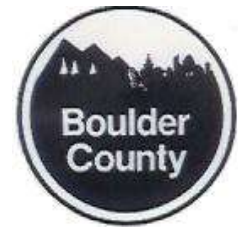


Boulder County Mosquito Control District Integrated Mosquito Management Program 2019 Annual Report

Prepared for and in Cooperation with:

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October 2019

Boulder County Mosquito Control District Integrated Mosquito Management Program

2019 Annual Report

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Program Objectives

Boulder County Mosquito Control District (BCMCD) and Boulder County Public Health Department (BCPH) contracted Vector Disease Control International, LLC (VDCI) to operate an Integrated Mosquito Management (IMM) program in 2019. The primary objective of BCMCD's IMM Program is to monitor and reduce mosquito populations through the use of environmentally sound control techniques in order to protect its residents from the threat of mosquito-borne diseases and suppress local populations of nuisance mosquitoes. VDCI prioritizes the detection and elimination of larval mosquitoes in aquatic habitats, in conjunction with the monitoring of adult mosquito populations through routine surveillance, in order to assess West Nile virus vector species abundance in the area.

Open communication is maintained by VDCI between the BCMCD, residents, HOAs, Property Management Companies, County and State Departments of Health & Environment, and surrounding municipalities in order to ensure that the highest level of mosquito control and epizootic response is achieved. This diligent and cooperative communication is important to the Boulder County Mosquito Control District mosquito management program and provides significant benefit to public health throughout the entire area.

VDCI's Commitment

Vector Disease Control International is a company built on the foundations of public health, ethics, professionalism, and technical expertise. VDCI is committed to providing our customers with scientifically based, environmentally sensitive and technologically advanced Integrated Mosquito Management (IMM) programs of the highest quality. All of our employees are committed to excellence in vector control and public health and strive to improve the quality of human life in communities through public education and the control of mosquitoes and the diseases they can transmit. VDCI currently has programs across the state of Colorado, providing services for towns, cities, counties, homeowners associations, and encephalitis surveillance monitoring programs for county health departments.

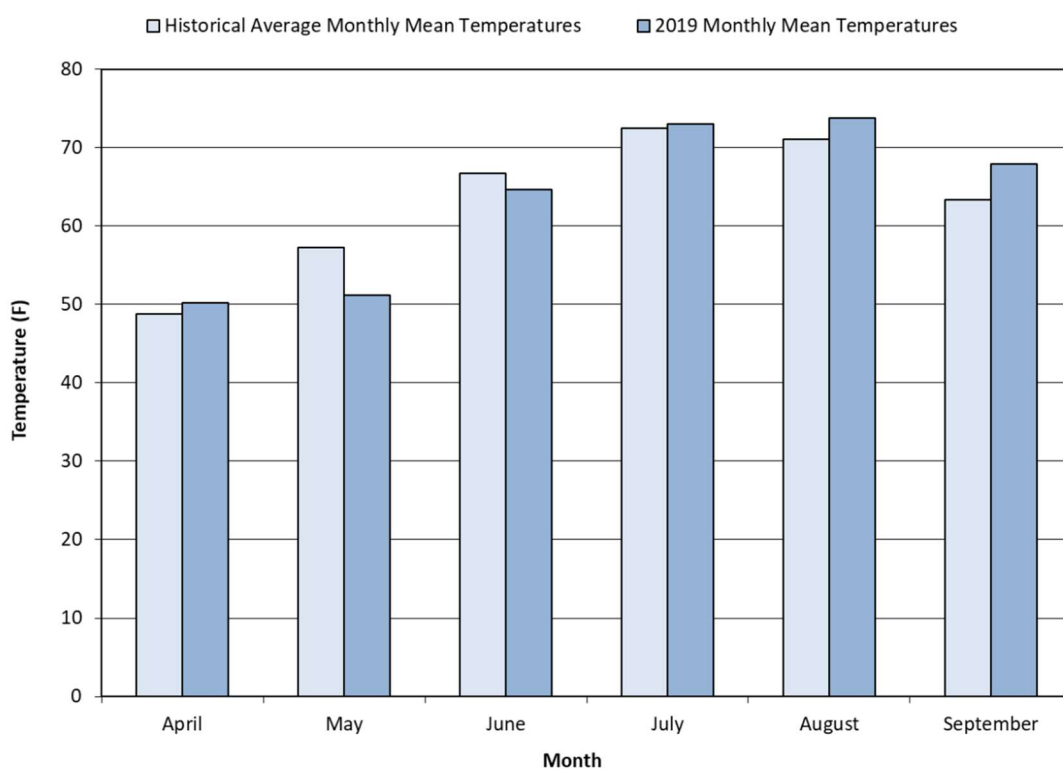
Vector Disease Control International, as the contractor for the Boulder County Mosquito Control District, will continue to use proven scientific Integrated Mosquito Management techniques to survey and control local mosquito populations using biorational larval controls and limited low-toxicity insecticide applications. All of the methods and materials used have been reviewed and registered by the US Environmental Protection Agency, the Centers for Disease Control, the Colorado Department of Agriculture and the American Mosquito Control Association.

