MASSACHUSETTS MOSQUITO CONTROL

ANNUAL OPERATIONS REPORT

Year Report Covers: 2023 Date of Report: 02/25/2024

Project/District Name: **Nantucket Mosquito Control Project**

Address: 188 Madaket Road

City/Town: Nantucket Zip: 02554

Phone: 508-228-7244 Fax:

E-mail: DPW@nantucket-ma.gov, tgreen@vdci.net

Report prepared by: ***Theodore Green***

NPDES permit no. **MAG87000S**

If you have a mission statement, please include it here:

ORGANIZATION SETUP:

Commissioner names:

Malcolm W. McNab
Brooke Mohr
Thomas M. Dixon
Matt Fee
Dawn E. Hill Holdgate
_____

Superintendent/Director name: Andrew Patnode
Superintendent/Director contact phone number: 508-228-7200 Ext 7512
Asst. Superintendent/Director name:

District/Project website: http://
Twitter handle: @
Facebook page: http://www.facebook.com/

Staffing levels for the year of this report:
Full time: 2
Part time: 1
Seasonal:
Other: (please describe)

Of the above, how many are:
(Please check off all that apply, and list employee name(s) next to each category)

☒ Administrative Theodore Green, Emily Hibbard
☐ Biologist
☒ Educator Julianne Darnell
☒ Entomologist Theodore Green, Emily Hibbard
☐ Facilities
☐ Information technology
☒ Laboratory Theodore Green, Julianne Darnell
☒ Operations Theodore Green, Julianne Darnell
☒ Public relations Julianne Darnell
☐ Wetland scientist
☐ Other (please describe)

For the year of this report, the following were maintained (enter number in the column to the left):

[ ] Modified wetland equipment (list type)
[1] Larval control equipment (list type) Maruyama Backpack Blower
[ ] ULV sprayers (list type)
[1] Vehicles
Other (please be specific): 2019 Chevy Colorado

Comments: Larvicide, Adult and larval Surveillance and education events. No Adultidciding efforts

How many cities and towns are in your service area?* 1
Alphabetical list:

Were there any changes to your service area this year? No
Cities/towns added:
Cities/towns removed:

***Please attach a map of your service area (or a website link to that map).**

INTEGRATED PEST MANAGEMENT (IPM):

Check off all services that your district/project currently provides to member cities and towns as part of an IPM program (details will be provided in the sections below):

☐ **Adult mosquito control**
☒ **Adult mosquito surveillance**
☐ **Ditch maintenance**
☒ **Education, Outreach & Public education**
☒ **Larval mosquito control**
☒ **Larval mosquito surveillance**
☐ **Open Marsh Water Management**

☐ **Research**
☐ **Source reduction (tire removals)**
☐ **Other (please list):**

Comments: _____

LARVAL MOSQUITO CONTROL:

If you have a larval mosquito control program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program: The purpose of the program is to reduce mosquito populations through an environmentally conscious approach.

What months is this program active? Late April through the end of September or early Octber, weather dependent

Describe the types of areas where you use this program: Floodwater, tidal sites, shallow ponds, vernal pools, ditches, artificial containers

Do you use:
☒ **Ground application (hand, portable and/or backpack, etc.)**
☐ **Aerial applications**
☐ **Other (please list):**
Comments: _____

List all products that you use for larval mosquito control in the table below (leave blank if not applicable)**:**

Product Name	**EPA #**	**Application Rate(s)**	**Application Method**	**Targeted life stage**	**Habitat Type**	**Total finished product applied**
Vectobac G	73049-10	5lbs/acre 7lbs/acre 10lbs/acre 15lbs/acre	by hand, granular spreader, and backpack	Larvae	☐ Catch basins ☐ Containers ☒ Wetland ☒ Other (please list): floodwater, ditches, shallow ponds	1,962.00 lbs
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	

List all products that you use for larval mosquito control in the table below (leave blank if not applicable)**:**

Product Name	**EPA #**	**Application Rate(s)**	**Application Method**	**Targeted life stage**	**Habitat Type**	**Total finished product applied**
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	

What is your trigger for larviciding operations? (check all that apply)
☐ Best professional judgment
☐ Historical records
☒ Larval dip counts – please list trigger for application: 3 larvae per dip on a 3 dip average
☐ Other (please describe):
Comments: _____

Please attach a map of your service area (or a website link to that map).

