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Agriculture**

Marketing and  
Regulatory  
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Animal and  
Plant Health  
Inspection  
Service

# **Gypsy Moth Cooperative Eradication Program in Hennepin County, Minnesota**

## **Supplemental Environmental Assessment, February 2018**

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## Supplemental Environmental Assessment, February 2018

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# I. Introduction

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), in cooperation with the Minnesota Department of Agriculture (MDA), is conducting a program to eradicate the gypsy moth (GM) (*Lymantria dispar* L.) in Hennepin County, Minnesota. The GM is one of the most destructive pests of trees and shrubs in the United States. There are two types of GM—the European (also known as North American) and the Asian. The North American GM was imported into Massachusetts from Europe in 1869 for silk production experiments. However, some moths were released accidentally and became established. The GM infestation spread relentlessly and now covers the entire northeastern part of the United States, from Maine south to North Carolina, and west to Michigan and parts of Minnesota. The North American GM has a host range of over 300 species of trees and shrubs; however, they prefer oaks and aspen. GM hosts are located throughout most of the continental United States.

APHIS, in cooperation with the U.S. Forest Service (FS) has established a national program to help slow the spread of the current North American GM population, and eradicate any new populations of GM that may exist outside this area. This program is an effective Federal/State partnership that prevents the establishment of GM in areas of the United States that are not contiguous to current regulated States and counties. APHIS assists States to eradicate isolated infestations of GM on 640 acres or less, while FS assists when areas exceed 640 acres.

The GM life cycle begins in the early spring with the hatching of first instar larvae from eggs laid the previous summer. Newly hatched larvae hang by silk threads and are caught by the wind and, thereby, are dispersed to other trees. Small larvae begin feeding on leaves. GM larvae go through five or six feeding stages. Between stages, the GM larvae molt by shedding their skin. Larvae typically feed at night and rest in bark crevices during the day. In areas with high caterpillar densities feeding may occur all day.

Pupation generally occurs about eight weeks after egg hatch. Once they emerge as adults, the female GM emits a pheromone that the males can detect through their antennae. The males locate the females and mate. After mating, the female lays eggs in a single mass on any solid object, such as tree trunks, shrubs, nursery stock, vehicles, camping equipment, and outdoor household articles.

Heavy infestations of GM can alter ecosystems and disrupt people's lives. The larval life stage can cause defoliation and, in extreme cases, can cause tree mortality. Defoliated trees are vulnerable to other insects and diseases. Repeated or widespread defoliation events from larval feeding can alter wildlife habitat, change water quality, reduce property and esthetic value, and reduce the recreational and timber value of forested areas. When present in large numbers, GM caterpillars can be a nuisance, as well as a hazard to health and safety (USDA, 1995).

## II. Purpose and Need

APHIS, in cooperation with the MDA, proposes to add the Lowry Hill area of Minneapolis to the GM eradication efforts in Hennepin County (see appendix A for a map of the area). APHIS proposes eradication because of the isolated nature of the infestation and the potential adverse ecological and economic impacts of GM on the infested and surrounding areas.

In March 2017, APHIS prepared an environmental assessment (EA) for the eradication of GM in the cities of Richfield and portions of Minneapolis (USDA, 2017, available at [https://www.aphis.usda.gov/plant\\_health/ea/downloads/2017/gm-mn-ea.pdf](https://www.aphis.usda.gov/plant_health/ea/downloads/2017/gm-mn-ea.pdf)). APHIS incorporates this EA by reference into this document. The 2017 EA analyzed alternatives consisting of (1) no APHIS action, and (2) the proposed action alternative, where APHIS would provide funding toward the eradication of GM from Hennepin County, Minnesota. The EA described the effects of GM on the environment and analyzed the impacts of using the biopesticide *Bacillus thuringiensis var kurstaki* (Btk) and pheromone traps to monitor for GM after Btk treatments. APHIS issued a finding of no significant impact (FONSI) on May 2, 2017, concluding that the implementation of the program would not significantly impact the quality of the human environment. This FONSI is available at [https://www.aphis.usda.gov/plant\\_health/ea/downloads/2017/gm-mn-ea-fonsi.pdf](https://www.aphis.usda.gov/plant_health/ea/downloads/2017/gm-mn-ea-fonsi.pdf).