2019 Season Perspective and Climate Data

At VDCI we have come to expect each Colorado summer to present a unique set of temperature, precipitation, irrigation, and human interactions that combine to create new and different challenges in both mosquito control and mosquito-borne disease proliferation. Boulder County is located in a semi-arid environment with elevations in the BCMCD ranging from approximately 4,900 feet to 5,500 feet above sea level. The typical mosquito season for the BCMDC is from late April to September. Current and historical climate data from the National Oceanic Atmospheric Administration's (NOAA) High Plains Regional Climate Center's (HPRCC) Boulder, Colorado weather station was used to monitor regional temperature and precipitation patterns throughout the season.

In 2019, every month of the mosquito season, except May and June, had temperatures at or above normal (**Figure 1**). The months of April, August and September experienced the highest deviation from average, +1.4, +2.7 and +4.6 degrees respectively. July had a mean monthly temperature that was near normal at only +0.5 degrees higher than average, while May and June were far below average at -6.1 and -2.1 degrees respectively. Overall, the 2019 season was approximately 0.3% warmer than the previous year.

Figure 1 2019 Monthly Mean Air Temperature and Historical Averages

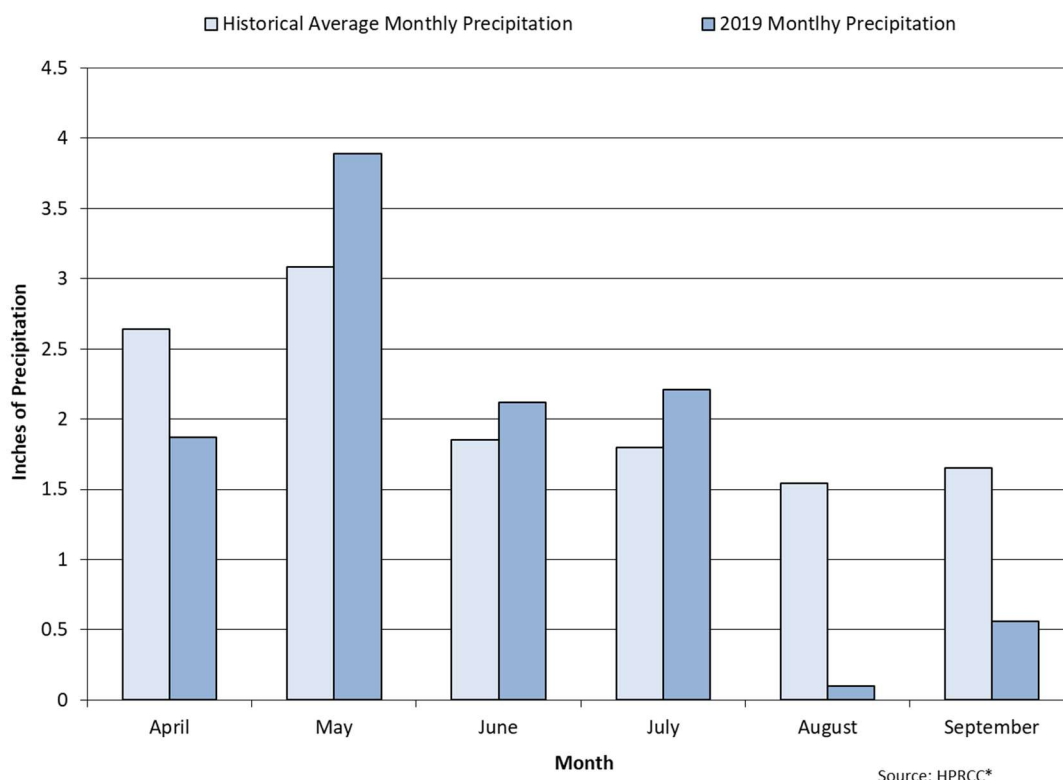


Source: HPRCC*

The historical averages for monthly mean precipitation indicate that April, May and June are usually the wettest months of the year. For the second year in a row, the most significant variation during the mosquito season was the month of May, which received 26.3 percent more precipitation (3.89") than the average amount (3.08"), making it the wettest month of 2019. During 2019, the accumulated precipitation from April through September was lower than the historical average for the same period with a total of 10.75 inches (**Figure 2**). This is approximately 14.4 percent less precipitation than the historical average of

12.56 inches. By contrast, and for the second year in a row, August received approximately 6.5 percent of its normal precipitation, making it the driest month of the mosquito season in 2019.

Figure 2 2019 Monthly Total Precipitation Data and Historical Averages*