ADULT MOSQUITO CONTROL:

If you have a larval mosquito control program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program:

What is the time frame for this program?

Describe the types of areas where you use this program:

Do you use:
☐ **Aerial applications**
☐ **Portable applications**
☐ **Truck applications**
☐ **Other (please list):**
Comments: _____

For each product used, please list the name, EPA #, and application rate(s):

Product Name	**EPA #**	**Application Rate(s)**	**Application Method**	**Total finished product applied**

Please describe the maximum amounts or frequency used in a particular time frame such as season and areas

What is your trigger for adulticiding operations? (check all that apply)
☐ Arbovirus data
☐ Best professional judgment
☐ Complaint calls (Describe trigger for application:)
☐ Landing rates (Describe trigger for application)
☐ Light trap data (Describe trigger for application)
Comments: _____

Please attach a map of your service area (or a website link to that map).

SOURCE REDUCTION (Tire Removals)

If you practice source reduction methods, such as tire removal, please fill out the section below, else skip ahead to the next section.

Please describe your program:

What time frame during the year is this method employed?

Comments: _____

WATER MANAGEMENT/DITCH MAINTENANCE

If you have a water management or ditch maintenance program, please fill out the section below, else skip ahead to the next section.

Please check all that apply:

☐ Inland/freshwater

☐ Saltmarsh

Please describe your program:

For **inland/freshwater water management**, check off all that apply.

Maintenance Type	**Estimate of cumulative length of culverts, ditches, swales, etc. maintained (ft)**
☐ Culvert cleaning	
☐ Hand cleaning	
☐ Mechanized cleaning	
☐ Stream flow improvement	
☐ Other (please list):	

Comments: _____

For **saltmarsh ditch maintenance**, check off all that apply:

Maintenance Type	**Estimate of cumulative length of ditches maintained (ft)**
☐ Hand cleaning	
☐ Mechanized cleaning	
☐ Other (please list):	

Comments: _____

What time frame during the year is this method employed?

Comments: _____

Please attach a map of ditch maintenance areas (or a website link to that map).

OPEN MARSH WATER MANAGEMENT

If you have an Open Marsh Water Management program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program:

What months is this program active?

Please give an estimate of total square feet or acreage:

Comments: _____

Please attach a map of OMWM areas (or a website link to that map).

MONITORING (Measures of Efficacy)

Describe monitoring efforts for each of the following:

Aerial Larvicide – wetlands:

Ground ULV Adulticide:

Larvicide – catch basins: We do pre and post application larval count dips to ensure product efficacy

Larvicide-hand/small area We do pre and post application larval count dips to ensure product efficacy

Open Marsh Water Management:

Source Reduction:

Other (please list):

Provide or list standard steps, criterion, or protocols regarding the documentation of efficacy (pre and post data), and resistance testing (if any):
VDCI does not apply larivicides until larval breeding is observed.

Check the boxes below, indicating if your program has performed any of the following:

Research Project	**Details**
Bottle assays	We do not apply adulticides on island, but have permfomed Bottle assays as part of the program. Noted resistance to commonly used barrier treatments by private lawn service companies. Deltamethrin, Permithrin, and Etofenprox tested.
Efficacy testing	One ineffective larvicide incident noted. Some bags of

	Vectobac G got exposed to high temperatures in transit to island by freight company. Resulted in a large hatchoff in certain sections of tidal marsh.
Other:	
Other:	

ADULT MOSQUITO SURVEILLANCE

If you have an adult mosquito surveillance program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program: Adult surveillance is performed to determine what the population density looks like, while also serving as an indication of whether we missed a major hatchoff. Its also helpful because it indicates what habitat mosqutioes are hatching out of.

