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Mexican Fruit Fly Cooperative Eradication Program

Zapata County, Texas

Environmental Assessment
April 2016

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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 capable of devastating crops throughout many parts of the Western Hemisphere. Mexfly has been introduced into the United States repeatedly since its first detection in Texas in 1927 (NAPIS, n.d.). Successful eradication programs have prevented Mexfly from becoming an established pest in the conterminous United States.

Adult Mexflies are long lived (up to 11 months), highly fertile, strong fliers, and highly mobile (UFL, 2012). Because Mexfly can damage over 50 species of fruits, a wide range of commercial crops and dooryard production in the United States would suffer if Mexfly populations became established. Fruit infested by Mexfly 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 (CDFA, 2016).

Monitoring for Mexfly is ongoing in susceptible agricultural regions of Texas. In April, 2016, a new Mexfly outbreak was confirmed in Zapata County, Texas. On April 7, four live adult Mexflies (three sterile and one fertile wild male) were collected from a monitoring trap on a citrus host in the town of Zapata (APHIS, 2016a). Also on April 7, one live mated female Mexfly was collected from a monitoring trap on a citrus host in the Siesta Shores community, approximately 3.5 miles away (APHIS, 2016b). As a result of these finds, the Zapata Quarantined Area[1] was established: 92-square miles that contain residential suburban and waterfront property, with parcels of commercial and undeveloped land (see appendix A). Delimitation surveys continue around each Mexfly detection site; fruit stripping and spinosad applications were undertaken after confirmation of the finds (APHIS, 2016c).

In addition to the Zapata quarantined area, there are active Mexfly quarantine and eradication programs in the Lower Rio Grande Valley (LRGV) counties of Hidalgo, Willacy, and Cameron (TDA, 2016a). (See appendix B for an overview of the program areas.) The nearest Mexfly quarantine lies over 90 miles and about 2 hours due east of Zapata (pers. comm., Stewart to Shalom 8APR16). The closest commercial host production is about 88 miles away. However, many Mexfly-host plant species are cultivated across south Texas, increasing the potential environmental impact of the Zapata infestation.

APHIS and the Texas Department of Agriculture (TDA) are proposing a cooperative program to eradicate the Mexfly infestation and prevent the

[1] 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.

spread of Mexfly to noninfested areas of the United States. APHIS' authority for cooperation in the program is the Plant Protection Act (Title 4 of the Agricultural Risk Protection Act of 2000), which 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.

Working cooperatively with States and territories, APHIS identifies and eradicates Mexfly infestations. APHIS has cooperated with the California, Florida, Puerto Rico, and Texas Departments of Agriculture on fruit fly eradication programs since 1984. To date, every fruit fly population targeted by APHIS' cooperative control programs was successfully eradicated.

The State of Texas initiates *Anastrepha* spp. delimitation and eradication programs in locations where the types and number of detections are not yet triggering quarantine regulatory actions. Delimitation and eradication programs try to eliminate fruit fly infestations before reaching a quarantine threshold and imposing regulatory quarantines. Following Texas program protocols for Mexfly depopulation, releases of sterile Mexflies continue year-round at a rate upwards of 500 flies per acre in designated at-risk counties (APHIS, 2016d, 2015a, and 2015b). Zapata County is not currently on this list.

APHIS and its cooperating partners have discussed and comprehensively analyzed alternatives for Mexfly eradication 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 environmental analysis (EA) incorporates the findings of EIS1 and EIS2 by reference.

This EA analyzes the environmental consequences of alternatives considered for Mexfly eradication, and analyzes, from a site-specific perspective, environmental issues relevant to this particular program. The eradication measures being considered for this program were discussed and comprehensively analyzed within APHIS' fruit fly chemical risk assessments (APHIS, 2014, 2003, 1999, 1998a, and 1998b). These documents also are incorporated by reference and summarized within this EA. 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.

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 may include the use of regulatory controls, high density trapping, host larval survey, and chemical and biological control (sterile insect technique (SIT)) to facilitate the timely elimination of the current Mexfly infestation. These alternatives and their component techniques were discussed and comprehensively analyzed within EIS1 and EIS2 (APHIS, 2001 and 2008), and are incorporated by reference and summarized within this EA.

A. No Action

Under the no action alternative there would be no Federal efforts to eradicate Mexfly or restrict expansion of the Mexfly population from the infested area. In the absence of a Federal effort, quarantine and control would be left to State and local 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 treatment" might be the only reasonable alternative for some sensitive sites. In such cases, lack of treatment 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 agricultural markets.

Under the no action alternative, APHIS would continue cooperative practices to support the TDA detection trapping program and research. SIT Mexfly releases would continue over commercial citrus groves and high-risk areas in the LRGV of Texas and Mexico (APHIS, 2010). (For details about the Texas State program to control Mexfly, please use the following link: Texas Mexfly program information.)

B. Quarantine and Commodity Certification

This alternative combines a Federal quarantine with commodity treatment and certification, as stipulated under Title 7 of the Code of Federal Regulations (CFR) § 301.32. Regulated commodities harvested within the quarantine area would not be allowed to move unless treated with prescribed applications, and certified for movement outside the area. For a large infestation, intensive quarantine enforcement activities could be necessary, including safeguarding of local fruit stands, mandatory baggage inspection at airports, and judicious use of road patrols and regulatory

checks. The quarantine actions of this alternative are designed to reduce Mexfly movement outside treated areas, and reduce human-mediated transport of Mexfly in host plant materials to areas 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. Eradication methods that may be used in this alternative include (1) regulatory chemicals, (2) cold treatment, (3) vapor heat treatment, and (4) irradiation treatment. Regulatory chemical treatments may include fumigation with methyl bromide (MB), and bait spray with a mixture of protein hydrolysate (a food bait) and spinosad. (Refer to EIS1 (APHIS, 2001) for more detailed information about these 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 Zapata Mexfly program is eradication using an IPM approach. This alternative combines quarantine and commodity certification with eradication treatments, and is designed to be biologically effective while minimizing impacts to the environment, public intrusiveness, and program operating costs (TDA, 2016b). Successful eradication of a Mexfly infestation in the LRGV, using a similar IPM strategy, was declared in December 2015 (APHIS, 2015c).

For many species of exotic fruit flies, effective nonchemical control or eradication techniques do not exist (APHIS, 2001). APHIS' and TDA's Mexfly eradication program relies primarily on surveillance, bait sprays and SIT (TDA, 2016a). Currently, all Mexfly SIT resources are being used in the LRGV—consequently, SIT is not planned for Zapata County (pers. comm., Nash to Shalom 8APR16). Eradication efforts for the Zapata program may include any or all of the following:

- no action,
- regulatory quarantine treatment and movement control of host materials and regulated articles,
- host survey for evidence of breeding Mexfly populations,
- host removal,
- eradication chemical applications, and

- mass trapping to delimit the infestation and monitor post-treatment Mexfly populations.

