the product formulations. The proposed program does not pose any disproportionate adverse effects to children, minority, or low-income populations because these individuals are unlikely to be present when APHIS applies treatments or otherwise become exposed to the applied products.

"Colonia" is a term used in the southwestern United States to describe a subdivision where developers divide the land into small lots and offer affordable housing to low-income families. These lots are often purchased through a contract for a deed with a low down payment and low monthly payments. The title for the house is not issued until the final payment is made by the homeowner (Anon., 2013b). Housing in these locations is built by residents over time as they can afford materials. Consequently, many residences lack connections to sewers or running water, and residents may not be able to access water lines because their homes do not meet county building codes (Anon., 2013b).

Three colonias occupy land inside the McAllen/Mission program area: Acevedo Colonia Number 4, Umberto Garcia Junior Colonia, and Tierra Dorada Colonia. Sno-bird Estates Colonia lies just outside the treatment boundary, and numerous other colonias are within a mile of the boundary. Many colonias are located within the Brownsville and Rangerville quarantine boundaries.

Children living in colonias are commonly exposed to pesticides, which may be used frequently in the home and in the surrounding environment. Studies of pesticide exposures in the LRGV found that children in colonias are particularly vulnerable to pesticide poisoning, but may not receive medical care until serious clinical symptoms manifest. Perceived language barriers may prevent use of local poison control centers. Federal and Texas authorities are working to increase public awareness in the LRGV of the importance of (1) proper pesticide application and safeguards, and (2) earlier medical intervention in cases of pesticide exposure (Belson et al., 2003; Donnelly and Cizmas, 2007).

Some of the lowest levels of education and family income in the United States are found in the LRGV. Barriers to proper health care may include: cultural and language barriers; illiteracy; lack of money, insurance, transportation, and child care. Border areas such as the LRGV are known to have higher incidence of infectious and preventable diseases than other parts of the United States (Bowden et al., 2006).

In Hidalgo County, 91 percent of the population identifies itself as Hispanic or Latino (USCB, 2015a). In Cameron County, the percentage is 88.5 percent (USCB, 2015e) and 87.4 percent in Willacy County (USCB, 2015d). Translations into Spanish and other languages if necessary will be provided to non-English-speaking populations. Advance notice of program activities and potential exposure hazards will be provided to members of colonias and people in areas that generally lack access to news media.

#### **4. Nontarget Species**

Potential environmental impacts of alternative A (the no action alternative) or alternative B (quarantine and commodity certification) on nontarget species could include loss of animal and plant life and habitat from unregulated pesticide use by the public, or from Mexfly host damage. Under the preferred alternative, the principal concerns for nontarget species, including threatened and endangered species, relate to potential harm from the use of program pesticides. Paralleling human health risk, the risk to nontarget species is related to the pesticides' fate in the environment, their toxicity to the nontarget species, and their exposure to nontarget species.

All of the pesticides considered in this EA are highly toxic to invertebrate species, although the likelihood of exposure (and thus, impacts) varies a great deal from pesticide to pesticide and with the use pattern. In general, a

well-coordinated eradication program using IPM technologies would result in the least use of chemical pesticides, overall, with minimal adverse impacts to nontarget species. The no action alternative and the quarantine and commodity certification alternative would be expected to result in broader and more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse impacts. (Refer to EIS1 and EIS2 (APHIS, 2001 and 2008) and the supporting nontarget risk assessments (APHIS, 2014b, 2003, 1998b) for more information on risks to all classes of nontarget species.)

Conservation areas in the LRGV provide important habitat for a wide variety of wildlife that cannot be seen anywhere else in the United States. The LRGV contains numerous protected wetlands, parkland and refuges; among others, units of the Las Palomas National Wildlife Management Area (Las Palomas WMA), the Laguna Atascosa National Wildlife Refuge, and the Lower Rio Grande Valley National Wildlife Refuge lie inside or within 30 miles of current Mexfly program areas. APHIS' Mexfly programs are designed to prevent the introduction of program chemicals into nontargeted areas. Sites near the program area that might require special consideration, should the program area expand, include irrigation canals, coastal wetlands, and salt lakes of potential ecological importance. No program chemical applications will be permitted at these sites or other protected areas. However, aerial SIT and surveillance trapping will continue, and fruit stripping by hand will be undertaken if Mexfly detections occur at such locations. Pesticide applications would only occur in national wildlife refuges with the approval of the U.S. Fish and Wildlife Service (FWS) and in coordination with the refuge manager.