In late June 2017, MDA confirmed gypsy moth in the Lowry Hills area after a resident reported the caterpillars. On July 1, 2017, MDA implemented a state quarantine for the 66-acre area. The quarantine: 1) restricts the movement of trees and woody material, including firewood, out of the area and 2) requires self-inspection of any equipment, household items, or vehicles that are outdoors in the quarantined area and are to be moved out of the quarantine (MDA, 2017). MDA requires entities that wish to move regulated articles, such as nursery stock and firewood, outside the quarantine area to have a compliance agreement in place (MDA, 2017).

This supplemental EA (SEA) examines the environmental consequences in the proposed treatment block of Lowry Hill when using the treatment options analyzed in the 2017 EA for GM management in Hennepin County, MN. The goal of this project is to eradicate GM.

The preparation of this supplemental EA (SEA) is consistent with National Environmental Policy Act of 1969 (NEPA) (42 United States Code (U.S.C.) § 4231 et seq.), the Council of Environmental Quality NEPA regulations (40 Code of Federal Regulations (CFR) part 1500 et seq.), APHIS' NEPA implementing regulations (7 CFR part 372), and USDA Forest Service NEPA implementing regulations (36 CFR part 220) for the purpose of evaluating how the proposed action and alternative described in the following sections, if implemented, may affect the quality of the human environment.

### A. Public Outreach

MDA implemented a state quarantine in the Lowry Hill area on July 1, 2017. On July 11, 2017, MDA hosted a public open house meeting and that evening had an

informational booth at the Lowry Hill Neighborhood Association ice cream social gathering. Over 70 residents stopped by the booth and MDA informed them about the GM outbreak and quarantine requirements. MDA also told residents about the future public meeting where MDA would share the proposed management plan. In addition, the City of Minneapolis hung informational fliers on the residents' garbage collection totes within the 66-acre quarantine area notifying them about the newly enacted quarantine restrictions.

MDA presented the 2018 GM treatment proposals, which includes the treatment proposal for the Lowry Hill area, to the Minnesota Gypsy Moth Program Advisory Committee (GMPAC) on December 7, 2017, for their formal concurrence. Both the City of Minneapolis and Minneapolis Park and Recreational Board were aware that a management proposal would be forthcoming after MDA placed a quarantine on the Lowry Hill area. GMPAC concurred with the 2018 treatment proposal.

The MDA has been working closely with both the City of Minneapolis and the Minneapolis Park and Recreational Board to inform residents about the proposed management plan. MDA will send notifications to legislators whose districts intercept the proposed treatment block.

MDA will hold a public open house regarding the proposed treatments on March 6, 2018 at the Kenwood Community Center, 2101 W Franklin Ave. MDA will mail a four-page "Proposal for Gypsy Moth Management" brochure to parcels within and surrounding the proposed treatment block inviting them to the open house. MDA will send a press release advertising the open house to local media. In addition, MDA will announce the open house on MDA's website and social media channels and will share the announcement with the local neighborhood association for posting on their website. The purpose of an open house meeting is to give interested parties (citizens, residents, municipality officials, other agency officials, etc.) an opportunity to get information, ask questions, and voice concerns. Staff from participating agencies, including the MDA GM program and the Minnesota Department of Health will be present. Staff will be available for questions and discussion before, during, and after the open house. At the public open house, MDA will display informational posters and provide an array of printed information.

The MDA has contacted local agency partners including the Minnesota Department of Natural Resources and county park managers near the proposed block so that they may direct citizens to the appropriate information. Other scoping activities include press releases, as well as information on the MDA and partner city and neighborhood association websites.

The MDA will continue to inform local leaders and affected residents with press releases, legal notices, email blasts, and other outreach opportunities. Additional postings, contacts, and media releases are planned to inform (and remind) the public approximately two weeks before treatments begin. The MDA will send a reminder postcard to residents and businesses within the block approximately two weeks prior to application. The postcard will include an information phone number and direct residents to the MDA website to sign up for an email listserv to receive the most current information prior to and during applications. The MDA gypsy moth program hotline, Arrest the Pest Hotline (888) 545-6684, will be updated frequently to alert

the public of actual treatment dates, while email and social media sites, including Facebook and Twitter, will also be used for notification. During the treatment period, the MDA GM program staff will monitor the hotline and online comments.

Local law enforcement, emergency care facilities, poison control and the 911 system will be notified weeks prior to application.