Program areas for Mexfly infestations are centered on Mexfly detection sites (see map of proposed Zapata program area in appendix A). Program surveillance, quarantine, and treatment boundaries may be expanded to include other properties if additional adult flies or life stages are found.

APHIS' cooperative programs to eradicate Mexfly infestations in Texas use established procedures and treatments designed with the species' life stages in mind, including delimitation and treatment.

1. Delimitation

The use of Multilure and yeast McPhail traps delimits the infestation and helps determine the efficacy of treatments. To do this, traps are placed in varying densities inside the core, and buffer areas surrounding Mexfly detection sites (APHIS, 2016c). All monitoring traps will be serviced for a period equal to three Mexfly life cycles beyond the date of the last fly detection. Fruit of host plants will be sampled for the presence of eggs and larvae in a 200-meter radius around each detection site.

2. Treatment

Confirmation of a breeding Mexfly population leads to application of a targeted, ground-based foliar bait treatment to host trees and plants within a 200-meter radius of the find site. Treatments are highly localized sprays consisting of an organic formulation of either spinosad or malathion (pesticides) and protein hydrolysate, a food bait. Spinosad is relatively nontoxic to mammals and beneficial arthropods; it is certified organic and has approved uses for the control of certain pests of agriculture, livestock, pets, and humans (DeAngelis, 2004). Malathion has not been used for APHIS fruit fly programs in Texas in over 10 years; its use is not planned for the Zapata program (pers. comm., Nash to Shalom, 8APR16), however, owners may opt to use this chemical on their individual properties. Spinosad applications in Texas occur at 7 to 10 day intervals for three life cycles (APHIS, 2010).

Protein hydrolysate is a common attractant used in fruit fly treatments, increasing the efficacy of chemical applications, and reducing the area of pesticide treatments needed for control (Prokopy et al., 1992). Pest fruit flies are attracted to the protein hydrolysate, which can be derived from plants or yeast, where they then receive a lethal dose of the pesticide that is mixed with the attractant.

Evidence of a breeding population (immature life stages, mated female Mexfly, or multiple adult captures within a certain distance and timeframe) will result in removal of host fruit from each detection site and from all properties within a 100-meter radius of each detection site.

A quarantine boundary will be established to ensure any host material that leaves the program area is free of Mexfly. Host material may be treated in enclosed areas or containers by cold treatment, vapor heat treatment, irradiation, or fumigation with MB. Should the Mexfly quarantine spread to federally protected historical sites, wilderness, or tribal lands, program treatments will be restricted to those approved for the type of site in question.

Growers will be able to move their harvested fruit out of the quarantined area, under a limited permit, to enclosed facilities for processing into juice or for packing, after the fruit receives APHIS-approved MB treatment in the field or at the packing shed. Growers of host fruits may also treat their production areas using approved program treatments (field and/or premise treatment) and, under compliance agreement, have crops certified for movement to packing sheds.

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. Residents whose property will be treated, or whose fruit will be removed, are to be notified at least 48 hours in advance. 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 industry operations handling Mexfly-host material will be notified of the Mexfly quarantine location and treatment schedule.

For more detailed information regarding the alternatives considered for Mexfly control and their component methods, refer to the previously mentioned fruit fly risk assessments (APHIS, 2014, 2003, 1999, 1998a, and 1998b).

III. Potential Environmental Consequences

This EA analyzes the potential environmental consequences of alternatives considered for Mexfly control. The site-specific characteristics of the Mexfly program area were considered with respect to the preferred alternative's potential to affect human health, nontarget species (including threatened and endangered species), and environmental quality. Potentially sensitive sites were identified, considered, and accommodated through special selection of eradication methods and use of specific mitigation measures. APHIS will conduct any necessary additional environmental analyses if Mexfly detections lead to an expansion of the program boundary.

A. No Action

Lack of Federal action would place the burden of eradication on the State of Texas. It is reasonable to expect that Mexfly populations would continue to expand in number and area, leading to increased quarantine efforts. Any failure of those efforts could lead to the establishment of this pest within the conterminous United States. If eradication attempts are unsuccessful, APHIS expects substantial economic losses to growers in the United States. Crop loss is likely to lead to commodity scarcity, higher costs for U.S. consumers, and the temporary or permanent loss of valuable U.S. export markets.

B. Quarantine and Commodity Certification

The quarantine actions of this alternative are designed to reduce the human-mediated movement of Mexfly by preventing the transportation of host-plant materials beyond the quarantine boundary. A resident Mexfly population would be expected to remain within the quarantine boundary. Any failure in quarantine actions could lead to Mexfly establishment outside the program area. The commodity certification requirement would create a necessary but new layer of ongoing governmental presence in the marketplace. This situation could create inspection jobs; however, it would restrict trade until the produce was inspected and certified for sale. Host plants would likely cease being grown for domestic use as landowners shifted to non-Mexfly host plants.

C. Eradication Using an IPM Approach (Preferred Alternative)

This section considers the extent to which implementation of the preferred alternative might affect the human environment. It begins with a brief description of the physical aspects of the region and its residents, both within and near the proposed program area The preferred alternative, eradication using an IPM approach, may employ any or a combination of the following measures:

- no action,
- regulatory quarantine treatment and movement control of host materials and regulated articles,
- host survey for evidence of breeding Mexfly popoulations,
- host removal,
- eradication chemical applications (foliar bait spray), and
- mass trapping using pheromone lures or food bait as an attractant.

Pheromone lures present little or no risk to human health or to the general environment, based on their low toxicity in animal testing, high target

specificity, and low exposure to humans and the environment (Reilly, 2003). Review of the treatment protocols by APHIS indicates the chemical formulations used as pheromone lures in Mexfly program traps are unlikely to result in adverse environmental or human health risks (APHIS, 2014, 2003, 1999, 1998a, and 1998b). Therefore, the discussion in this section will focus on the other eradication measures of the preferred alternative.

1. Affected Environment

a. Land Characteristics and Demographics

Zapata County is located in South Texas in the Rio Grande Valley and is bounded by Webb County on the north, Jim Hogg County on the east, Starr County on the south, and the Rio Grande and Mexico on the west. Ninety-eight percent of the county is used as rangeland; urban areas and irrigated lands are concentrated near the Rio Grande (TWDB, 1996). Less than 1 percent of the county is considered prime farmland. The county's largest town and county seat is the U.S.-Census-designated-population of Zapata, located on the Rio Grande at the junction of U.S. Highway 83 and State Highway 16. Zapata County covers about 999 square miles, with elevations from 200 to 700 feet above sea level. The county generally has light-colored loamy soils over reddish or mottled clayey subsoils; limestone lies in places within 40 inches of the surface. The flora includes thorny shrubs, grasses, mesquite, and cacti. Natural resources include caliche, clay, lignite coal, sand, gravel, oil, and gas. Zapata County's climate is subtropical-subhumid. The average annual temperature is 74 °F. Rainfall averages 19 inches a year, and the growing season lasts 295 days (Garza and Long, 2016).

