



**Commonwealth of Massachusetts**  
STATE RECLAMATION AND MOSQUITO CONTROL BOARD  
**NORTHEAST MASSACHUSETTS MOSQUITO CONTROL  
AND WETLANDS MANAGEMENT DISTRICT**  
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[www.nemassmosquito.org](http://www.nemassmosquito.org)



**Operations**

Barry Noone: *District Director*  
Kimberly A. Foss.: *Entomologist*  
Robyn A. Januszewski: *IT Coordinator*  
Steven Przyjemski: *Wetlands Project Coordinator*

**Commissioners**

John W. Morris, CHO: *Chair*  
Vincent J. Russo, MD, MPH: *Vice Chair*  
Paul Sevigny, RS, CHO  
Joseph T. Giarrusso, Conservation Officer  
Rosemary Decie, RS

**2024 Best Management Practice Plan  
Revere**

**FY25 Percentage of assessment allocated to specific measures as prescribed by individual municipalities  
Best Management Practice (BMP) in the City of Revere**

NEMMC is requesting a 4% increase above the FY24 certified assessment for the FY25 operational budget. During FY24 the District reorganized allowing more technicians in the field, we anticipate being at full staff this year. FY24 allowed the opportunity to replace one of our frontline heavy equipment pieces a Freightliner Equipment Hauler. The district was finally able to place an order for two front line replacement trucks. Our FY25 budget addresses funding for regional aerial larviciding treatments. Aerial larviciding cost has increased significantly over the past two years, NEMMC plans accordingly for these increases. The FY25 budget includes the increased costs of materials, energy, fuel, pesticides, full staffing and contributing to capital expenses. NEMMC's facility lease expires in FY25 where we will be responsible for portions of EV infrastructure as well as State mandated EV First policy coming with a substantial cost increase when replacing vehicles. Regional environmental changes remain challenging to plan for a "normal" year of mosquito control. Often dictated by the weather, mosquito populations, additional treatment for viruses and requests from member municipalities, NEMMC will work diligently to deal with exceptional mosquito nuisance and health issues.

Assessment: As estimated by the Massachusetts Department of Revenue, Division of Local Services, in accordance with Chapter 516 of the General Laws of the Commonwealth. The assessment formula is based on a regional concept, which considers square miles and evaluation. The district offers this breakdown as a general guide to how funds are allocated specific to your community.

FY25 Estimated District Budget for the City of Revere	\$ 54,182.00
FY25 State Reclamation and Mosquito Control Board	\$ 2,184.00
FY25 Total Estimated Assessment for the City of Revere	\$ 56,366.00

*-Committed to the principals of mosquito control and wetland management -*  
**District Control Measures specific to Revere**

*2024 Best Management Practice Plan: Revere*

General Operational Cost Share

Regional Adult Mosquito Surveillance Program

Regional Vector / Virus Intervention

Surveillance

Ground Larviciding

Catch Basin Treatments

Manual Ditch Maintenance

Adulticiding **(Resident and/or Board of Health requests)**

Barrier Treatment **(School officials and/or Board of Health requests)**

Ditch Maintenance / Wetlands Management

Tire Recycling Program

Property Inspections

Mosquito Habitat Mitigation

Research and Development

Education and Outreach

Social Media

**NOTE:** Any adulticiding, larviciding or treatment of catch basins for mosquito control on public school property requires a current IPM (Integrated Pest Management) Plan. We are often asked by local Boards of Health and/or athletic directors to treat ball fields and/or parks that may be owned/used by the school departments, and without an IPM plan that includes our materials we may not be able to assist.

## **BMP Reminders for 2024**

☐ **Schedule an annual Board of Health meeting/ presentation with NEMMC**

\*Meetings will only be scheduled between the dates of October 1st - June 1<sup>st</sup>

☐ **Notify NEMMC with Health Department /Board of Health contact changes**

\*Work phone, cell phone, and email are required of primary and secondary contacts.

☐ **Review District Phased Response to WNV/EEE Virus Isolations in Integrated Pest and Vector Management Plan (IPVMP)**

☐ **Review login information for Municipal Toolbox on NEMMC website**

\*Our Liaison will e-mail you the password and login (see contact below)

\*At the recommendation of NEMMC or request from Health Department/Board of Health, NEMMC will coordinate with schools, parks, and/or public areas for scheduling barrier treatments/adulticiding and confirm access to these areas. NEMMC will provide Standard Written Notification to be distributed.