## **B. Authorizing Laws**

### **1. USDA Authorities**

Authorization to conduct treatments for GM infestations is given in the Plant Protection Act of 2000 (7 U.S.C. section 7701), and the cooperation with State agencies in Administration and Enforcement of Certain Federal Laws (7 U.S.C. section 450). The Cooperative Forestry Assistance Act of 1978 (Public Law (P.L.) 95–313) provides the authority for Federal and State cooperation in managing forest insects and diseases. The 1990 Farm Bill (P.L. 101–624) reauthorizes the basic charter of the Cooperative Forestry Assistance Act. The NEPA of 1969 requires detailed environmental analysis of any proposed Federal action that may affect the human environment. The Federal Insecticide, Fungicide and Rodenticide Act of 1947, as amended, known as FIFRA, requires insecticides used within the United States be registered by the U.S. Environmental Protection Agency (EPA). Section 7 of the Endangered Species Act prohibits Federal actions from jeopardizing the continued existence of federally listed threatened, endangered, or candidate species or adversely affecting critical habitat of such species. Section 106 of the National Historical Preservation Act and 36 CFR part 800: Protection of Historic Properties requires consultation with the State Historic Preservation Officer regarding the proposed activities.

### **2. State Authorities**

The Minnesota State Statutes Chapter 18G, Plant Protection and Export Certification, authorizes MDA to conduct detection and eradication projects for plant pests. MDA's Pesticide Control Law Chapter 18B provides the State statutes governing pesticide application.

## **C. Decisions to be Made**

Two agencies within the USDA support GM eradication work. Each agency has different roles and responsibilities in GM management. Per the revised memorandum of understanding between APHIS and the Forest Service (FS), signed in 2009, APHIS is responsible for eradication work of 640 acres or less, while the FS' State and Private Forestry is the lead agency for treatment areas larger than 640 acres. The proposed treatment block for the GM eradication is 310 acres. APHIS will have responsibility for the proposed treatment in Hennepin County in 2018.

The proposed action alternative in this document proposes a multiagency approach between APHIS and MDA. The responsible officials must decide the following:

- Should there be a cooperative treatment program in the proposed 310-acre treatment block in Hennepin County?
- Is implementation of the proposed action likely to have any significant impacts requiring further analysis in an EIS?

## **D. Responsible Officials**

The responsible official for APHIS is:

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USDA/APHIS/PPQ  
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The official responsible for implementation for MDA is:

Kimberly Thielen Cremers  
Pest Mitigation and Regulatory Response Unit Supervisor  
Minnesota Department of Agriculture  
Plant Protection Division  
625 Robert Street North  
St. Paul, MN 55155

## **III. Alternatives**

This SEA analyzes the potential environmental consequences associated with two alternatives: A) no action and B) the proposed action to add the Lowry Hill area to the GM eradication program in Hennepin County, Minnesota (see map in appendix A).

### **A. No Action**

Under the no action alternative, APHIS would not participate in the GM eradication in the Lowry Hill area of Hennepin County. Other Federal and non-federal entities, including the State of Minnesota, could take control measures; however, APHIS would not assist in either the control or funding of these measures.

### **B. Proposed Action**

Under the proposed action alternative, APHIS would add the 310-acre Lowry Hill



area to the GM eradication program in Hennepin County. For public outreach purposes, the scoping area is 437 acres (appendix A). MDA would apply Btk (Foray<sup>®</sup> 48B) at a rate of 64 fluid ounces (fl oz. or ½-gallon) of product per acre using low flying aircraft. Two applications will cover the entire 310 acres, with a 5- to 10-day interval between applications. One change to the treatment use pattern from that described in the March 2017 EA is the third application to the smaller 66-acre quarantine area located within the treatment block (appendix A) due to the high density of caterpillars and egg masses in this area. The MDA estimates these applications to occur in mid-May 2018. The exact dates of application will coincide with the early larval stages when GM caterpillars hatch from their eggs and are most susceptible to treatments.

As described in the March 2017 EA, the program will survey the treatment block for two years after treatment using pheromone-baited GM traps to ensure that the treatment was effective. Traps are baited with disparlure, a synthetically produced sex pheromone that mimics the natural pheromone female GM use to attract the male GM. Trapping density will be as high as one trap per 250 square meters in the 310-acre treatment block.