In 2015 the U.S. Census estimated 14,374 people lived in Zapata County. Zapata is the county's largest town (2010 population, 5,089) and occupies about 7.6 square miles; neighboring Siesta Shores reported a population of 1,382 in 2010 (USCB, 2016a and 2016b). Other communities include Medina (pop. 4,150), San Ygnacio (659), and Falcon (185). There are 41 colonias listed in the county; 24 of these colonias contain land within the Zapata Mexfly program boundary.[2] Ranching, tourism, and the production of oil and natural gas are the central elements of the local economy. In 2002, beef cattle, goats, onions, cantaloupes, and melons were the chief agricultural products. Recreational facilities in the county include the International Falcon Reservoir, Falcon State Park, the San Ygnacio Historic District, Corralitos Ranch, and San Francisco Ranch. The Texas Tropical Trail, which links the counties of the lower Valley, runs through the area. There are extensive hunting and fishing opportunities throughout the year (Garza and Long, 2016).

[2] "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, 2016).

The current Mexfly infestation centers on private property where fruit is grown near houses. Local land use is mainly residential, with scattered urban and light industrial districts. There is a public golf course (Los Ebanos) near one Mexfly treatment core, and a recreational park (Siesta Shores) near the other core. Mexfly host plants in the Siesta Shores and Zapata communities are cultivated primarily for non-commercial purposes, but may represent subsistence agriculture in certain neighborhoods. (For more information see table 1.)

b. Water Resources

At this time, there is no drought impact on surface water resources in the Zapata program area (Tinker, 2016). All of the water provided by the public water suppliers in Zapata County is surface water pumped from the Rio Grande (TWDB, 1996). The Rio Grande, which defines much of the international border between Mexico and the United States, is a natural river system bordering Zapata County (see figure 1.).

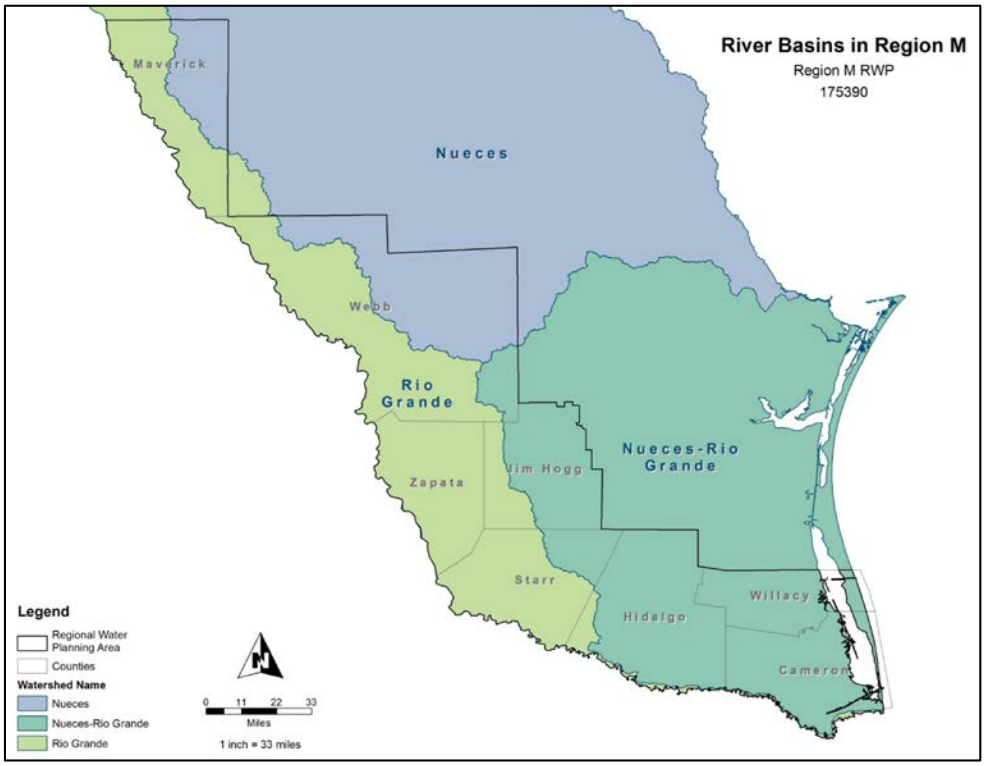

Figure 1. Rio Grande Region Water Planning Area (Region M). (State of Texas, 2016.)

Table 1. Distance from Center of Detections to Certain Land Sites.*

Designated Land Use	Distance Rounded Off to Nearest Tenth of a Mile
Nearest Airports	• Zapata County Airport, 10.0 • Laredo International Airport (USA), 50.0 • Aeropuerto Internacional Quetzalcóatl (Mexico), 57.0
Mexico	To border, 1.6
Nearest Seaports	• Port Isabel: 150.0 miles • Port of Brownsville: 145.0 miles.
Colonias	Within the proposed treatment area • Falcon Lake Estates • Lago Halcon B Colonia • Lago Halcon A Colonia • Siesta Shores Colonia • Siesta Shores 1 Colonia • Siesta shores 2 Colonia • Siesta Shores Section A Colonia • Black Bass • Morgan's Lakefront Lodge Colonia • Falcon Mesa • Four Seasons Colonia • Sunset Villa Colonia • S Truman Phelps Colonia • Falcon Estates Colonia • Buena Vista Colonia • Falcon Shores • A F Pierce Colonia • Guzman Colonia • Zapata • Flores Addition Colonia • Medina • Manuel Median Addition Colonia • Cuellar Colonia • Ranchito San Jose Colonia
City, State and Federal Lands	Within the proposed treatment area • Siesta Shores Park • Romeo T. Flores Park • Zapata County Sesquicentennial Trail Park • Zapata Cemetery Falcon State Park (in Starr County, Texas), 30.6
Federally Registered Historic Sites	None within the proposed program area
Nearest Native American Reservation	• Kickapoo Reservation, about 250 • Ceded Comanche and Kiowa lands: inside proposed quarantine and about 2.5 miles outside proposed treatment area
Organic Production and Certified Farmers Markets	None registered within 50 miles
Schools and Academic Institutions	• 1 inside proposed treatment area • 6 inside proposed quarantine

* See appendix C for data sources.

