MASSACHUSETTS MOSQUITO CONTROL

ANNUAL OPERATIONS REPORT

Year Report Covers: 2016 Date of Report: 1/13/2017

Project/District Name: **Plymouth County Mosquito Control Project**

Address: 142R Pembroke Street, PO BOX 72

City/Town: Kingston Zip: 02364

Phone: 781-585-5450 Fax: 781-582-1276

E-mail: ddeluca@plymouthmosquito.org

Report prepared by: *Stephen Gillett*

NPDES permit no. **MAG 87A025**

If you have a mission statement, please include it here: To maintain an efficient, economical mosquito control operation that will provide the best results possible, be consistent with all ecological aspects and consider the best interests of member communities.

ORGANIZATION SETUP:

Commissioner names:

John Kenny Chairman
Michael Valenti
John Sharland
Cathleen Drinan
Kimberly King (Resigned)

Superintendent/Director name: Anthony Texeira(Retired), Stephen Gillett
Superintendent/Director contact phone number: 781-585-5450
Asst. Superintendent/Director name:

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

Staffing levels for the year of this report:
Full time: 13
Part time: 1
Seasonal: 6
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 Denise Deluca
☐ Biologist
☒ Educator Dan Daly, Ellen Bidlack
☒ Entomologist Ellen Bidlack
☒ Facilities Anthony Texeira(Retired), Steve Gillet, Ross Rossetti
☐ Information technology
☒ Laboratory Ellen Bidlack
☒ Operations Stephen Gillett, Ross Rossetti, Denise Deluca, Anthony Texeira(Retired)
☒ Public relations Dan Daly
☐ Wetland scientist
☒ Other (please describe) Pilot-Ross Rossetti, Excavator Operator-Brian Callahan, Brandon Gillett, Field Technicians - Dan Cabral, Richard Goodwin(Terminated), Christoper Hanna, Matt McPhee, George Rego, and Kenneth Andrea

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

1 Modified wetland equipment (list type) 1 Link-Belt Excavator
7 Larval control equipment (list type) 2 Hydraulic units, 2 backpack sprayers, 3 pump cans
16 ULV sprayers (list type) Clarke Pro Mist
18 Vehicles
Other (please be specific): 1 Link-Belt excavator, 1 John Deere 35G mini excavator, 1 John Deere 323E Compact Track Loader, 1 Cessna AG Wagon w/boom nozzle & grandular spreader

Comments: _____

How many cities and towns are in your service area?* 28
Alphabetical list: Abington, Bridgewater, Brockton, Carver, Cohasset, Duxbury, East Bridgewater, Halifax, Hanover, Hanson, Hingham, Hull, Kingston, Lakeville, Marion, Marshfield, Mattapoisett, Middleboro, Norwell, Pembroke, Plymouth, Plympton, Rochester, Rockland, Scituate, Wareham, West Bridgewater, Whitman

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 larval suppression program is one of our most effective methods to reduce the number of biting mosquitoes by preventing mosquitoes from maturing into adults, through spring aerial laviciding over 15,000 acres of wetlands, site inspection and treating larval habitat by hand or hydraulic spraying and catch basin treatment, the Project hopes to enhance the quality of life of our residents by reducing the number of mosquito biting mosquitoes hatching out.

What months is this program active? Spring and Summer months

Describe the types of areas where you use this program: A variety of fresh water wetlands and salt marshes, drainage basins and stagnant water within the district.

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 12AS	73049-38	1 pint per acre	Aerial	Larvae	☐ Catch basins ☐ Containers ☒ Wetland ☐ Other (please list):	1920 gals
Vectobac 12AS	73049-38	4oz to 50gals water	Hydraulic sprayer	Larvae	☐ Catch basins ☐ Containers ☒ Wetland ☐ Other (please list):	4 gals
Vectobac GS	73049-10	10 lbs per acre	Aerial	Larvae	☐ Catch basins ☐ Containers ☒ Wetland ☐ Other (please list):	720 lbs
Summit Briquets	6218-47	1briquet /10'x10' surface area	hand	Larvae	☐ Catch basins ☐ Containers ☒ Wetland ☐ Other (please list):	48 lbs
Altosid Pellets	2724-448	7 grams per basin	hand	Larvae	☒ Catch basins ☒ Containers ☒ Wetland ☐ Other (please list):	495 lbs
Altosid XR	2724-421	1 briquet / 20'x 10' surface area	hand	Larvae	☐ Catch basins ☐ Containers ☒ Wetland ☐ Other (please list):	5 lbs
VectoLex WSP	73049-20	1 pouch per basin	hand	Larvae	☒ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	366 lbs