## **IV. Affected Environment**

The area proposed for addition to the current GM eradication program in Hennepin County is 310-acre treatment block located in Lowry Hill area of Minneapolis, Minnesota. A 66-acre quarantine area (based on the life stage survey) is located inside the 310-acre treatment block (based on the male moth survey). The scoping boundary extends beyond the treatment block boundary with the intent to expand public outreach about the Program. A map of the scoping boundary, treatment block, and quarantine boundary is in appendix A. Below is a description of the treatment block.

The treatment block is a 310-acre area mostly located in the Lowry Hill neighborhood (approximately 240 acres). The western portion is located in the Kenwood neighborhood (approximately 70 acres), and the extreme northwestern corner is located in the Bryn-Mawr neighborhood (less than one acre). There are no state, federal, or tribal lands located within the treatment block.

Approximately 253 acres, or 81 percent, of the treatment block is urban development. Red pine trees are scattered throughout the treatment block and account for about 7 percent of the coverage (approximately 21 acres). Kenwood Park is located along a portion of the western boundary and contributes to the native plant community; oaks cover 4 percent (approximately 12 acres) of the treatment block and are primarily located within this park. The Thomas Lowry Park is a small park that features cascading pools and ornamental plantings. There are several baseball diamonds (classified as grasslands) which account for 3 percent (approximately 11 acres) of the treatment block.

The treatment block has two waterbodies, the northern tip of Lake of the Isles and Spring Lake, accounting for 3 percent (approximately 11 acres) of the treatment block. To the west of Spring Lake, there is approximately 1.8 acres of sedge meadow and to the east there is approximately 1.4 acres of tamarack; these plant communities combined account for 1 percent of the block coverage.

There are 1,349 parcels located within the treatment block, the majority of which are residential (including apartments, condominiums, and townhomes). No hospitals occur within the treatment block. There are three schools located within the treatment block (Kenwood Elementary, Blake School, and Gaia Democratic School). Bridgeway for Runaway Youth, an educational and residential facility, is located just outside of the southern boundary.

The treatment block is an irregularly shaped block. The northwestern corner is located approximately 0.2 miles north of the intersection of Kenwood Parkway and Douglas Ave. The northern boundary roughly follows I-394 for approximately 0.6 miles, then turns south for 0.1 mile to a point just north Kenwood Parkway (near Spring Lake), turns east and continues for 0.2 miles. The northeastern corner is located just north of Kenwood Parkway, near the intersection of Kenwood Parkway and Vineland Place. The eastern boundary is jagged with multiple turns. From the northeastern corner, the eastern boundary extends south for 0.1 miles where it intersects and follows Groveland Terrace for 0.2 miles, it then turns south and extends for approximately 0.1 mile to the intersection of Douglas Ave and Mount Curve Ave where it turns west for a half city block (between Bryant Ave South and Colfax Ave South). It then turns south and extends for 0.2 miles where it turns west and extends to DuPont Ave South. The eastern boundary then turns south and extends for 0.2 miles to the intersection of DuPont Ave South and W 22<sup>nd</sup> St. The southeastern corner is at the intersection of DuPont Ave South and W 22<sup>nd</sup> St. The southern boundary is 0.75 miles long and is a straight line following W 22<sup>nd</sup> St and extends across Lake of the Isles, where it terminates at the southwestern corner located at a point 0.1 mile north of the intersection of W Lake of the Isles Parkway and Penn Ave South.

## **V. Environmental Impacts**

Both alternatives result in potential environmental consequences. APHIS examined the risks associated with ecological and human impacts under both alternatives.

### **A. No Action**

A description of the environmental impacts associated with the no action alternative, including human health risk, ecological risk, and impacts on environmental quality is in the March 2017 EA (USDA, 2017) and is incorporated by reference in this document.

## **B. Proposed Action**

The proposed action alternative is the aerial application of Btk and placement of pheromone-baited traps using disparlure. The human health and ecological impacts of these program activities were analyzed in the March 2017 EA and those results are incorporated in this SEA by reference (USDA, 2017). Below we discuss any further impacts from adding the 310-acre treatment block to the eradication program in Hennepin County. MDA would apply applications of Btk (Foray<sup>®</sup> 48B) at five- to ten-day intervals at a rate of 64 fluid ounces (fl oz. or 1/2-gallon) of product per acre. Two applications will cover the entire 310 acres. One difference in the treatment use pattern in this EA compared to the March 2017 EA is the application of a third Btk treatment to a smaller 66-acre quarantine area (See map in appendix A).