Zapata County is located within two Falcon Reservoir watersheds—Arroyo Loma Blanca and Arroyo Cabeza de Vaca. Both watersheds are also within the proposed Mexfly quarantine. The Rio Grande forms the county's

western border and is the county's main source of potable and irrigation water. There are no impaired waters listed for the Zapata program area. The U.S. Environmental Protection Agency defines impaired waters as "waters with chronic or recurring monitored violations of the applicable numeric or narrative water quality standards" (EPA, 2015). (See table 2 for information on other water resources as they relate to the proposed program area.)

Abnormally dry conditions continue to result in mandatory water conservation, recycling, and restricted use throughout other parts 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 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 (RGRWPG, 2016).

Table 2. Distance from Center of Detections to Certain Water Resources.*

Type of Resource	Distance Rounded Off to Nearest Tenth of a Mile
Wetlands	• Lake: about 23,474 acres • Fresh water, forested/shrub: >143 acres • Fresh water, emergent: about 38 acres • Fresh water, pond: >14 acres
Water Bodies within 6 miles	Within the proposed treatment area • Falcon International Reservoir, 0.4 • Unnamed canal, 0.8 Within the proposed quarantine area • El Rancho Tank, 4.6
Impaired Waters within 15 miles	• None listed

* Sources: (FWS, 2016) and data sources listed in appendix C.

2. Human Health

The principal concerns for human health are related to potential program use of chemical pesticides, including spinosad or malathion bait, and MB (as a fumigant). Factors that influence the human health risk are associated with pesticide use, and include pesticide toxicity and exposure to humans. These factors are influenced by the use pattern and environmental fate for a particular pesticide.

Spinosad is toxic to specific invertebrate species but has low toxicity to humans and other mammals (APHIS, 2014). Limited data exists regarding the toxicity of the protein hydrolysate bait used in the spinosad formulation, however the available data suggests low acute toxicity to human health.

Malathion is an organophosphate insecticide that targets the nervous system and acts by inhibiting acetylcholinesterase. In humans and other mammals, malathion is metabolized to its oxon (malaoxon), a more potent cholinesterase inhibitor than malathion. Carboxylesterases and other metabolic processes detoxify malathion and malaoxon to polar, and water-soluble compounds that are excreted. Mammals are less sensitive to the effects of malathion than insects due to increased carboxylesterase compared resulting in less accumulation of malaoxon. Malathion has low acute toxicity via oral, dermal, and inhalation exposure routes. EPA classifies malathion as having "suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential" (EPA, 2006). This indicates that any carcinogenic potential of malathion is so low that it cannot be quantified based upon the weight of evidence. At high doses, human health effects from malathion may include headache, nausea, vomiting, abdominal cramps, diarrhea, blurred vision, muscle weakness and twitching (ATSDR, 2003). If malathion is used, high dose exposures are not expected from program applications of malathion. Malathion may have synergistic effects when used with other organophosphate or carbamate pesticides (USFS, 2008). However, other organophosphate or carbamate pesticides are not proposed to be used in the Mexfly eradication program.

Exposure to program pesticides can vary, depending upon the pesticide and the use pattern. The Mexfly eradication program will employ ground-based targeted applications of spinosad (or malathion, if it is used) combined with protein bait. Workers who mix, load, and apply pesticides, and members of the public who live or visit the Mexfly eradication program area are the potentially exposed human populations. Proper use of personal protective equipment and engineering controls limit the exposure of program workers.

Exposure to the general public is not expected based on the targeted foliar applications and the program mitigation measure. Commercial applications, should they become necessary, will be applied to properties owned by commercial growers and producers, making exposure to the general public unlikely. Residential neighborhoods and other areas of public traffic within the Mexfly eradication program receive only targeted foliar applications. Another mitigation measure designed to minimize exposure of humans to program pesticides is the requirement for public notification. Information concerning the Mexfly eradication project will be shared via press releases and media announcements to the general public. Either the county agricultural commissioner or public information officer will serve as the primary contact to the media. Any resident with property to be treated will be contacted directly or notified in writing at least 48 hours prior to treatment. Following the treatment, notices will be left with

homeowners detailing precautions to take and safe intervals of time that should elapse before harvesting fruit on the property.

Spinosad bait applications in Texas occur at 7-to 10-day intervals for three life cycles. Applications of malathion bait sprays in commercial or production orchards in Texas are conducted by a private contractor hired by industry, and occur at 10- to 14 day intervals for three life cycles (APHIS, 2010). The potential for exposure to the general public after pesticide application is low because spinosad and malathion are not persistent in the environment with a half-life of 2.0 to 11.7 days (spinosad) and 1 to 6 days (malathion) on foliage. An additional summary of the environmental fate of the pesticides is discussed in the in the environmental quality portion of this chapter (chapter 3, section 6).

If spinosad bait and malathion bait applications are restricted to target surfaces and made in accordance with EPA label instructions, effects to human health and the environment are expected to be incrementally negligible. The use of protein hydrolysate as an attractant in the Mexfly program is also expected to present a low risk to human health. The attractant has low toxicity and its ground-based, targeted method of application results in a low probability of exposure and risk to workers and the general public.

Should treatment by MB fumigation be indicated, adherence to EPA label restrictions and application in enclosed areas or containers will protect applicators and the general public from risk of exposure to the fumigant (APHIS, 2007 and 2002).

The analyses and data of EIS1 and EIS2, and the associated human health risk assessments, indicate exposures to pesticides 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 human health risk assessments (APHIS, 2014, 1999 and 1998a) for more detailed information relative to human health risk.).

APHIS recognizes a small portion of the population may have greater than usual sensitivity to certain chemicals, and program treatments may pose a higher risk for these individuals. Special communication strategies to mitigate this risk are discussed in detail in appendix C of EIS1 (APHIS, 2001).

Trap placement and chemical applications may be rescheduled if rainfall of strong winds are forecast for the program area. Site inspections will continue to ensure existing program treatments are not likely to affect humans. The destruction or relocation of traps and treatments due to weather events is unlikely to result in adverse impacts to the human environment because the potential pesticide toxicity is reduced by dilution during the storm's water and air movement.

Of the three alternatives considered, a well-coordinated eradication program using IPM technologies results in the least use of chemical pesticides and minimizes their potential to adversely affect human health. The no action alternative and quarantine/commodity certification alternative are not expected to eliminate Mexfly as readily or as effectively as the preferred alternative. Over a protracted period of no action, 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

APHIS summarizes its findings on potential environmental impacts of implementing the action alternatives on historic sites, minority and/or low-income communities, and tribal interactions in the proposed quarantine program area in this section.