#### **a. Migratory Birds**

Unless permitted by regulation, the Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703–712) provides that it is unlawful to pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird or any part, nest, or egg of any such bird.

Executive Order 13186, “Responsibilities of Federal Agencies to Protect Migratory Birds,” directs Federal agencies taking actions with a measurable negative effect on migratory bird populations to develop and implement a memorandum of understanding (MOU) with FWS that promotes the conservation of migratory bird populations. On August 2, 2012, an MOU between APHIS and FWS was signed to facilitate the implementation of this executive order.

More than 500 species of birds have been documented in the Rio Grande Valley and it is recognized for having the largest number of bird species in the region, especially in Cameron County. Cameron County has some of the greatest bird diversity in the world. The LRGV is an important migration corridor that provides suitable habitat for many bird species.

APHIS evaluated the proposed Mexfly program in terms of potential impact on migratory avian species. Malathion is only slightly to moderately toxic to birds, and spinosad acute and chronic toxicity to birds is low. The targeted application of the pesticide to Mexfly host plants within 500 meters of Mexfly detections, usually in residential areas, and the short half-life of malathion on vegetation (1 to nearly 9 days), would result in limited to no exposure of birds to malathion. The localized and direct application of malathion and spinosad formulations to host plants is designed not to affect the food of birds. Migrating and other outdoor bird populations are not expected to be exposed to methyl bromide treatments. Implementation of the preferred alternative is not expected to have any adverse effects on migratory birds or their flight corridors.

## **b. Endangered Species Act**

Section 7 of the Endangered Species Act (ESA) and ESA's implementing regulations require Federal agencies to consult with the FWS and/or the National Marine Fisheries Service to ensure that their actions are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat.

There are 16 federally listed species in Cameron, Hidalgo, and Willacy Counties, including ocelot (*Leopardus pardalis*), Gulf Coast jaguarundi (*Felis yagouaroundi*), West Indian manatee (*Trichechus manatus*), northern aplomado falcon (*Falco femoralis septentrionalis*), piping plover (*Charadrius melodus*), yellow-billed cuckoo (*Coccyzus americanus*), red knot (*Calidris canutus rufa*), hawksbill sea turtle (*Eretmochelys imbricata*), leatherback sea turtle (*Dermochelys coriacea*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), green sea turtle *Chelonia mydas*, loggerhead sea turtle (*Caretta caretta*), South Texas ambrosia (*Ambrosia cheiranthifolia*), Texas ayenia (*Ayenia limitaris*), Walker's manioc (*Manihot walkerae*), and star cactus (*Astrophytum asterias*). APHIS prepared a programmatic biological assessment (BA) for program activities in Cameron, Hidalgo, and Willacy Counties that was submitted to FWS in 2008 and received a concurrence letter dated July 31, 2008. This programmatic consultation is updated yearly to include any new listed species in the three counties.

A revised BA was submitted to FWS in January 2015 to include the recently listed yellow-billed cuckoo and red knot. APHIS determined that Mexfly eradication program activities will have no effect on the red-knot

and may affect, but are not likely to adversely affect, the yellow-billed cuckoo. APHIS is awaiting concurrence from FWS on these determinations.

APHIS coordinates with the FWS, Ecological Services Field Office in Corpus Christi, Texas before implementing Mexfly program activities. FWS reviews maps of the quarantined area, and notifies APHIS if listed species are present in the program area. If listed species are present, APHIS implements protection measures for those species, as described in the programmatic BA.

For the quarantine areas in McAllen/Mission and Rangerville, FWS reviewed maps of the areas and indicated that there were no listed species of concern in the areas (B. Fuentes-Capozello, pers. comm., 6 April, 2015).

## **5. Environmental Quality**

The principal environmental quality concerns are for the protection of air quality, water quality, and the minimization of the potential for environmental contamination. In relation to preserving environmental quality, use of pesticides is a major concern for both the general public and the Mexfly program planners. Under the no action alternative or the quarantine and commodity certification alternative, pesticides could potentially be employed in more formulations, at higher frequency, and in broader areas than allowed under the preferred alternative. Although program pesticide use is limited, especially in comparison to other agricultural pesticide uses in the LRGV, implementing the preferred alternative is expected to result in a controlled release of chemicals into the environment. The fate of those chemicals varies with respect to an environmental component (e.g., air, water, or other substrate) and its characteristics (temperature, pH, dilution, etc.). The environmental fates of spinosad, malathion, and methyl bromide are outlined below. (Refer to EIS1 and EIS2 (APHIS, 2001 and 2008) for more detailed consideration of program pesticides' environmental fates.)