### **1. Human Health**

The impacts to human health from applications of Btk under this proposed alternative do not differ from those described in the March 2017 EA. APHIS expects the human health risks to be minimal from the two to three Btk applications based on its long-term safety demonstrated through laboratory and monitoring studies (Aer'Aqua Medicine, 2001; Siegel, 2001; Noble et al., 1992; Pearce et al., 2002; Parks Canada, 2003; USDA, 2004; Otvos et al., 2005). Btk has low acute mammalian oral, dermal, and inhalation toxicity and pathogenicity (McClintock et al., 1995; EPA, 1998; WHO, 1999; Siegel, 2001; USDA, 2004). APHIS acknowledges aerial treatments can cause people stress, and the inclusion of the third aerial application over the quarantine area could increase this stress. MDA has scheduled a public open house regarding the gypsy moth eradication program for March 6, 2018. Additional public outreach and education will continue with local citizens within the 437-acre scoping area (see the public outreach section). A continuation of local outreach and education will minimize anxiety and health concerns associated with these treatments.

Human health risks are expected to be minimal from using pheromone-baited traps in this program based on disparlure's long-term safety and the fact that it would be unlikely that humans would be exposed to the pheromone in the traps. The potential for exposure is greatest to workers who handle the concentrated product; however, following label requirements will minimize exposure.

### **2. Ecological Resources**

The impacts to ecological resources from the proposed applications of Btk do not differ from those described in the March 2017 EA. There will be minimal risk to most non-target terrestrial and aquatic organisms due to limited exposure and low toxicity (EPA, 1998; WHO, 1999; USDA, 2004). Impacts to some native lepidopteran larvae within the treatment block may occur; however, the effects are expected to be minor due to the size of the treatment block and specificity of Btk to the larval stage of the insect. Although no direct effects to birds and wild mammals are expected, there is the possibility of indirect effects through the loss of invertebrate prey items, which may serve as a temporal input into their diet.

Based on the available data, indirect effects have not been noted in studies with wild mammals (Innes and Bendell, 1989; Belloco et al., 1992) or birds (USDA, 2004). In general, due to Btk's unique mode of action, toxicity to pollinators and beneficial insects are considered low based on laboratory and field studies testing honey bees, as well as other beneficial insects (USDA, 2004; EPA, 1998; Sterk et al., 2002; Bailey et al., 2005; Duan et al, 2008). Label requirements and other restrictions, where appropriate, will further reduce exposure risk to sensitive organisms.

The traps used to monitor for GM after Btk treatment will be a minimal risk to most non-target terrestrial and aquatic organisms due to limited exposure and low toxicity. The traps are baited with a pheromone specific to the male gypsy moth. There may be incidental capture of non-target insects, but the number of non-targets affected would be very small.

## **VI. Other Issues**

### **A. Cumulative Impacts**

Based on the analysis in the environmental consequences section, the proposed GM eradication program has limited impacts to lepidopteran and other nontarget species in the affected area. These limited impacts are not expected to have a cumulative impact with past, present, or future projects in the area. In May 2017, MDA applied two Btk aerial treatments in another part of Hennepin County (Richfield and part of Minneapolis) and currently is surveying the area with disparlure-baited traps. The survey will end in 2019, about two years after the Btk applications. The addition of Lowry Hill to the GM eradication program in Hennepin County is not expected to result in any Btk-related cumulative impacts because of the distance between the Lowry Hill site and the Richfield/Minneapolis site as well as the 1-year time interval between the treatments at these two sites. Similarly, cumulative impacts from trapping at the two sites are not expected given the distance between the two sites. There is no other known current Federal, State, or other projects in Hennepin County that will affect lepidopterans or other non-target organisms.

In 2018, MDA expects to treat four other treatment blocks within the state (appendix B). Three sites are in Lake County: Two Harbors, White Iron Lake, and Split Rock Beaver Bay. The fourth site, Lakeside Duluth, is in St. Louis County. MDA plans to apply aerial applications of Btk to the 526-acre treatment block of Two Harbors, 77-acre treatment block of White Iron Lake, and 352-acre treatment block of Lakeside Duluth. MDA plans to use mating disruption with the synthetic GM pheromone disparlure at the 73,509-acre Split Rock Beaver Bay (Lake County) treatment block. The Split Rock Beaver Bay site exceeds the 640-acre limit for APHIS participation in the Program. Treatments at these four sites are not expected to result in cumulative impacts during or after treatment at the Lowry Hill site because of the distance between these sites and the Lowry Hill site (appendix B).