The National Historic Preservation Act of 1966, as amended (16 U.S. Code (U.S.C.) § 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 Code of Federal Regulations §§ 63 and 800). APHIS identified six locations listed on the National Register within Zapata County. The historic places include three ranches (Corralitos Ranch, San Francisco Ranch, and Trevino-Uribe Rancho), and a historic district where buildings may have surrounding landscaping that includes Mexfly host plants (Anon., 2016). Only one of the 19 cemeteries in Zapata County is listed as a Texas Historical Cemetery (Anon., 2016). The 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 bait applications or backpack sprayers 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 Zapata County. In February 2014 and March 2016, the SHPO evaluated the Lower Rio Grande program area (Hidalgo, Willacy and Cameron Counties) and determined that historic properties would not be affected by the proposed action. To ensure historic properties will not be adversely affected by the proposed action, APHIS will not conduct aerial chemical applications at locations with historical or archeological importance. Instead, surveillance trapping and fruit stripping by hand may occur. Hand spraying with a 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.

In general, APHIS' fruit fly eradication programs are compatible with the preservation of historic sites because control activities are inconspicuously integrated into the site, do not disturb the ground, and do not affect human-made structures. APHIS restricts program treatments and activities to an as-needed basis, and also can modify normal program activities at historically significant locations to reduce pesticide release, if necessary. APHIS will not conduct aerial chemical applications; spraying will be ground-based, directly targeting foliage. This may include hand spraying with a backpack sprayer. In this program, APHIS intends to use surveillance trapping or bait treatments and, when necessary, fruit stripping by hand. If APHIS discovers any archaeological resources, the appropriate individuals will be notified.

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*. 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 are not anticipated as a result of carrying out the preferred alternative's surveillance activities, trapping, or program chemical applications.

"Colonia" is a term used in the Southwestern 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., 2013). 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., 2013).

Residents of Zapata County reported a median household income of less than $31,000 per year, and the median value of owner-occupied houses was estimated as below $55,000. The percentage of residents below the poverty level from 2009-2013 in the county exceeded 32 percent (USCB, 2016a). Based on this data, APHIS finds Zapata County is a low-income area. The ability of APHIS program delivery systems to consistently minimize the potential for pesticide exposure ensures this low-income population does not disproportionately experience adverse impacts.

In Zapata County, 93.9 percent of the recorded population identifies itself as Hispanic or Latino (USCB, 2016a). To meet the linguistic needs of this group, advance notice of program activities and potential exposure hazards will be provided in Spanish to members of colonias and other non-English-speaking populations or people in areas that generally lack access to news media.

Federal agencies comply with Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. The preferred alternative does not pose any disproportionate adverse effects to children because maintenance of traps and any pesticide applications would not occur when children are present in the immediate area. The intermittent presence of children at shelters, playgrounds, parks and picnic areas, religious centers, public/private campgrounds and trailer parks, athletic fields, bus depots, and outdoor community facilities means they are likely to frequent locations where fruit fly baits are in use; however, the placement of bait traps is likely to be far above their reach.

There are several schools within the quarantine area, and some may occur within the treatment zone (e.g., schools within the Zapata County Independent School District). APHIS will meet the following program requirements for every school 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.
- Baits will not be applied on school property.
- A bait or backpack sprayer would be used if any pesticide applications are deemed essential.
- Any exposure of children to applied products is negligible based on the program's application methods and the product formulations.

The proposed program is not expected to result in 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.

Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, calls for agency communication and collaboration with tribal officials when proposed Federal actions have potential tribal implications. The Archaeological Resources Protection Act of 1979 (16 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, 2016; 25 U.S.C. §§ 3001 et. seq.), APHIS finds the nearest reservation is more than 250 miles away (Kickapoo Traditional Tribe of Texas). Based on the best available information, several Indian tribes ceded land in the area in treaties dating from 1865-1874 while retaining hunting interests. This suggests it is prudent for APHIS to contact the present day Comanche Nation of Oklahoma, and the Kiowa Indian Tribe of Oklahoma in addition to the Kickapoo Tribe to ascertain their interests. 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 Lower Rio Grande Valley area (Roberta Duhaime, pers. comm., 30 January, 2014). APHIS does not expect program activities to affect any tribes or tribal lands. The proposed action will not disturb the ground, so it is unlikely to affect Native American sites or artifacts. Should APHIS discover any archaeological resources, it will notify the appropriate individuals. APHIS is in the process of notifying the tribal governments regarding the program activities and will consult with tribal entities, as needed.

Individual tribal members living within the quarantine zone will not be disproportionately affected in comparison to other individuals in the area because eradication treatments are applied to host foliage above the unassisted reach of most humans, and foliar canopy spraying is highly targeted. The proposed action will not disturb the ground, so it is unlikely to affect Native American sites or artifacts. For these reasons, APHIS does not expect any tribal members to be directly affected by program activities.

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.

Current eradication activities in Zapata County will be limited to ground-based foliar applications of spinosad, combined with protein hydrolysate bait that is applied to host plants. Malathion may be used as an alternative to spinosad, although it has not been used by the Texas program for at least 10 years. The malathion and spinosad bait treatments target Mexfly life stages on host plants in a manner that minimizes potential exposure and associated risks to nontarget species.

Protein hydrolysate is a common attractant used in fruit fly treatments, increasing the efficacy of chemical applications and reducing the area of pesticide treatments needed for control (Prokopy et al., 1992). Mexflies are attracted to the protein hydrolysate where they then receive a lethal dose of the pesticide (spinosad or malathion) that is mixed with the attractant. Protein hydrolysate alone is expected to have minimal impacts to environmental quality and nontarget species because of its low toxicity.

Malathion is an organophosphate pesticide whose mode of toxic action is primarily through acetylcholinesterase inhibition (Klaassen et al., 1996; Smith, 1987). The toxicity of malathion is very slight to moderate for mammals and birds. For fish, the acute toxicity of malathion varies from moderately toxic to some species of fish, to very highly toxic to other species (Beyers and Sikoski, 1994; Mayer and Ellersieck, 1986; USFS, 2008). Malathion is moderately to very highly toxic to most aquatic invertebrates on an acute basis, depending on the sensitivity of the species.

Spinosad has low to moderate toxicity to wild mammals and birds. Spinosad toxicity to fish is moderate, while aquatic invertebrates are more sensitive in acute and chronic exposures. Toxicity to terrestrial invertebrates is variable; however, spinosad is considered highly toxic to honey bees. Risks to nontarget species from the use of either malathion or spinosad baits are anticipated to be negligible because the proposed use pattern (targeted, hand application of the bait) results in a low potential for exposure to most taxa. The bait applications attract only a small number of invertebrate species other than Mexfly. (Refer to EIS1 and EIS2 (APHIS, 2001, 2008) and the supporting nontarget risk assessments (APHIS, 2014, 2003, 1998) for more information on risks to all classes of nontarget species.)