\*Scheduled barrier treatments are recommended between July 15<sup>th</sup> – August 25<sup>th</sup>

**As a reminder school IPM Coordinators should be kept up to date. NEMMC will alert IMP Coordinators with any pesticide product changes/additions.**

For any questions on where to find this information, scheduling, and/or how to complete these tasks, please reach out to our Board of Health Liaison:

Jennifer Sforza/Board of Health Liaison

Cell: (978) 971-7689

Office: (978) 352- 2800

Email: [Jennifer.Sforza@mass.gov](mailto:Jennifer.Sforza@mass.gov)

## **2024 NEMMC Protocols for District Arboviral Events**

Climate change is expected to affect the geographic and seasonal patterns of mosquito-borne diseases in the United States. The northeast is experiencing an increase in precipitation and unusually hot temperatures. Since EEE is more prevalent in wetter years and WNV in hotter years the likeness of the district experiencing EEE and/or WNV events in any given year is possible, in some years both viruses can present substantial risk. The district feels that it is beneficial to our subscribing municipalities to set prevention and response criteria preparing for both mosquito-borne viruses.

#### **District Prevention for WNV and EEE**

- Adult mosquito surveillance and DPH virus testing
- Larviciding areas that can promote mosquito breeding including municipal catch basins
- Public notification to use personal protective measures from spring to first hard frost
- Wetlands management and stormwater maintenance
- Property inspections to larvicide standing water and remove containers holding water
- Early barrier treatments for public parks, recreation areas and schools
- Tire disposal program

#### **District Response for WNV and EEE**

*If risk level increases for municipality but no virus in municipality:*

- Public notification to use personal protective measures
- Additional larviciding of freshwater wetlands and flooded areas
- Recommendation for municipality to complete barrier treatments

*If bird biting mosquitoes in municipality test positive for virus:*

- Public notification to use personal protective measures
- Supplemental adult mosquito trapping and additional DPH virus testing in risk areas
- Additional larviciding of freshwater wetlands and flooded areas
- Retreatment of catch basins (if WNV) in focal area
- Retreatment of hummock swamps (if EEE) in focal area

*If human biting mosquitoes in municipality test positive for virus:*

- Public notification to use personal protective measures
- Supplemental adult mosquito trapping and additional DPH virus testing in risk areas
- Additional larviciding of freshwater wetlands and flooded areas
- Recommendation for municipality to complete a block adulticide of focal area
- Recommendation for municipality to complete barrier treatments

*If mammal or human case of WNV or EEE in municipality:*

- Public notification to use personal protective measures
- Supplemental adult mosquito trapping and additional DPH virus testing in risk areas
- Additional larviciding of freshwater wetlands and flooded areas
- Recommendation for municipality to complete a block adulticide of focal area
- Recommendation for municipality to complete barrier treatments