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: +1 per dip
☐ Other (please describe):
Comments: _____

Please attach a map of your service area (or a website link to that map).
http://www.plymouthmosquito.org/

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: The goal of our program is to reduce the number of biting mosquitoes to protect human health and improve the quality of life of our residents. The Project takes residential, businesses and town officials requests for adulticiding with ULV truck mounted sprayers .

Describe the types of areas where you use this program: Project wide, PCMCP accepts request for adult mosquito control from individual residents, business and town officials within the 28 town district.

What is the time frame for this program? May to October (end date depends on virus activity and weather conditions).

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**
DUET	1021-1795-8329	.62oz.per acre	ULV	460 gals
Mavrik	2724-478	5oz/50gal water	Hydraulic sprayer	10 oz

Please describe the maximum amounts or frequency used in a particular time frame such as season and areas
Each resident household has a maximum of 8 treatments per season

What is your trigger for adulticiding operations? (check all that apply)
☒ Arbovirus data
☒ Best professional judgment
☒ Complaint calls (Describe trigger for application: 2 per geographical area)
☒ Landing rates (Describe trigger for application 1 per night)
☒ Light trap data (Describe trigger for application 5 per night)
Comments: _____

Please attach a map of your service area (or a website link to that map).
http://www.plymouthmosquito.org

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: Our source reduction program is comprised of our ditch maintenance program, OMWM and education. We often inspect properties and offer advice to landowners regarding actions they can take to reduce the amount of mosquito production on their property.

What time frame during the year is this method employed? Throughout the year

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: Hand and Mechanized Equipment using BPM practices

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	67245
☒ Mechanized cleaning	21875

☐ 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	2325
☒ Mechanized cleaning	10852
☐ Other (please list):	

Comments: _____

What time frame during the year is this method employed? Jan.-Dec

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: OMWM aims to protect the salt marsh from the adverse impacts of grid ditching and improve the ecosystem. OMWM utilizes the natural features of the salt marsh to enhance predatory fish and native bird habitat while reducing or eliminating stagnant areas that are conducive to mosquito larval development.

What months is this program active? The program is active year round. In the summer months the salt marsh is monitored and in the winter the OMWM site is constructed.

Please give an estimate of total square feet or acreage: 0

Comments: We are currently in the process of renewing our permits for this program.

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:	Pre and Post applications
Ground ULV Adulticide:	Periodic landing rate checks and trapping data
Larvicide – catch basins:	prior to application
Larvicide-hand/small area	prior to application

Open Marsh Water Management: Pre and Post application and per permit

Source Reduction: Pre and Post applications

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):
Per established Mass. Best Management Practice Standards and State Reclamation and Mosquito Board G.E.I.R.

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

Research Project	**Details**
Bottle assays	
Efficacy testing	
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: The purpose of this program is three fold to monitor the mosquitoes for diseases, to determine general population levels and to decide where we can better focus our larvaciding and audulticiding efforts.

What months is this program active? May-October

Check off all trap types currently in use by your program:

- ☐ ABC light traps
- ☐ ABC light traps w/CO_2
- ☐ CDC light traps
- ☒ CDC light traps w/CO_2
- ☒ Gravid traps
- ☒ Landing rate tests
- ☒ NJ light traps
- ☐ NJ light traps w/CO_2
- ☒ Ovitraps
- ☐ Resting boxes
- ☒ Other (please describe): BG Gravid Aedes Trap, BG Sentinel w/ Co2 and with lure.