Btk has other uses including organic and inorganic crop, and home and garden uses. The amount of Btk currently used in the Lowry Hill treatment block is unknown; however, there would be an expected increase in environmental loading of Btk with the proposed treatments. However, the cumulative impacts from additional Btk use, relative to other stressors are expected to be incrementally negligible to human health and the environment due to the very low risk of Btk.

The proposed treatments at all sites will result in cumulative impacts related to the protection of vulnerable GM host trees in the proposed treatment areas as well as other areas in the state if GM were allowed to expand. In the event that the GM population is not eradicated from these areas, future treatments may be required. Treatment with Btk in the same area over several years may lead to an increase in effects to lepidopteran species, thus limiting their chances to reestablish in the proposed treatment area. However, if future treatments are needed, a subsequent EA will be prepared and risks will be evaluated further.

## **B. Threatened and Endangered Species**

Section 7 of the Endangered Species Act (ESA) and ESA's implementing regulations require Federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of critical habitat. APHIS has considered the impacts of the proposed program regarding listed species in Hennepin County.

The threatened northern long-eared bat, *Myotis septentrionalis*, and the rusty patched bumblebee, *Bombus affinis*, are federally listed species that may occur in the proposed treatment area. APHIS prepared a biological assessment dated January 2018 and submitted it to the U.S. Fish and Wildlife Service, Twin Cities Ecological Services field office on February 5<sup>th</sup>, 2018 for concurrence. The biological assessment is included in the administrative record for this EA. APHIS made a determination that the proposed GM program is not likely to jeopardize the continued existence of the northern long-eared bat or the rusty patched bumblebee. APHIS is waiting to receive a concurrence letter from the U.S Fish and Wildlife Service.

MDA made a determination of "no effect" for their 2018 GM treatment proposal, which includes the Lowry Hill treatment block, on state listed threatened and endangered species and requested concurrence from Minnesota's Department of Natural Resources by March 15, 2018.

## **C. Historical Preservation**

Consistent with the National Historic Preservation Act of 1966, APHIS has examined the proposed action in light of its impacts to national historical properties. MDA submitted requests to review State historical sites to the Minnesota Historical Society on February 6, 2018. MDA will continue to coordinate with the State Historic Preservation Office to ensure that if any historic properties occur in the proposed treatment area there will be no impacts to these properties.

## **D. Executive Orders**

Consistent with Executive Order (EO) 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” APHIS considered the potential for disproportionately high and adverse human health or environmental effects on any minority or low-income populations. The proposed treatment block is based on GM finds in the area. The proposed treatment itself will have minimal effects to those that live in this area, and will not have disproportionate effects to any minority or low-income population.

Consistent with EO 13045, “Protection of Children from Environmental Health Risks and Safety Risks,” APHIS considered the potential for disproportionately high or adverse environmental health and safety risks to children. The children in the proposed treatment areas are not expected to be adversely affected disproportionately more than adults from the proposed program actions. Btk poses a very low risk to the human population, including children. There are three schools within the proposed treatment block; however, notification to the public prior to the proposed spray and the low risk of adverse impacts from Btk will ensure protection of this group of the human population.

## VII. Listing of Agencies and Persons Consulted

Minnesota Department of Agriculture  
Plant Protection Division  
625 Robert Street North  
St. Paul, MN 55155

U.S. Department of Agriculture  
Animal and Plant Health Inspection Service  
Plant Protection and Quarantine  
Plant Health Programs  
4700 River Road, Unit 134  
Riverdale, MD 20737

U.S. Department of Agriculture  
Animal and Plant Health Inspection Service  
Plant Protection and Quarantine  
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Bloomington, MN 55420

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

U.S. Fish and Wildlife Service  
Twin Cities Ecological Services Field Office  
4101 American Blvd East  
Bloomington, MN 55425-1665

Minnesota Department of Natural Resources  
Division of Ecological and Water Resources  
500 Lafayette Rd.  
St. Paul, MN 55155

Minnesota Historical Society  
Manager of Government Programs and Compliance  
345 Kellogg Blvd. West  
St. Paul, MN 55102