## Summary of NEMMC District Operations Completed in Revere during 2023

Date	Activity Completed
3/2/2023	2023 Draft Best Management Plans (BMP) e-mailed to BOH for review, IPVMP mailed to BOH
3/2/2023	2023 Integrated Pest and Vector Management Plan published to NEMMC website
4/10/2023	Habitat Inspections (12)
4/12/2023	Larviciding- Intervale Street salt marsh area (3.51 lbs Vectobac-G)
4/12/2023	Habitat Inspections (3)
4/14/2023	Habitat Inspections (1)
4/19/2023	Habitat Inspections (2)
5/3/2023	NEMMC Virtual Town Hall BOH District-wide meeting
5/8/2023	Adult mosquito surveillance traps set out
5/15/2023	Adult mosquito surveillance starts for the season
5/22/2023	Resident request site inspection- (1) Washington Street
5/23/2023	Collected and disposed of 2 tires collected at Dunn Road, Dashwood
5/23/2023	Larviciding- Salt marshes: Ford, Intervale, Oak Isle, Bay, Dashwood, Bryant, Dunn, Martin, Washburn, Belle Isle (1,050.0 lbs Fourstar CRG)
5/24/2023	Resident request site inspection- (1) Proctor Avenue
6/1/2023	Residential Adulticiding Requests completed (7) + BOH adulticide requests (15)
6/8/2023	Residential Adulticiding Requests completed (10) + BOH adulticide requests (15)
6/8/2023	Catch basin larviciding (351 Metalarv XRP)
6/9/2023	Catch basin larviciding (657 Metalarv XRP) + School (12 Metalarv XRP)
6/12/2023	Catch basin larviciding (243 Metalarv XRP) + Beachmont School (9 Metalarv XRP)
6/13/2023	Mosquito batches to PHL - 1 batch NEGATIVE
6/15/2023	Residential Adulticiding Requests completed (13) + BOH adulticide requests (15)
6/16/2023	Resident request site inspections (9)- Thorndike St, Sagamore St, Cushman Ter, Rand St, Vane St,
6/20/2023	Catch basin larviciding (1,337 Metalarv XRP) + Garfield, Paul Revere, Revere HS, Rumney Marsh School, Hill School (53 Metalarv XRP)
6/21/2023	Catch basin larviciding (408 Metalarv XRP)
6/22/2023	Residential Adulticiding Requests completed (17) + BOH adulticide requests (14)
6/23/2023	Catch basin larviciding - Lincoln School (5 Altosid WSP)
6/23/2023	Catch basins in Revere completed- 2,996 municipal basins + 79 School basins= 3,075 total
6/27/2023	Barrier and ULV adulticide treatments- Beachmont, Garfield, Gibson, PR ES, RM Aced, Revere HS, Lincoln, Griswold, WR ES (16.725 oz Suspend Polyzone)
6/27/2023	Mosquito batches to PHL - 1 batch NEGATIVE
6/28/2023	Residential Pesticide Exclusion Received (1)
6/29/2023	Residential Adulticiding Requests completed (31) + BOH adulticide requests (8)
7/4/2023	Mosquito batches to PHL - 1 batch NEGATIVE
7/6/2023	Residential Adulticiding Requests completed (12) + BOH adulticide requests (3)
7/11/2023	Mosquito batches to PHL - 1 batch NEGATIVE
7/11/2023	Residential Pesticide Exclusion Received (2)
7/13/2023	Residential Adulticiding Requests completed (25) + BOH adulticide requests (4)
7/17/2023	Mosquito batches to PHL - 2 batches NEGATIVE
7/20/2023	Residential Adulticiding Requests completed (50) + BOH adulticide requests (9)
7/21/2023	Larviciding- Salt marshes: Bay Road, Oak Island, Dunn Road, Martin Street, Belle Isle (385 lbs Fourstar CRG)

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7/24/2023	Mosquito batches to PHL - 1 batch NEGATIVE
7/27/2023	Residential Adulticiding Requests completed (47) + BOH adulticide requests (14)- (Cancelled due to inclement weather)
8/1/2023	Mosquito batches to PHL - 3 batches NEGATIVE
8/3/2023	Residential Adulticiding Requests completed (32) + BOH adulticide requests (14)
8/8/2023	Mosquito batches to PHL - 4 batches NEGATIVE
8/10/2023	Residential Adulticiding Requests completed (21) + BOH adulticide requests (14)
8/14/2023	Mosquito batches to PHL - 3 batches NEGATIVE
8/17/2023	Residential Pesticide Exclusion Received (1)
8/17/2023	Residential Adulticiding Requests completed (21) + BOH adulticide requests (15)
8/22/2023	Mosquito batches to PHL - 4 batches NEGATIVE
8/22/2023	Barrier and ULV adulticide treatments- Beachmont, Garfield, Gibson, PR ES, RM Aced, Revere HS, Lincoln, Griswold, WR ES (14.64 oz Suspend Polyzone)
8/22/2023	Resident request site inspections (8)- Gore Rd, Kingman Ave, Camille Rd, Ford St, Dale St, Jarvis St, Salem St
8/24/2023	Residential Adulticiding Requests completed (23)
8/29/2023	Mosquito batches to PHL - 2 batches NEGATIVE
8/31/2023	Residential Adulticiding Requests completed (16)
9/6/2023	Mosquito batches to PHL - 3 batches NEGATIVE
9/7/2023	Residential Adulticiding Requests completed (19)
9/13/2023	Mosquito batches to PHL - 3 batches NEGATIVE
9/19/2023	Mosquito batches to PHL - 3 batches NEGATIVE
9/22/2023	Resident request site inspections (5)- Ford Street, Bryant Street, Carlton Street, Library Street, Ellerton Street
9/27/2023	Mosquito batches to PHL - 1 batches NEGATIVE
10/16/2023	Collected and disposed of 1 tire collected on Salem Street (resident request)
10/17-10/23/2023	Phragmites Mowing- Bryant Street (9.92 acres)
10/2-10/4/2023	Phragmites Mowing- Intervale Street (5.26 acres)
10/26-10/27/2023	Phragmites Mowing- Washburn Street (1.21 acres)
10/26-10/27/2023	Phragmites Mowing- Martin Street (0.41 acres)
10/27-11/1/2023	Phragmites Mowing- Wild Meadow Road (0.002 acres)
10/3-10/17/2023	Phragmites Mowing- Ford Street (9.31 acres)
10/5-10/17/2022	Phragmites Mowing- Dashwood Street (5.96 acres)
10/11/2023	NEMMC met with MA DOT in Revere regarding plugged drainage system- Olive Street area
10/31/2023	Phragmites Mowing- Belle Isle (0.579 acres)
12/12/2023	Collected and disposed of 2 tires from Franklin Street (resident request)