- ☐ Canopy
- ☐ Canopy
- ☐ Canopy
- ☐ Canopy
- ☐ Canopy
- ☐ Canopy

Do you maintain long-term trap sites in any of your areas? Yes

If yes, please describe how you chose these long-term sites:

We maintain a system of NJ traps that have been at the same locations for numerous years. In cooperation with DPH we maintain our own sites for disease surveillance. Locations were chosen using a variety of factors including disease history, neighboring wetlands and location of DPH traps.

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*
- ☒ Other (please list): **An. walkeri, Ps. cilita**
- ☒ *Oc. abserratus*
- ☒ *Oc. canadensis*
- ☒ *Oc. cantator*
- ☒ *Oc. j. japonicus*
- ☒ *Oc. sollicitans*
- ☒ *Oc. taeniorhynchus*
- ☒ *Oc. triseriatus*
- ☒ *Oc. trivittatus*
- ☒ *Ps. ferox*
- ☐ *Ur. sapphirina*

Do you participate in the MDPH Arboviral Surveillance program? Yes
How many pools do you submit weekly on average? 35

Number of traps in your service area **placed by MDPH**: 5
Were these long-term trap sites or supplemental trapping sites? long-term

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)	3	0	0
☐ West Nile Virus (WNV)	0	0	0
☐ Other (please list):	0	0	0

Comments: Ae. albopictus was detected for the first time in the district. The collection was made via ovicups on the 13th of July in Wareham. In response additional traps were deployed in the county but no additional Ae. albopictus were collected.

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	all towns low risk	all town low risk
WNV	all towns low risk	all towns low risk

Comments: _____

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: The over-arching purpose of the program is to enhance public health and safety of the residents of Project communities as it applies to mosquitoes and mosquito viruses. The Project employs all the methods checked on the form to reach individuals and groups of people of all ages in our member communities and to communicate the messages of the Massachusetts Department of Public Health, The Centers for Disease Control ,the Environmental Protection Agency, and the American Mosquito Control Association.

What time frame during the year is this method employed? Primarily April through October. The time period of November - March is generally a time for planning the focus of the next season's efforts.

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): mail trap results to landowners participating in surveillance program.)
☒ 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: Formal presentations reached several hundred people, but the addition of local cable covering events add countless numbers.
Comments: It is very difficult to estimate the audience size when information is presented electronically. Using newspaper press releases (print plus therir websites), our own website, and local radio helps us maximize our audience but the total numbers are impossible to quantify.

List your program's top 3 education/outreach activities for this year:

1. Communicating with the Bee Keepers in Plymouth County in an effort to better understand their issues and to offer an opportunity to ask their questions about the Project's activities. Toward this end, the Project was able to attend a Plymouth County Bee Keepers meeting and the results were positive for both the bee keepers and the Project. At the conclusion of the meeting, members present stated that they did not believe the Project's activities presented any threat to their hives.
2. Making the public more aware of how to choose the best repellants (EPA registered vs non-registered or exempt products). Examples: press releases, radio, our website,

bringing informational materials to libraries within Plymouth County, speaking to organizations, such as the Abington Rotary Club.

3. Due to the special vulnerability of seniors, the project met with most area councils on aging or senior centers to speak or leave educational materials on protection from mosquito bites.

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
☒ Another mosquito control district/project
☒ Another state agency (DCR, DPH, etc.)
☐ Environmental groups
☐ Industry

List any training/education your staff received this year: Applicators License training, NMCA Annual Meeting, Clarke & Univar Spring training, NMCA Field Day, DigSafe and M.U.S.T. Training, NAAA Annual Conference, NEAAA Annual Conference, AMCA Annual Meeting.

Please list the certifications and degrees held by your staff: Anthony Texeira B.S., M.A.T. ,Commercial Certification 47 - Stephen Gillett Commonwealth Supervisor Certificate, CDL , 1c2a Hoisting Engineer License, Commercial Certification 47 - Ellen Bidlack B.S., M.A. Entomology, Commercial Certification 47 - Dan Daly BS, M Ed., CAGS. - Ross Rossetti B.S. Aviation Science, Commercial Pilots Certificate, Commercial Certification 47 and 34, Hoisting license 2a 1c, CDL Permit - Brain Callahan Commercial Certification 47, CDL, 2a Hoisting License - Brandon Gillett Commercial Certification 47, 2a Hoisting License, CDL Permit - Kenneth Andrea B.S. Biology, Commercial Certification 47, Hoisting License 2a1c - Christopher Hanna Commercial Certification 47, 2a Hoisting License - George Rego Applicators License, CDL, 2a Hoisting License - Richard Goodwin Commercial Certification 47, 1c2a Hoisting License - Daniel Cabral Commercial Certification 47, 2a Hoisting License - Matthew McPhee Commercial Certification 47, 1c Hoisting License, B.A. Earth, Environment and Oceanic Sciences.