- Spinosad adsorbs strongly to soil particles, and is unlikely to leach to great depths. Dissipation half-lives for spinosad in the field may last 0.3 to 0.5 day. It is photodegraded quickly on soil exposed to sunlight, but the degradation rate is decreased at longer exposure times. Spinosad is quickly metabolized by soil micro-organisms under aerobic conditions, and has a half-life of 9.4 to 17.3 days. Because natural water bodies and rain are generally not of basic pH, spinosad will not hydrolyze in them or on moist plant surfaces. Aqueous photolysis is rapid in natural sunlight (half-life of less than 1.0 to 1.6 days), and is the primary route of degradation in aquatic systems exposed to sunlight. Under anaerobic conditions, the degradation rate is slower, between 161 and 250 days. Spinosad has a half-life of 2.0 to 11.7 days on foliar surfaces (APHIS, 2014b).

After initial photodegradation, residues are available for metabolism by plant biochemical processes. Effects from residues of individual treatments are no longer detectable in environmental substrates within a few weeks of application (Kollman, 2003).

- Malathion is toxic to many nontarget species; it is used less widely than spinosad, and primarily by commercial growers on private property. Malathion is considered lower in toxicity and less persistent (1 to 25 days in soil) than other organophosphorus pesticides. In water, malathion has a half-life of approximately 1 week, and is more stable in acidic aquatic conditions. Malathion is soluble in water, and can be highly mobile in soil. Generally, degradation occurs rapidly (a half-life of less than 1 to nearly 9 days) (Gervais et al., 2009); application to foliage allows for exposure of residues to degradation from processes (e.g., photolysis), resulting in a reduced potential for significant movement to ground water. Malaoxon is an oxygen analogue of malathion, and it can be found either as an impurity in malathion products, or can be generated during the oxidation of malathion in air or soil. Malathion and malaoxon can be transported in air over large distances and elevations (Newhart, 2006).
- Methyl bromide (MBr) will not be used as an eradication treatment, but may be employed as a regulatory treatment. MBr volatilizes into air from soil and water, and is known to contribute to stratospheric ozone depletion. The volatilization half-life for MBr from surface water ranges from 3.1 hours to 5 days. The degradation half-life of MBr in water ranges from 20 to 38 days, depending on temperature and pH. Volatilization of MBr from surface soil is rapid, with a half-life ranging from 0.2 to 0.5 days. The degradation half-life of MBr in soil ranges from 31 to 55 days. MBr has a low affinity to bind to soils, but is not considered a major contaminant of ground water (NPIC, 2000). The small quantities used to treat for Mexfly disperse when fumigation chambers are vented.

Urban and agricultural runoff may flow directly into local waters, picking up trash, dirt, chemicals, and other contaminants along the way. The Mexfly eradication plan calls for ground-based spray applications to host plants inside core-area boundaries, and no-spray buffers around all sensitive sites, including all water bodies. (See appendix A for further information about the current core areas.) This method of application is designed to minimize the potential for the harmful introduction of program chemicals to local marine and freshwater resources. The approaches used to mitigate potentially adverse impacts to bodies of water are described in EIS1 (APHIS, 2001).

The alternatives were compared with respect to their potential to affect environmental quality. Risk to environmental quality is considered minimal for the preferred alternative. Again, a well-coordinated eradication program using IPM technologies is expected to result in the least use of chemical pesticides overall, with minimal adverse impacts on environmental quality. The no action alternative and the quarantine and commodity certification alternative would likely result in broader and more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse impacts.

## **6. Cumulative Impacts**

This section considers the potential of the alternatives to cause cumulative impacts on the human environment. Not taking Federal action is expected to result in the cumulative impacts that arise from tolerating uncontrolled Mexfly infestations in the United States. The quarantine and commodity certification alternative places the burden of control efforts and expense on producers already engaged in complying with other quarantine and commodity certification requirements. Also, this alternative may increase the time it takes for commodities to reach their intended markets, or may prevent them from reaching consumers at all, which may contribute to negative public perception of the affected industry.