- **344 Residential adulticide (ULV) service requests (up from 315 in 2022)**
- **160 Board of Health adulticide (ULV) service request (down from 193 in 2022)**
- **25 Residential property inspection service requests (up from 19 in 2022)**  
Informing residents that they can contact the district to inspect for standing water and help identify new breeding areas can help reduce mosquito populations.
- **23 mosquito habitat site inspections**
- **Catch basin larviciding was completed on 6/23/2023: 3,075 total basins were treated (2,996 municipal + 79 school)**
- **4 Residential Pesticide Exclusions were filed with the district for Revere during 2023, up from 3 during 2022.**
- **32.65 acres of *Phragmites australis* mowing was completed.**
- **3 abandoned tires were collected for disposal.**

## 2023 Revere Mosquito & Arbovirus Surveillance Summary

There were no WNV/EEE mosquito isolations or human and animal WNV/EEE cases in Revere for 2023. At the end of 2023, the arboviral risk level for Revere remained at REMOTE for EEE and LOW for WNV. Risk Categories are described on pages 13, 22, 25 of the 2023 Massachusetts State Arbovirus Surveillance and Response Plan.

Massachusetts DPH assesses arboviral risk levels based on many factors including but not limited to mosquito isolations, locations of acquired veterinary and human infections, virus history locally and in bordering states, weather conditions present and predictions, and current mosquito populations and future trends.

State arbovirus risk updates: <https://www.mass.gov/info-details/massachusetts-arbovirus-update#risk-maps->

- 33 mosquito pools/batches were sent from Revere to the MDPH lab for testing in 2023, all batches tested negative for EEE/WNV.

### Mosquito virus isolation history (WNV/EEE) in Revere:

Collection Date	Species	Test Type	Result
8/25/2020	<u>Culex pipiens</u>	WNV	Positive
9/9/2019	<u>Culex salinarius</u>	WNV	Positive
8/10/2016	<u>Culex pipiens</u>	WNV	Positive
8/24/2016	<u>Culex pipiens</u>	WNV	Positive
9/12/2016	<u>Culex pipiens</u>	WNV	Positive
9/14/2016	<u>Culex pipiens</u>	WNV	Positive
9/14/2015	<u>Culex pipiens</u>	WNV	Positive
7/11/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
7/18/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
7/25/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
7/25/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
7/30/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
7/30/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/01/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/08/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/08/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/15/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/22/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/29/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
9/05/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
7/28/2011	<u>Culex pipiens</u>	WNV	Positive
7/31/2011	<u>Culex pipiens/restuans</u> complex	WNV	Positive
7/31/2011	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/31/2011	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/18/2010	<u>Culex pipiens/restuans</u> complex	WNV	Positive



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8/06/2008	<i>Culex pipiens/restuans</i> complex	WNV	Positive
9/03/2008	<i>Culex pipiens/restuans</i> complex	WNV	Positive
9/10/2008	<i>Culex pipiens/restuans</i> complex	WNV	Positive
8/29/2007	<i>Culex pipiens/restuans</i> complex	WNV	Positive
8/14/2004	<i>Culex pipiens</i>	WNV	Positive
8/14/2004	<i>Culex pipiens</i>	WNV	Positive
8/23/2004	<i>Culex pipiens</i>	WNV	Positive
8/23/2004	<i>Culex pipiens</i>	WNV	Positive

<b>Total Mosquito Collected in Revere</b>	<b>2022</b>	<b>2023</b>	<b>% Change</b>
CDC CO2/Light Traps (1) - Mammal feeders/bridge vectors	401	1,250	212%
Gravid Traps (1)- WNV primary vectors	77	125	62%
<b>Totals</b>	<b>478</b>	<b>1,375</b>	<b>188%</b>