Comments: _____

INFORMATION TECHNOLOGY (IT)

Does your program use (check all that apply):

☒ Aerial Photography
☒ Databases
☐ Dataloggers (monitoring for temperature, etc.)
☒ GIS mapping (Describe: ESRI GIS Desktop)
☒ GPS equipment
☒ Smartphones
☐ Tablets/Toughbooks
☒ Other (please describe): Electronic Data Solutions (Archer) Hand helds

Describe any changes/enhancements in IT from the previous year: In collaboration with Electronic data solutions (now Frontier Precision) we began to make enhancements to our recording and distributing of service calls and are looking to expand this in 2017.

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

Comments: _____

REVENUES & EXPENDITURES

Please provide the amounts for your approved budgets for the current, previous, and future fiscal years. Please note if the budget for the next fiscal year is an estimate, or put "n/a" if it is not yet available.

Fiscal Year	Approved Budget
2016	1,685,369.00
2017	1,719,076.00

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):
Abington: 35460
Bridewater: 65394
Brockton: 115613
Carver: 62140
Cohasset: 38259
Duxbury: 71554
East Bridgewater: 40934
Halifax: 30942
Hanover: 48987
Hanson: 33530
Hingham: 92011
Hull: 27220
Kingston: 45421
Lakeville: 56465
Marion: 38085
Marshfield: 89139
Mattapoisett: 39474
Middleboro: 118389
Norwell: 53647
Pembroke: 56065
Plymouth: 231736
Plympton: 23,931
Rochester: 53682
Rockland: 35032
Scituate: 68736
Wareham: 88936

West Bridgewater: 32613
Whitman: 25678

Comments: _____

SERVICE REQUESTS

How many service requests did you receive this season? 13,775
How many were for larviciding? 284
How many were for adulticiding? 13,491

Was this an increase or decrease over last season? Decrease

Comments: Calls were down due to the drought and little abrovirus activity.

EXCLUSIONS

How many exclusion requests did you receive this season? 125

Was this an increase or decrease over last season? Increase

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. We have a variety of large exclusions that impact our ability to provide service to our communities. This year we saw an increase in large properites that conservation organizations added to the no-spray list. We are espcially concerned about a large cedar swamp in Lakeville and a portion of a cedar swamp in Hanson that were added to the no spray list. We continue to have large areas that NHESP excludes due to concerns about endangered species.

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: we continue to work with local DPW on water management programs

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

  Describe:

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

  Describe: We participated in a CDC survey regarding the geographic range of Ae. albopictus and aegypti.

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

  Describe: Yes, we attended a meeting called Zika Global Health Symposium at UMass Boston from 2-3 May 2016.

- ☐ 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? Yes

If yes, please explain: The program is annually impacted by the CFPA. This year there were no requests to spray any schools or day care programs due the the absence (essentially) of virus in Project towns. However the Project annually prepares for any requests that might be made (such as annually checking the status of IPM plans) and having the necessary paperwork available in case there is such a need.

If you have data on compliance rates with the CFPA within your program area, please list here: All requests to spray follow the CFPA regulations and paperwork is on file for each request made.

Describe any difficulties you have had with the implementation of your program due to the CFPA, please elaborate here: The Project annually anticipates that many school districts will need to have their understanding of the CFPA refreshed. Unless there is personnel turnover the review process is generally quick. When new school staff is involved the process requires fully educating these individuals and working closely with them during their first year.

Comments: While the question asks about "difficulties" our focus is on ensuring the process is fully understood and implemented.

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: _____