APHIS considered implementation of the preferred alternative in the context of, and in conjunction with, other pest insect eradication and quarantine projects in the LRGV program area (such as pink bollworm and cattle fever tick eradication efforts). The combination of different pesticide chemistries, targets for application, and application timings for these programs suggest interacting or multiple exposures are not likely to create significant cumulative impacts in the human environment.

Texas conducts continual SIT and monitoring in designated counties at risk of Mexfly infestation. Aerial sterile release for confirmed infestations occurs at a rate of 900 flies per acre (APHIS, 2015a and 2015b). No significant environmental impacts are expected to result from proper implementation of the SIT and monitoring portions of the Mexfly eradication and control program in the McAllen/Mission and Rangerville Quarantined Areas, as well as the ongoing control program in the Brownsville Quarantined Area.

The Mexfly program for the Quarantined Areas in the LRGV was examined for potential synergistic and cumulative environmental impacts. LRGV is an area of concern for pesticide exposure from the use of pesticides on adjacent fields and in homes or gardens in the rural and agricultural communities, and in urban communities in close proximity to agriculture (Belson et al., 2003; Donnelly and Cizmas, 2007). Malathion is one pesticide approved for use against Mexfly; it is also a prescribed treatment for the Texas cotton boll weevil eradication program. The use of malathion

in a Mexfly program within the Texas boll weevil quarantine (currently active in the counties of Brooks, Cameron, Hidalgo, Jim Hogg, Kenedy, Maverick, Starr, Webb, Willacy, and Zapata) should, therefore, be monitored and adjusted, where necessary, to minimize environmental impacts (TBWEF, 2014). Other treatments for potentially overlapping eradication programs in southern Texas target different arthropod species, and do not affect the same nontarget organisms (TDA, 2014). Additional eradication and quarantine programs affecting the LRGV are designed to target plant pests including, but not limited to, Asian citrus psyllid, and citrus greening.

There are no significant cumulative impacts anticipated as a consequence of the program or its use of component treatment measures. Residual impacts have not been reported from previous Federal and non-Federal actions targeting fruit fly infestations in the proposed program area, and APHIS does not anticipate any reasonably foreseeable future actions that could result in incremental increases in environmental effects. Based on the use pattern of foliar application to host trees with 500-meter radius of the detection site, quick degradation of program chemicals in the environment, and program practices such as personal protective equipment, public notification and host fruit removal, exposure to program workers and the general public from program pesticides is expected to be minimal to negligible.

Based on APHIS' review of the context and intensity of existing, ongoing, and potential future pesticide treatments in the LRGV, no cumulative or synergistic impacts to the human environment are expected to result from implementation of this program.

#### Closing remarks

During final preparation of this document a fourth Mexfly quarantine was being established in the La Villa region of Hidalgo County (see appendix B). This new program area covers an area of 67 square miles; it contains 70 acres of citrus production within the quarantine and zero acres of citrus in the core area (where eradication treatments would occur). The core area contains LaVilla Colonia and three schools: La Villa High School, La Villa Middle School and La Villa Elementary School. Based on the environmental analysis already conducted and referenced in this document, no additional environmental impacts are expected to result from implementation of the LRGV Mexfly program in the La Villa region.

Expansion of current Mexfly infestations may necessitate additional actions under this program, involving additional eradication, quarantines and regulatory treatments. Program activities and the use of chemical treatments as prescribed under the preferred alternative are considered to pose a

minimal risk to the human environment, as determined in EIS1 and EIS2 (APHIS, 2001 and 2008) and the nontarget species and human health risk assessments (APHIS, 2014b, 2003, 1999, 1998a, 1998b).