What months is this program active? First week of June throught the last week of September.

Check off all trap types used this past season by your program:

Trap Type	**Canopy?** (check box for yes)	**Number of traps** (leave blank if zero)
☐ ABC light trap	☐	
☐ ABC light trap w/CO_2	☐	
☐ CDC light trap	☐	
☒ CDC light trap w/CO_2	☐	7
☒ Gravid trap		2
☐ Landing rate test		
☐ NJ light trap	☐	
☐ NJ light trap w/CO_2	☐	
☐ Ovitrap		
☐ Resting box		
☐ Other (please describe):		
☐ Other (please describe):		
☐ Other (please describe):		

Do you maintain long-term trap sites in any of your areas? Yes
If yes, how many:
8

Please check off the species of concern in your service area:

☐ *Ae. albopictus*
☐ *Ae. cinereus*
☒ *Ae. vexans*
☐ *An. punctipennis*
☒ *An. quadrimaculatus*
☒ *Cq. perturbans*
☒ *Cx. pipiens*
☒ *Cx. restuans*
☒ *Cx. salinarius*
☒ *Cs. melanura*
☐ *Cs. morsitans*
☐ *Oc. abserratus*
☒ *Oc. canadensis*
☒ *Oc. cantator*

☐ *Oc. j. japonicus*
☒ *Oc. sollicitans*
☒ *Oc. taeniorhynchus*
☐ *Oc. triseriatus*
☐ Others (please list):

☐ *Oc. trivittatus*
☒ *Ps. ferox*
☐ *Ur. sapphirina*

Number of adult mosquitoes collected this season (whether submitted to DPH or not): 3126, averaging 20.4 per trap
Number of adult mosquito pools collected this season (submitted and unsubmitted): 0
Number of ovitrap collections this season, if any: 0
Any other trap collections of note (please describe):

Do you participate in the MDPH Arboviral Surveillance program? No
Total number of adult mosquito pools submitted to DPH this past season:
How many pools do you submit weekly on average?

Number of traps in your service area **placed by MDPH**:
Were these long-term trap sites or supplemental trapping sites? Choose one

Which arboviruses were found in your area during the previous mosquito season? Enter the number of pools/cases below:

Arbovirus	**Positive Mosquito Pools**	**Equine Cases**	**Human Cases**
☐ Eastern Equine Encephalitis (EEE)			
☐ West Nile Virus (WNV)			
☐ Other (please list):			

Comments: None

For each arbovirus listed below, please list the risk levels in your project area at both the start and end of the season (if more than one, please list all):

Arbovirus	**Start of Season**	**End of Season**
EEE	low-none	low-none
WNV	low-none	low-none

Comments: There has never been evidence of WNV on Nantucket since we have been been administering the program (2012- present), so the threat is low. VDCI internally tested 17 pools of Culex collected from gravid traps in August and September with zero postitives. Results were achieved using RT-PCR at our regional lab.

EDUCATION, OUTREACH & PUBLIC RELATIONS

If you have an education/outreach program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program: see comments

What time frame during the year is this method employed? June-Sept

Check off all education/outreach methods that were performed by your program this year:
☒ Development/distribution of brochures, handouts, etc.
☐ Door-to-door canvassing (door hangers, speaking to property owners, etc.)
☐ Facebook page, Twitter, or other social media
☐ Mailings (Describe target audience(s):)
☐ Media outreach (interviews for print or online media sources, press releases, etc.)
☐ Presentations at meetings
☐ School-based programs, science fairs, etc.
☒ Tabling at events (local events, annual meetings, etc.)
☒ Website
☐ Other (please describe):