<b>Mosquito Species- pest/disease list- Revere</b>	<b>2022</b>	<b>2023</b>	<b>% Change</b>	<b>WNV/EEE +</b>	<b>District Total % Change 2022 to 2023</b>
<i>Culiseta melanura</i> (red maple swamp/acid bog)	0	0	-	NO	5%
<i>Culex pipiens</i> (container/catch basins/heavy organics)	65	116	78%	NO	64%
<i>Culex restuans</i> (container/catch basins)	2	5	150%	NO	359%
<i>Culex salinarius</i> (brackish water/phragmites/roadside ditches)	21	982	4576%	NO	11154%
<i>Coquillitidia perturbans</i> (cattail)	1	2	100%	NO	-40%
<i>Aedes vexans</i> (rainwater/fresh floodwater)	1	93	9200%	NO	2256%
<i>Aedes japonicus</i> (tree hole/container breeder)	1	0	-100%	NO	1233%
<i>Aedes sollicitans</i> (salt marsh)	252	77	-69%	NO	-39%
<i>Aedes cantator</i> (salt marsh)	133	63	-53%	NO	89%
<i>Aedes canadensis</i> (snowmelt/woodland pool)	0	0	-	NO	287%

### WNV/EEE bridge vectors/human biters

- Due to historic precipitation during 2023, there was an increase in the fresh floodwater species *Ae. vexans* and *Cx. salinarius*, a brackish water mosquito which also relies on seasonal precipitation. The cattail species *Cq. perturbans* populations did not fully recover due to multiple years of drought and populations remain unchanged. There were no WNV or EEE isolates in these bridge vector species during 2023. Informing residents that they can contact the district to inspect for standing water and help identify new breeding areas can also reduce these populations.

### WNV primary vectors/bird biters (*Cx. pipiens/restuans*)

- There was a 76% increase in collections of WNV primary vectors from 2022 to 2023 in Revere. There is usually an increase in these vector species during hot dry years in container habitats. However, the precipitation received this year left quite a bit of stagnant water on grassy lawns which made perfect additional habitats for *Culex*. Timely catch basin cleaning and treatments and increased floodwater treatments helped keep *Culex* larval populations in check. 6 batches of *Culex* tested positive for WNV in



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2023 with all isolations identified west of the I-95 corridor (Middleton, Haverhill, Lawrence, Andover). There were no EEE isolates in these species during 2023. Informing residents that they can contact the district to inspect for standing water and help identify new breeding areas can also reduce these populations.

### EEE primary vectors/bird biters (*Cs. melanura*)

- While 2019 was an unprecedented year for EEE statewide, due to early and sustained drought conditions and anticipatory targeted larviciding activities in the Northeast from 2020 through 2022. In the 2022 the district saw a 30% decrease in *Cs. melanura* populations from 2021. During 2023 the replenishment of groundwater needed for this species to propagate caused a 5% increase from 2022 populations. Even with the excessive rainfall this year, it will take several years for *Cs. melanura* populations to recover from the drought years. There were no WNV or EEE isolates in this species during 2023.

### Pest Status salt marsh mosquitoes (*Ae. sollicitans*)

- *Ae. sollicitans*, a summer-fall salt marsh species, was also affected by the wet conditions this year. *Ae. sollicitans* relies on higher saline salt marsh conditions than other salt marsh mosquito species such as *Ae. cantator*. The excess precipitation “watered” down the salt pools on the marsh and cooler, cloudier than normal conditions limited evaporation of this fresh water which also decreased salinity of these pools. The district also conducted 4 aerial larvicide operations in 2023 versus the usual 3. This species decreased in the district by 39% from 2022. Populations of *Ae. sollicitans* decreased in Revere by 69% from 2022 collections.

Revere has a largely urban setting that favors the development of the WNV vectors. Due to extensive WNV history in Revere and surrounding communities, from July to the first full hard frost, residents should take necessary precautions to reduce the risk of infection from WNV and other mosquito borne viruses, regardless of low mosquito populations and/or aggressiveness of control.

A hard, or killing frost, is defined meteorologically as two consecutive hours of temperatures below 28 degrees Fahrenheit or three hours below 32 degrees. This will occur at different times for different communities, and there may even be variation within communities based on local geography. Although mosquitoes are not killed until a hard frost occurs, they are extremely unlikely to be active when temperatures fall below 50 degrees in the evening (Page 15 of the 2023 MA Arbovirus Plan listed below).

Refer to the 2023 Massachusetts State Arbovirus Surveillance and Response Plan viewed online at:

<https://www.mass.gov/lists/arbovirus-surveillance-plan-and-historical-data>