## **IV. Agencies Consulted**

State Historic Preservation Officer  
Texas Historical Commission  
108 W. 16th Street  
Austin, TX 78701

U.S. Department of Agriculture  
Animal and Plant Health Inspection Service  
Plant Protection and Quarantine  
Center for Plant Health Science and Technology  
1730 Varsity Drive, Suite 400  
Raleigh, NC 27606

U.S. Department of Agriculture  
Animal and Plant Health Inspection Service  
Policy and Program Development  
Environmental Risk and Analysis Services  
4700 River Road, Unit 149  
Riverdale, MD 20737

U.S. Fish and Wildlife Service  
Ecological Services  
c/o TAMU-CC,  
6300 Ocean Drive, Unit 5837  
Corpus Christi, TX 78412

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NPS—See U.S. National Park Service

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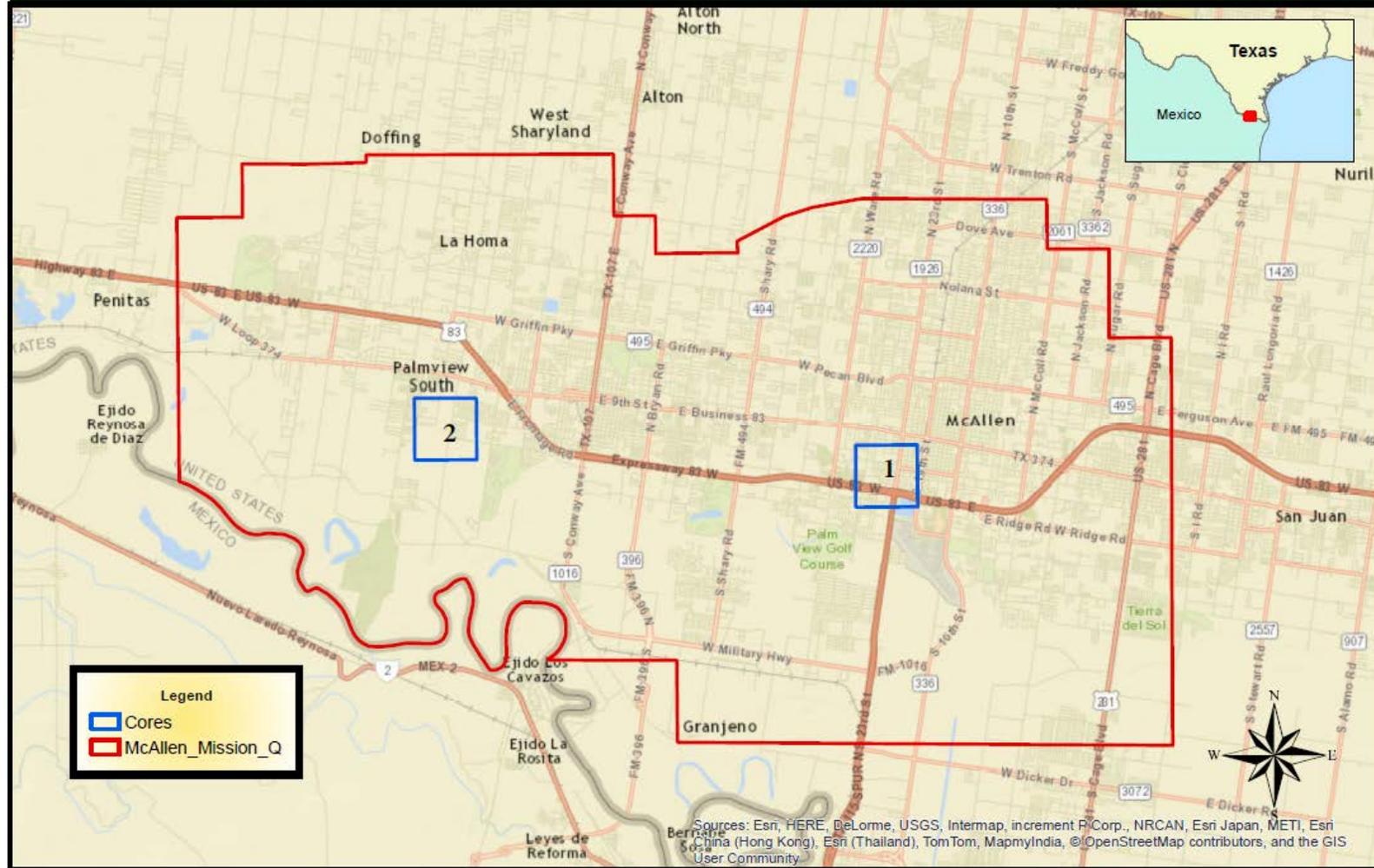
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**Appendix A. Views of McAllen/Mission and Rangerville  
Quarantined Areas—April 2015**