Estimate the audience reached this year using the education/outreach methods above:
Hundreds
Comments:

List your program's top 3 education/outreach activities for this year:
1. Teaching program at UMass field station, Nantucket
2. Table at Nantucket farmers market for how to mitgate mosquitoes at home through source reduction
3. Presentation on mosquito lifecycle and habitat selection between species

Were you involved in any collaborations with the following partners this year? Provide details below, including a list of technical reports, white/grey papers, journal publications, trade magazine articles, etc:
☒ Academia Collaborate frequently with UMass Boston Field station
☐ Another mosquito control district/project
☐ Another state agency (DCR, DPH, etc.)
☐ Environmental groups
☐ Industry

List any training/education your staff received this year: CEUs via University of Florida with Dr. Baldwin, March 9-10 2023 , Corporate compliance training, Sexual harrassement training, Driver safety training

Please list the certifications and degrees held by your staff: Emily Hibbard Master's in Entomology, Ted Green Bachelor's of Agriculture in Entomology, Julianne Darnell Bachelor's of Science in Biology

Comments: _____

INFORMATION TECHNOLOGY (IT)

Does your program use (check all that apply):

☐ Aerial Photography
☒ Databases
☐ Dataloggers (monitoring for temperature, etc.)
☐ GIS mapping (Describe:)
☐ GPS equipment
☒ Smartphones
☒ Tablets/Toughbooks
☐ Other (please describe):

Describe any changes/enhancements in IT from the previous year: VDCI has developed its' own software and custom data system for organization and management of mosquito programs.

Describe any difficulties your program had with IT software/equipment this year:

Comments: _____

REVENUES & EXPENDITURES

Please enter your approved budgets for the current, previous, and future fiscal years.

	Date of Fiscal Year	Approved Budget	Notes
Previous	126250	126250	
Current	no contract in place	no contract in place	
Future	year to year contract		

List each member municipality, along with the corresponding (cherry sheet) funding assessment dollar amount, for the current fiscal year (or provide a web link to this information):
contract is with the Town of Nantucket

Comments:

SERVICE REQUESTS

How many service requests did you receive this season? none
How many were for larviciding? none
How many were for adulticiding?

Was this an increase or decrease over last season? Stayed steady

Comments:

EXCLUSIONS

How many exclusion requests did you receive this season? 3

Was this an increase or decrease over last season? Stayed steady

Do you have large areas of pesticide exclusion, such as estimated or priority habitats? Yes

If yes, please explain, and attach maps or a web link if possible. Per request, we do not apply pesticide to any property that is managed by the Nantuckt Conservation Foundation, Nantucket Land Bank or Nantucket Trustees.

SPECIAL PROJECTS

Did your program perform any of the following special projects? Check all that apply.

- ☐ Inspectional services (inspections at sewage treatment facilities, review of subdivision plans, etc.)

  Describe:

- ☐ Work with DPW departments or other local or state officials to address stormwater systems, clogged culverts, or other areas identified as man-made mosquito problem areas

  Describe:

- ☐ Work with groups as described above on long term solutions?

  Describe:

- ☐ Conduct or participate in any cooperative research or restoration projects?

  Describe:

- ☐ Participate in any state/regional/national workgroups or panels, or attend any meeting pertaining to the above?

  Describe:

- ☐ Work on any biological control projects, such as enhancement of habitat for native predators, release of predatory fish or invertebrates, etc.?

  Describe:

CHILDREN AND FAMILIES PROTECTION ACT (CFPA)

Is your program impacted by the CFPA? No

If yes, please explain:

If you have data on compliance rates with the CFPA within your program area, please list here:

Describe any difficulties you have had with the implementation of your program due to the CFPA, please elaborate here:

Comments:

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM

Did your program report any adverse incidents during this reporting period? No

If yes, please list any corrective actions here: _____

GENERAL COMMENTS

Please add any comments here for topics not covered elsewhere in this report: _____