Conservation areas in Zapata County provide important habitat for a wide variety of wildlife. For example, Zapata County contains a portion of the Lower Rio Grande Valley National Wildlife Refuge. Falcon State Park and the Falcon International Reservoir provide habitat for wildlife including birds and fish in the county. Seedeater Sanctuary is a Zapata County park where white-collared seedeaters breed in the cane beds along the river.

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 or wetlands of potential ecological importance. No program chemical applications will be permitted at these sites or other protected areas. However, 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 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.

Approximately 290 bird species are found in Zapata County, including the red-billed pigeon, Audubon's oriole, Cassin's sparrow, and the varied bunting, green jay, great kiskadee, vermillion flycatcher, hooded oriole, and black phoebe (ZCC, 2012). APHIS evaluated the proposed Mexfly program in terms of potential impact on migratory avian species. Implementation of the preferred alternative is not expected to have any adverse effect on migratory birds or their flight corridors.

Malathion is only slightly to moderately toxic to birds, and spinosad acute and chronic toxicity to birds is low (APHIS, 2014). The targeted application of the insecticide baits to Mexfly host plants within 500 meters of Mexfly detections, usually in residential areas, and the short half-life of malathion on vegetation would result in limited to no exposure of birds to malathion. The localized and direct application of malathion and spinosad baits to host plants would not result in any impacts to food of birds. Birds would not be exposed to methyl bromide treatments.

FWS recommends that any activities requiring vegetation removal or disturbance should avoid the peak nesting period of March through August to avoid destruction of individual birds, nests, or eggs. If project activities must be conducted during this time, FWS recommends surveying for nests prior to commencing work. If a nest is found, if possible, FWS recommends a buffer of vegetation (≥ 50 feet) remain around the nest until young have fledged or the nest is abandoned.

b. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) and ESA's implementing regulations require Federal agencies to consult with 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 5 federally listed species in Zapata County: ocelot (*Leopardus pardalis*), Gulf Coast jaguarundi (*Felis yagouaroundi*), least tern (*Sterna antillarum*), ashy dogweed (*Thymophylla tephroleuca*), and Zapata bladderpod (*Lesquerella thamnophila*). APHIS contacted the FWS, Ecological Services Field Office in Corpus Christi, Texas, on April 10, 2016 regarding the proposed treatment. The FWS reviewed a map of the quarantined area, and indicated that there was no critical habitat within the area. The treatment areas where spinosad or malathion will be applied are on private property in dooryard fruit. Local land use is mainly residential, with scattered urban and light industrial districts, and is not habitat for listed species. Therefore, APHIS has determined that the proposed program will have no effect on listed species or critical habitat in the current treatment areas. Should the program area expand or further outbreaks be detected that are not considered herein, APHIS will consult with FWS and other appropriate agencies, as necessary.

5. Environmental Qualilty

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, program pesticides remain the major concern for the public and the program. Although program pesticide use is limited, especially in comparison to other agricultural pesticide use, the proposed action would result in a controlled release of chemicals into the environment. The fate of those chemicals varies with respect to the environmental component (air, water, or other substrate) and its characteristics (temperature, pH, dilution, etc.). The environmental fates of spinosad, malathion, and MB are outlined below. (Refer to EIS1 and EIS2 (APHIS, 2001 and 2008) and the risk assessments (APHIS, 2014, 2003, 1999, 1998a and 1998b) for a more detailed consideration of program pesticides' environmental fates.)

Attractant ingredients (e.g., yeast and protein hydrolysate baits) have minimal affect on environmental quality, based on EPA-approved use patterns and the ingredients' rapid degradation. Use of these attractants in Mexfly program treatments is not expected to result in impacts to environmental quality beyond those described for the below chemicals.

- **Spinosad** is not considered mobile in soil as it 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. Spinosad is quickly metabolized by soil micro-organisms under aerobic conditions, and has a half-life of 9.4 to 17.3 days. Spinosad is not sensitive to hydrolysis, but 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 plant surfaces. 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 (APHIS, 2014; 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** (MB) fumigation will not be used as an eradication treatment, but may be employed as a regulatory treatment. MB volatilizes into air from soil and water, and is known to contribute to stratospheric ozone depletion. The volatilization half-life for MB from surface water ranges from 3.1 hours to 5 days. The degradation half-life of MB in water ranges from 20 to 38 days, depending on temperature and pH. Volatilization of MB from surface soil is rapid, with a half-life ranging from 0.2 to 0.5 day. The degradation half-life of MB in soil ranges from 31 to 55 days. MB has a low affinity to bind to soils, however, 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. (See section 6 of this chapter regarding MB's potential cumulative impacts to the environment.)

Urban and agricultural runoff may flow directly into local waters, picking up trash, dirt, chemicals, and other contaminants along the way. If treatment is indicated in close proximity to a body of water where pesticides might be directly discharged into the water, TDA will analyze the environmental setting, and establish and follow site-specific best management practices. The prescribed method of spray application directly to host plants is designed to minimize drift and runoff. Mitigation measures will be applied to protect marine and freshwater resources. Personnel will maintain a minimum distance of 98 feet (30 meters) from surface water. Personnel applying pesticides will adhere to label directions, State and Federal laws, and recommendations of the environmental compliance staff associated with the program. Water body contact is not anticipated due to the targeted application measures and the environmental fate of the pesticides used in *Anastrepha* spp. cooperative eradication programs.

The alternatives were compared with respect to their potential to affect environmental quality. Risk to environmental quality is considered minimal. Again, a well-coordinated eradication program using IPM technologies would 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.

The proposed program area was examined to identify characteristics that would tend to influence the effects of program operations. Potentially sensitive areas were identified, considered, and accommodated, as necessary, through special selection of control methods and use of specific mitigation measures. Allowances were made for the special site-specific characteristics that would require a departure from the standard operating procedures. The approaches used to mitigate for adverse impacts to bodies of water are described in EIS1 (APHIS, 2001).

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. Federal quarantine restrictions and commodity certification requirements would place the burden of control efforts and expense on producers already engaged in complying with other quarantine and commodity certification requirements. Either of these alternatives 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 consumer shortages and 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 Zapata program area (e.g., pink bollworm acattle fever tick eradication efforts). These programs use pesticides with different chemistries. They target different pests, and are applied at different times. The combination of these different pesticide chemistries, targets for application, and application timings suggest limited interacting or multiple exposures that are not likely to create significant cumulative impacts in the human environment.

Current and future in-State Mexfly programs could potentially merge into one larger program area. When Mexfly eradication programs are combined with trapping and eradication actions across Texas counties, APHIS expects a beneficial cumulative impact on the environment from reduced Mexfly populations causing damage to fruit combined with overall fewer chemical treatments. Trapping and surveys for Mexfly continue under the Texas fruit fly detection and monitoring program, and sterile Mexflies continue to be released over high-risk regions as a preventive measure.