United States  
Department of  
Agriculture

# McAllen/Mission, Hidalgo County, Texas Mexican Fruit Fly Quarantine



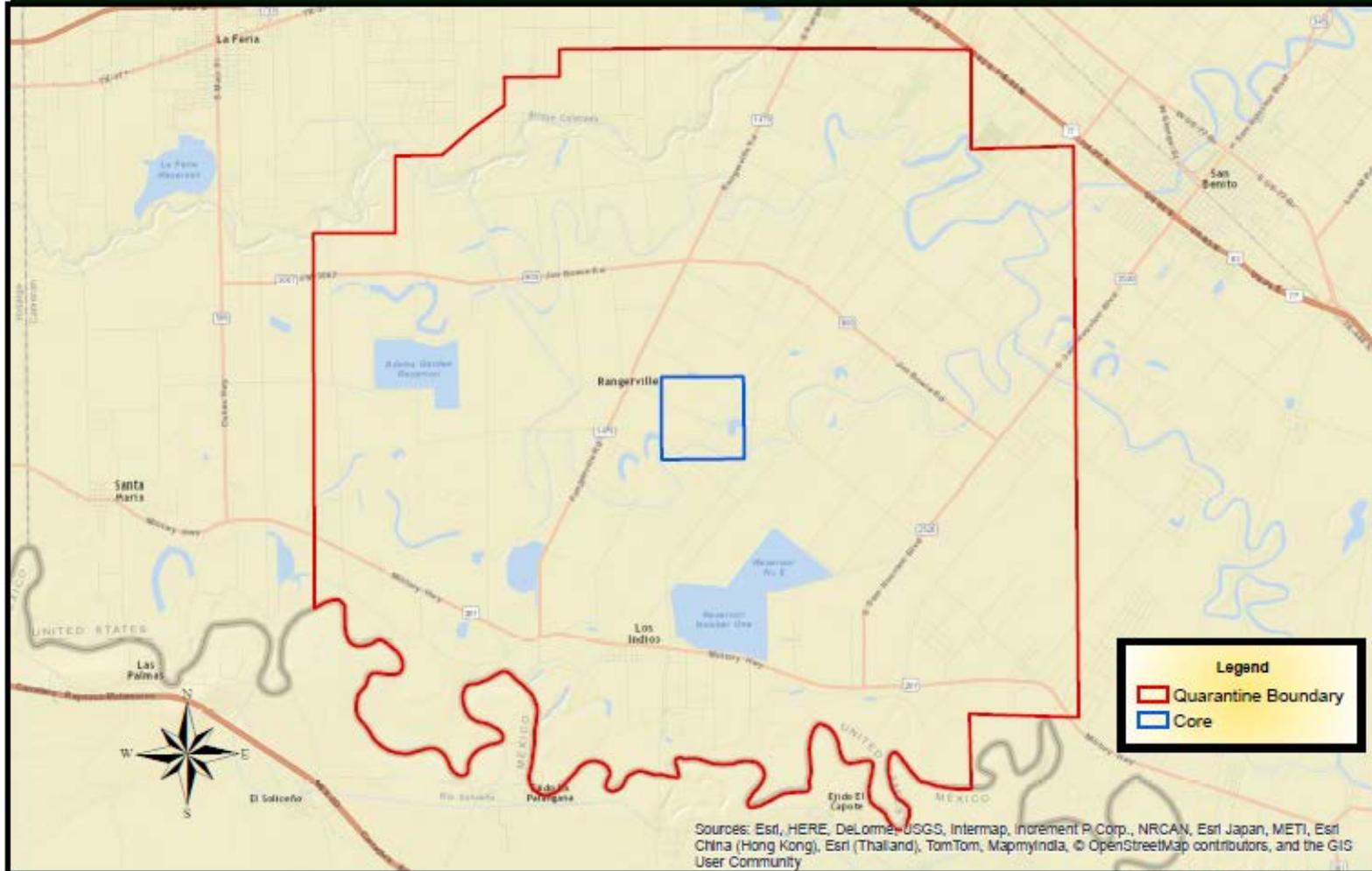
USDA-APHIS-PPQ  
903 San Jacinto Blvd  
Austin TX 78701

Date Printed: 04/07/2015  
Time Printed: 15:02 hrs CDT  
Coordinate System:  
NAD 1983 UTM Zone 14N