Minnesota Department of Health  
Environmental Health Division  
625 Robert Street N  
St. Paul MN 55164

## VIII. References

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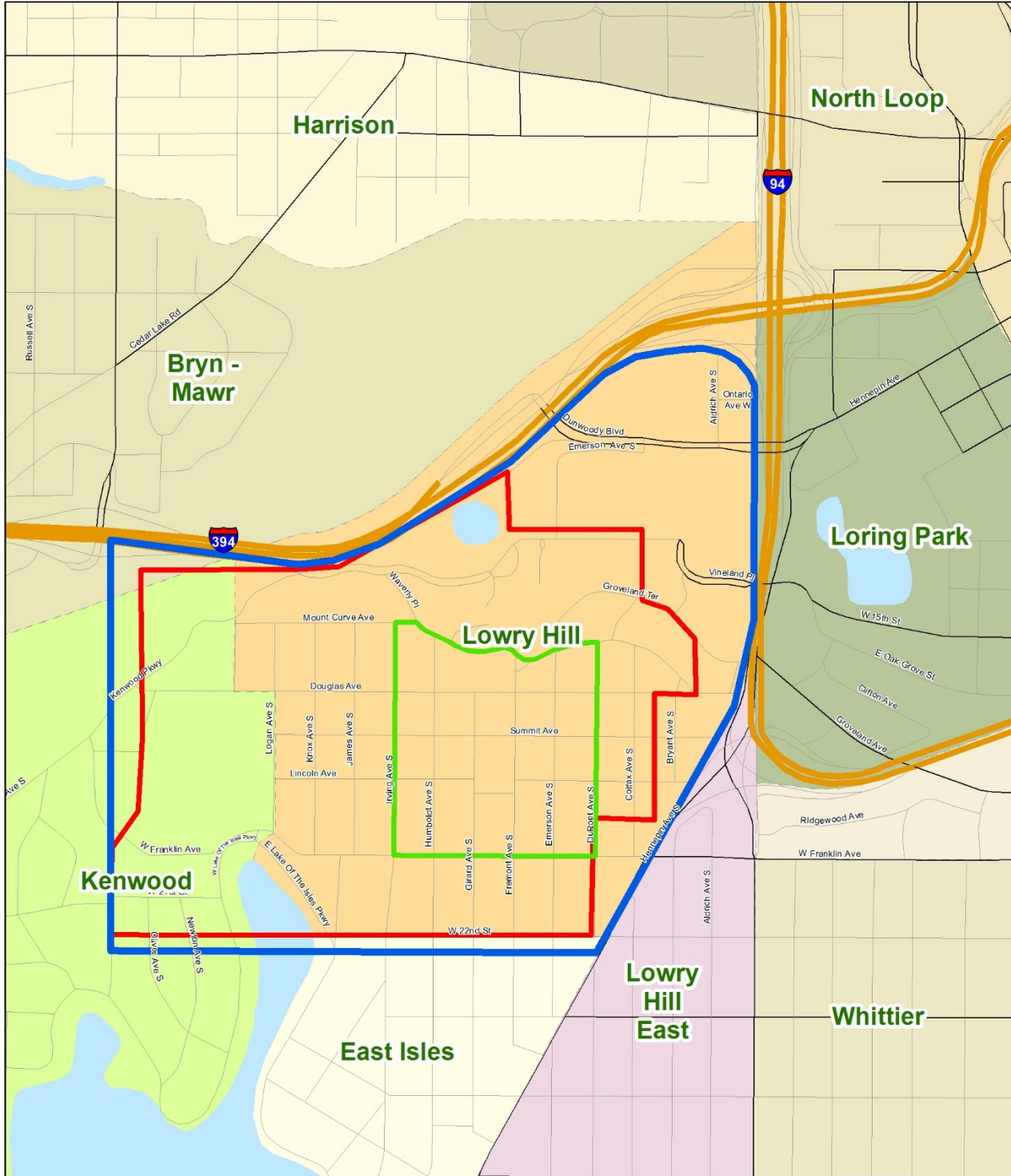
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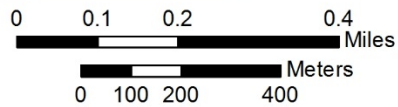
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# Appendix A. Map of Treatment Area