The Zapata Mexfly program activities and treatments are designed not to overlap (in time or space) with similar activities and treatments. Pesticide use in a Mexfly control program that overlaps with another Anastrepha spp. program is monitored and adjusted, where necessary, to minimize environmental impacts. During 2014, for example, infestations of West Indian fruit fly (*Anastrepha obliqua* (Macquart)) were detected in areas being treated for Mexfly. The eradication program protocols for West Indian fruit fly being the same as that for Mexfly, no additional chemical treatments were considered necessary. Due to the passage of time and the prevailing weather conditions in southern Texas during 2015 and early 2016, no chemical residues are believed to remain from previous Mexfly programs that could result in additive or synergistic chemical effects with previous program chemical applications.

The Mexfly programs for Zapata County and the LRGV were examined for potential synergistic and cumulative environmental impacts. The Mexfly program is the first of its kind for Zapata County. The LRGV is an area of concern for pesticide exposure from the use of pesticides on adjacent fields, in homes or gardens in the rural agricultural communities, and the urban communities in close proximity to agriculture (Belson et al., 2003; Donnelly and Cizmas, 2007).

Malathion is a 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, 2016). Other treatments for potentially overlapping eradication programs in southern Texas target different arthropod species, and do not affect the same nontarget organisms (TDA, 2016c).

No significant environmental impacts are expected to result from proper implementation of this Mexfly eradication and control program. The differences in pesticide chemistries, targets for application, affected species and resources, and application timing between the Mexfly program and other pest control programs in Texas are not likely to create significant cumulative impacts in the human environment. No synergistic, additive, or cumulative impacts from pesticide applications in the Zapata Quarantined

Area are expected with the following active control programs (TDA, 2016c)—

- **Asian citrus psyllid.** Quarantine over the entire State; pesticide applications in the citrus-growing areas of eight counties, including Zapata.

- **Citrus greening.** Quarantine over six counties, not including Zapata.

- **Exotic fruit fly species.** Mexfly programs in Hidalgo, Willacy, and Cameron Counties.

Care should be taken, however, when multiple pest species in the same area are targeted for treatment using the same chemical. Spinosad, for example, has other labeled food and non-food uses, and is currently used in a variety of pest control efforts, including the control of termites and European grapevine moth (APHIS, 2014). Implementation of a Mexfly eradication program could lead to an increase in spinosad use, and the possible overlap of APHIS and non-APHIS program treatments. The Mexfly treatment schedule will be adjusted in locations where another CDFA or APHIS program may have scheduled similar treatments to avoid additive chemical impacts.

It is uncertain how pesticides may be used by private entities in the Mexfly program area. In terms of Federal and Texas State program activity, there are no significant cumulative impacts anticipated as a consequence of implementing the preferred alternative or its component treatment measures. The preferred alternative is designed for pesticide applications to avoid overlapping treatment areas, and to prevent nontarget exposure until pesticide residues are degraded.

APHIS determined uses of MB for fruit fly quarantine treatments pose negligible potential for cumulative impacts to the environment. For information on potential depletion of the ozone layer related to MB released into the atmosphere, see the *Rule for the Importation of Unmanufactured*

Wood Articles from Mexico, with Consideration for Cumulative Impact of Methyl Bromide Use, Final Environmental Impact Statement (APHIS, 2002) and subsequent analyses, such as the *Importation of Solid Wood Packing Material, Supplement to the Final Environmental Impact Statement* (APHIS, 2007).

There were no residual impacts from previous Federal and non-Federal actions targeting fruit fly infestations in the State of Texas, and there are no reasonably foreseeable future actions that could result in incremental increases in environmental effects. Based on APHIS' review of the context and intensity of the existing, ongoing, and potential future treatments, there will be no cumulative impacts to the human environment resulting from this Mexfly cooperative eradication program.

As discussed previously, additional actions may be implemented in this program, including additional quarantines and regulatory treatments. The anticipated use of these treatments is considered to pose 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, 2014, 2003, 1999, 1998a, and 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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FWS—See U.S. Department of the Interior, Fish and Wildlife Service