The higher precipitation in the first half of the season and above normal temperatures likely influenced the higher than average nuisance mosquito populations during 2019 mosquito season. While a wetter July coupled with a warmer and drier August, presumably caused the elevated abundance of *Culex* species mosquitoes experienced throughout the later months of the mosquito season. An unusually longer wet and cold spring could have also contributed to lower than average levels of West Nile virus to be detected about three (3) weeks later than normal throughout Boulder County.

West Nile Virus Season

Since the introduction of West Nile virus to the United States in 1999, the virus has made a complete westward expansion to the West Coast. Starting in the Northeastern parts of the United States, the virus steadily spread through the South, the Midwest, the Rocky Mountain region and to the Western States. This extensive distribution is due to the ability of WNV to establish and persist in the wide variety of ecosystems present across the country. WNV has been detected in 65 different mosquito species in the U.S., though it appears that only a few *Culex* species drive epizootic and epidemic transmission (WNV Guidelines CDC 2013). Although West Nile virus has been endemic to the United States since 1999, researchers continue to seek an understanding for some of the factors which contribute to region specific spikes in vector abundance and human risk. We still do not understand why some humans develop West Nile fever while other infections develop into more serious West Nile encephalitis or West Nile meningitis cases. Additionally, physicians and researchers continue to seek answers to the variable recovery times and occurrence of deaths that result with some infections. WNV has expanded to the point that it can now

be found in all 48 contiguous states and has produced two additional, large nationwide epidemics in 2003 and 2012 (WNV Guidelines CDC 2013).

As of October 2nd, 2019, a total of 43 states and the District of Columbia have reported West Nile virus infections in people, birds, or mosquitoes in 2019 (**Figure 3**). Overall, 627 cases of West Nile virus disease in humans have been reported to CDC. This is less than half the number of cases reported in 2018 at this time last year. Of these, 401 (64%) were classified as neuroinvasive disease (such as meningitis or encephalitis) and 226 (36%) were classified as non-neuroinvasive disease (**Figure 4**) and a total of 30 deaths have resulted from these infections.

Figure 3 West Nile Virus Activity by State – United States, 2019 (as of October 2nd, 2019)*

*CDC image <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2019/activitybystate2019.html>