Document Path: C:\Maps\MXFF\2015\MXD\McAllen\_WF.mxd

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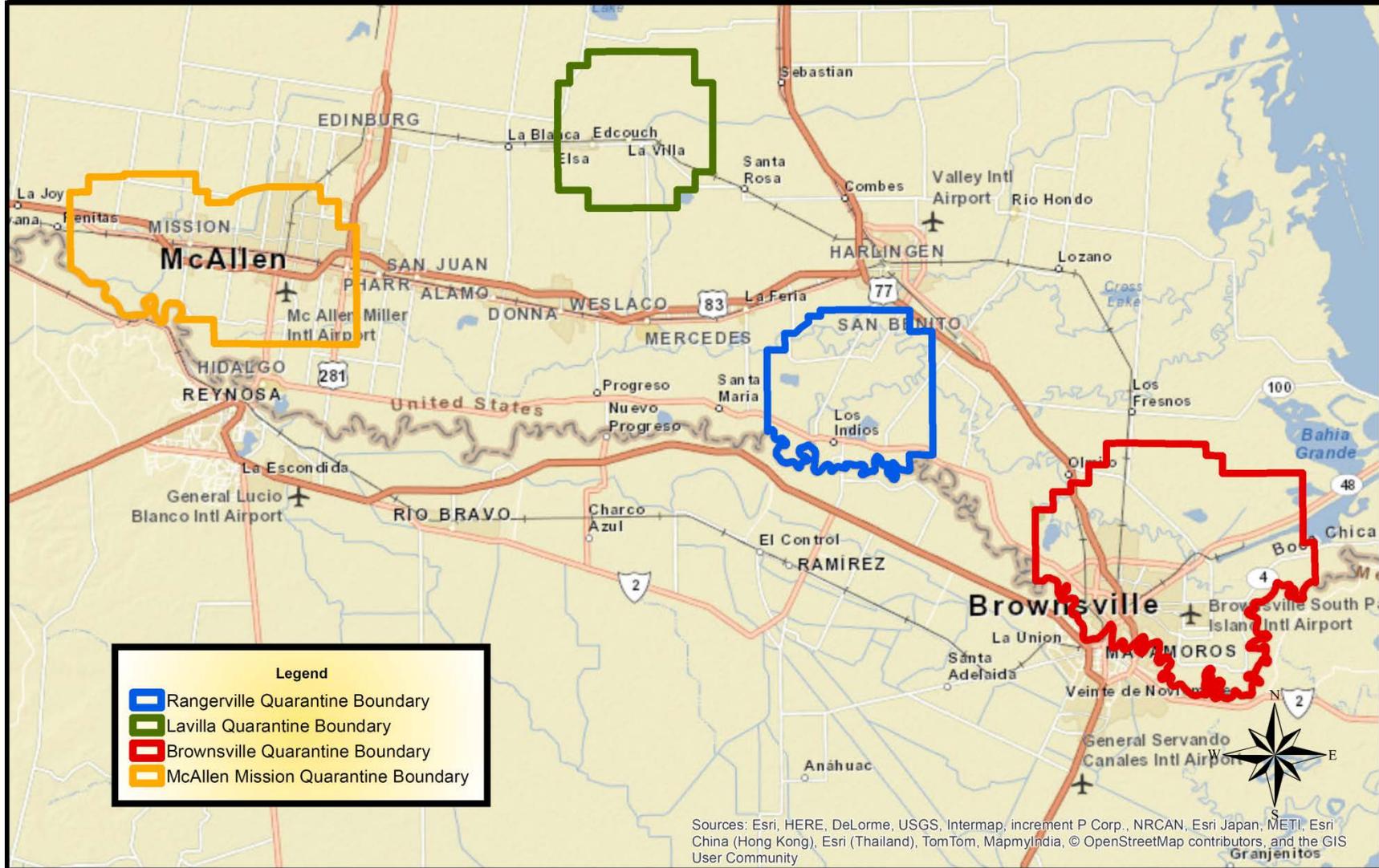
# Rangerville, Cameron County, Texas Mexican Fruit Fly Quarantine



**Appendix B. Lower Rio Grande Valley Mexfly Quarantined Area,  
Texas—as of April 14, 2015**



# 2015 Texas MXFF Quarantines



**Legend**

-  Rangerville Quarantine Boundary
-  Lavilla Quarantine Boundary
-  Brownsville Quarantine Boundary
-  McAllen Mission Quarantine Boundary

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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