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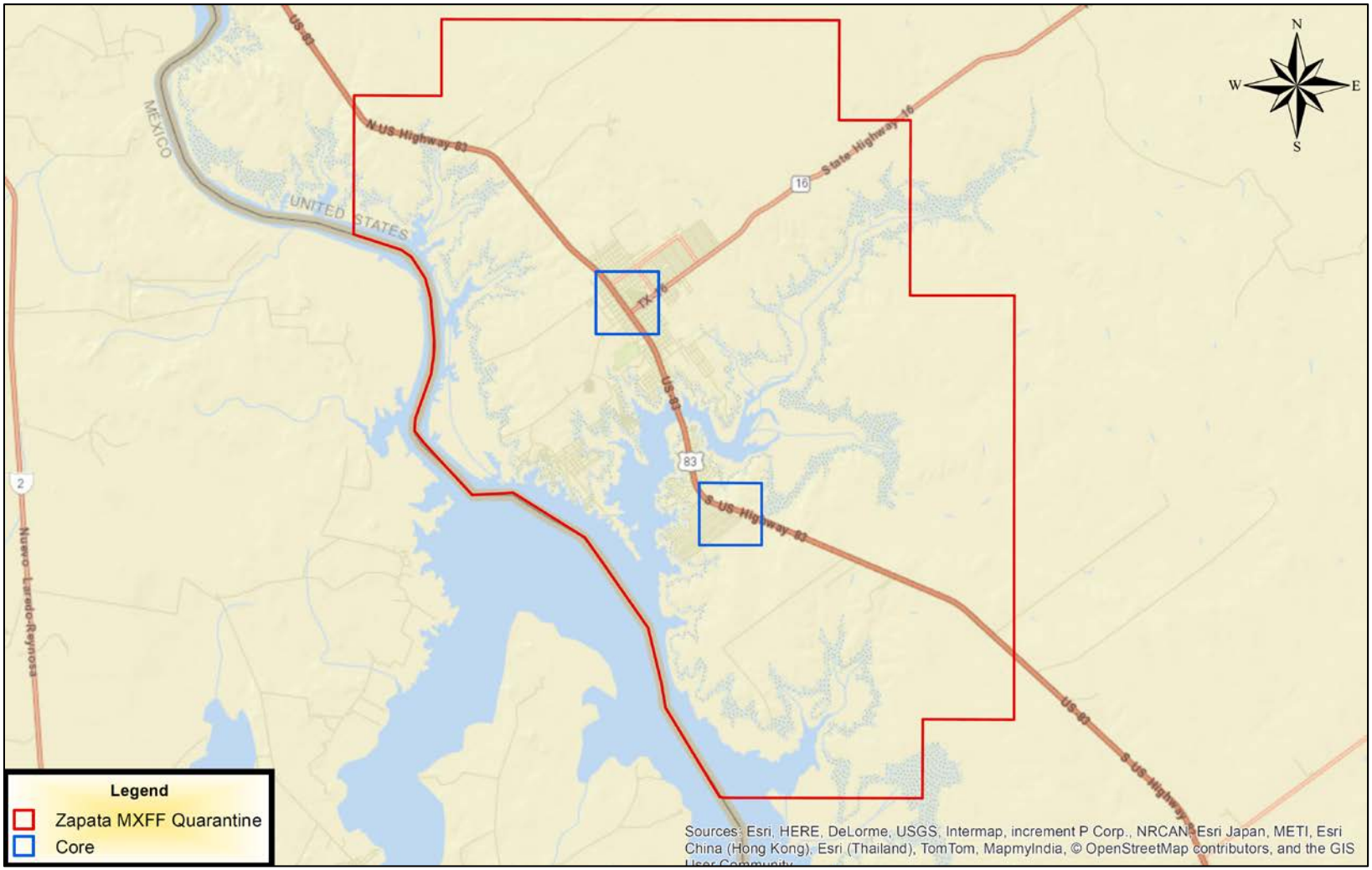
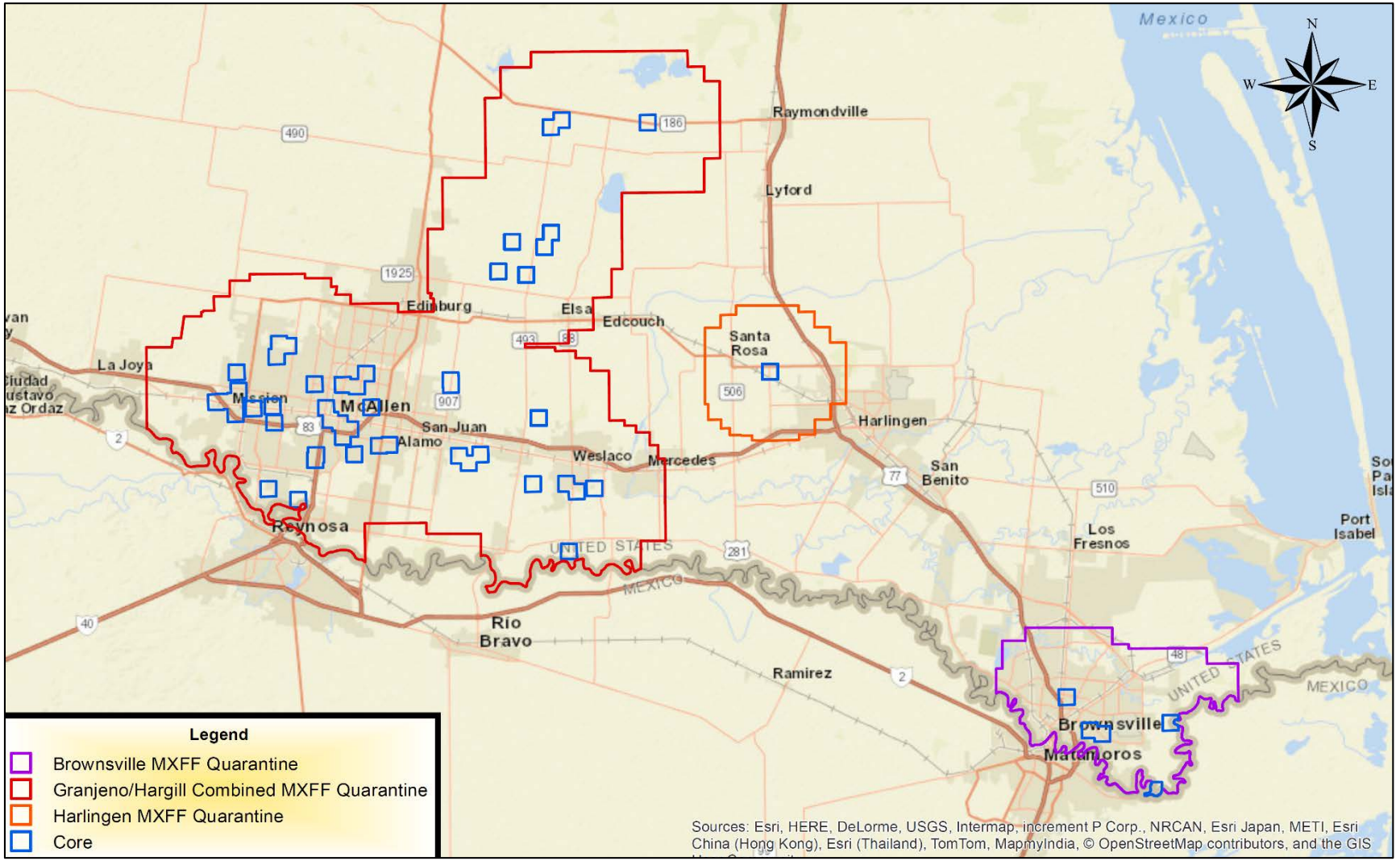
Appendix A. Zapata County Mexfly Program Area, Texas—as of April 8, 2016



Source: USDA-APHIS-PPQ

Appendix B. Other Mexfly Program Areas in South Texas—as of April 8, 2016



Source: USDA-APHIS-PPQ

Appendix C. Outside-APHIS Spatial Data Resources Used to Prepare this Document

The following resources were used by USDA-APHIS-PPD, 8–11 April 2016.

Web-Based Mapping Application for Environmental Assessments

- **NepaAssist:** http://nepassisttool.epa.gov/nepassist/entry.aspx

For Information on—

- **Bing Maps Road:** http://www.esri.com/software/arcgis/arcgisonline/bing-maps.html
- **Boundaries:** http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Boundaries/MapServer
- **Historic Sites:** http://www.nps.gov/nr/
- **Native American Areas:** http://viewer.nationalmap.gov/
- **Nonattainment Areas:** http://geoplatform2.epa.gov/arcgis/rest/services/PM_Designations_Mapping/Nonattainment_Areas/MapServer
- **Organic Farms:** http://www.ams.usda.gov/AMSv1.0/nop
- **Places:** http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Places/MapServer
- **Threatened and Endangered Species:** http://www.dfg.ca.gov/biogeodata/cnddb/
- **Transportation**: http://epamap9.epa.gov/arcgis /rest/services/NEPAssist/Transportation/MapServer
- **Water:** http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Water/MapServer