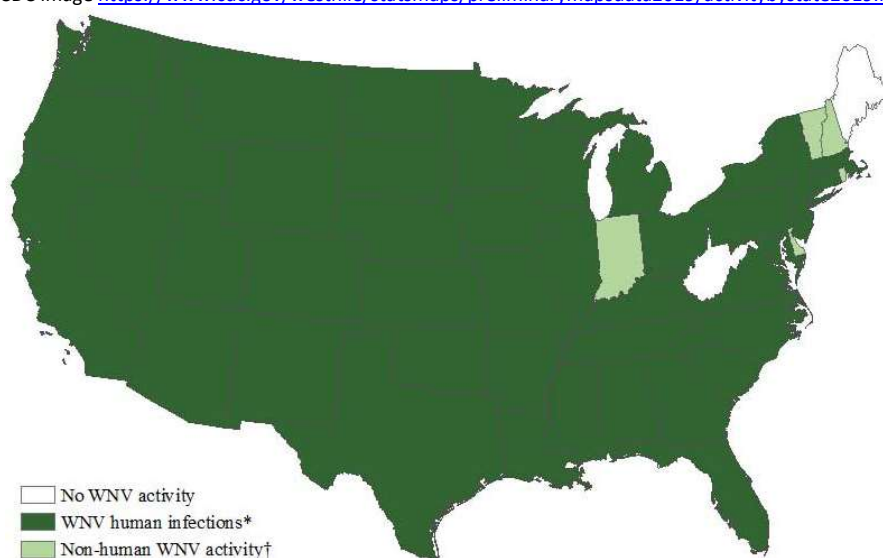
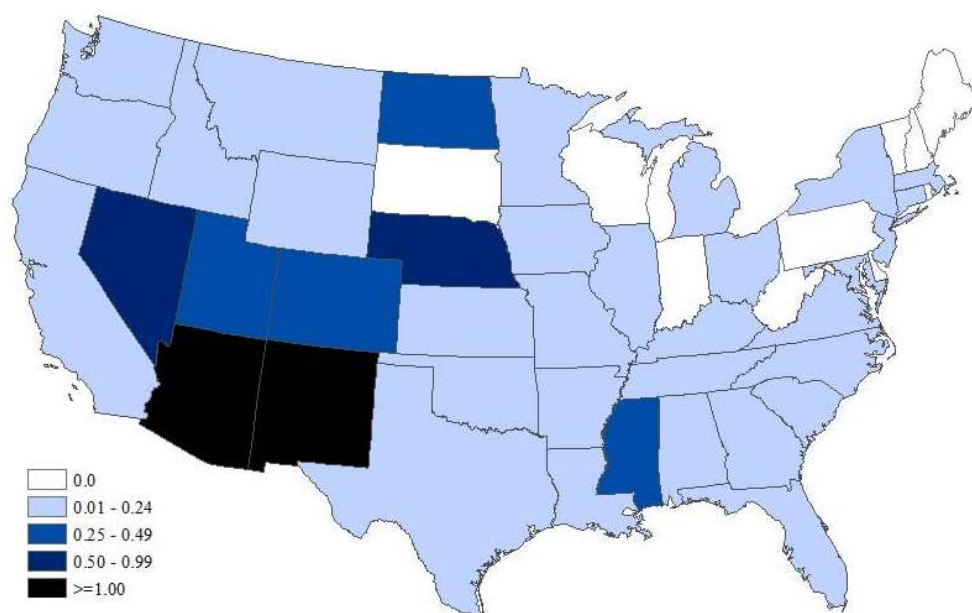


Figure 4 West Nile Virus Neuroinvasive Disease Incidence by State – United States, 2019 (as of October 2nd, 2019)*

*CDC image <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2019/incidencestate-2019.html>



Colorado 2019

As of October 2nd, 2019, the Colorado Department of Health and Environment has identified 72 cases of human West Nile virus (WNV) infections in Colorado (**Figure 5**). The CDC reports only 66 cases as of October 2nd, 2019 with 11 (14%) asymptomatic blood donor, 27 (35%) neuroinvasive cases including symptoms of meningitis or encephalitis (including meningoencephalitis), and 39 (51%) non-neuroinvasive which includes cases where individuals are non-symptomatic or present with fever and other minor symptoms (**Figure 6**). There has been one death (**Figure 6**) associated with West Nile virus infections from an undisclosed location in Colorado during the 2019 season. The discrepancy between CDPHE data and CDC data is likely due to lag time in the communication between these entities.