## Lowry Hill, Minneapolis Gypsy Moth Proposed Treatment Area



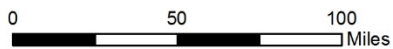
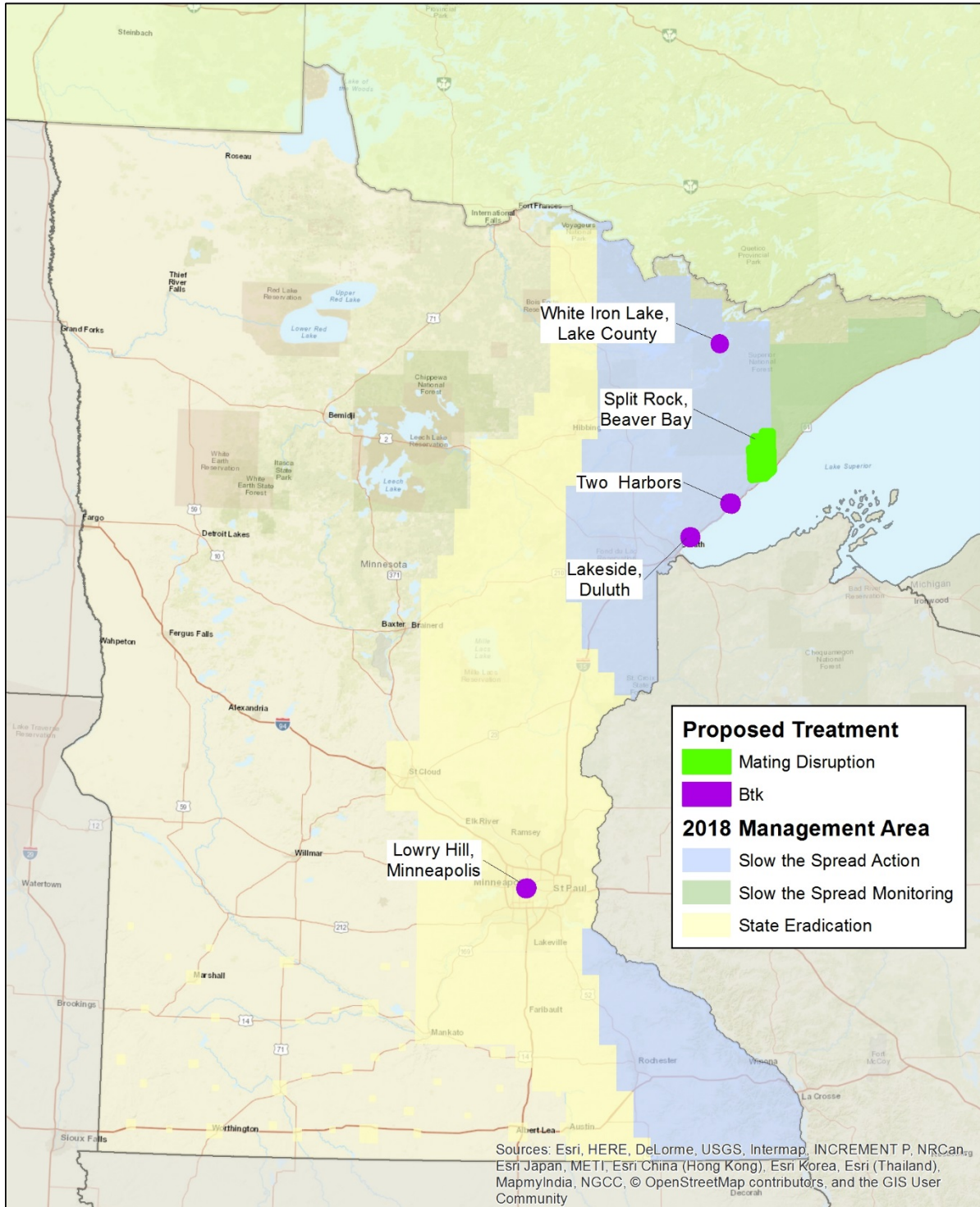
- Quarantine 66 acres
- Scoping Area 437 acres
- Proposed Treatment 310 acres



Date: 1/2/2018

# Appendix B. Map of MDA's 2018 Gypsy Moth Treatment Proposal

## 2018 Proposed Gypsy Moth Treatments



Date: 2/6/2018

Treatment blocks not drawn to scale