Figure 5 Weekly WNV Human Case Count 2019 (2014-2018 Average) *

*CDPHE image <https://www.colorado.gov/pacific/cdphe/west-nile-virus-data>

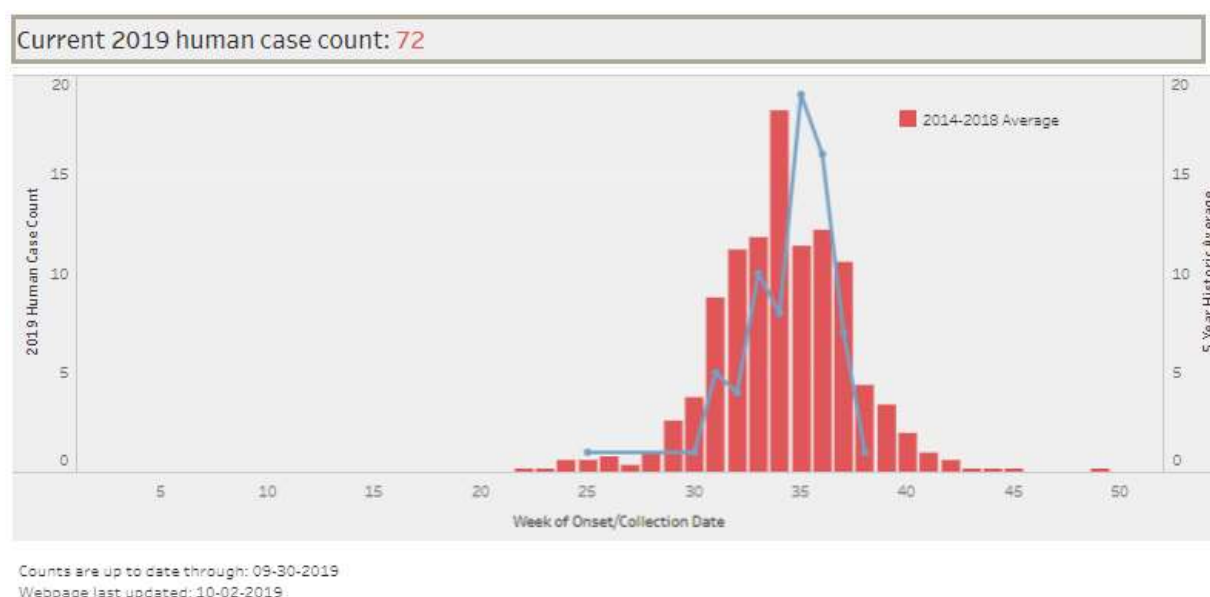


Figure 6 West Nile Virus Disease Cases and Presumptive Viremic Blood Donors by State – United States, 2019 (as of October 2nd, 2019)*

State	Neuroinvasive Disease Cases†	Non-neuroinvasive Disease Cases	Total cases	Deaths	Presumptive viremic blood donors‡
Colorado	27	39	66	1	11

*CDC image <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2019/disease-cases-state-2019.html>

Boulder County 2019

CDPHE data currently shows Delta County with the most West Nile virus human cases (21) while Boulder County ranks 2nd with 9 human cases followed by Weld County with 8 human cases (**Figure 7**).

Colorado WNV Human Cases by County, 2019*

Map of Colorado showing the number of human cases by county for the year 2019. The map uses a color scale from light green (1 case) to dark blue (21 cases). The highest number of cases is in Delta county (21 cases), followed by Larimer (18 cases) and Weld (18 cases). Other counties with cases include Morgan, Adams, Arapahoe, Elbert, Teller, Pueblo, Montrose, Pitkin, and Mesa. The map includes a legend, a year selector set to 2019, and a scale bar.

The actual 2019 weekly Vector Index rates, as calculated by BCPH, for sentinel zones 1, 2 and 3 are illustrated below (**Table 1**). Due to below average WNV activity in 2019, no widespread emergency spraying was conducted within BCMCD during the 2019 mosquito season.

Table 1 Vector Index, Boulder County Sentinel Zones 1 - 3, 2019

Boulder County Vector Index 2019 ¹			
	Sentinel Zone 1 ²	Sentinel Zone 2 ³	Sentinel Zone 3 ⁴
Season Week	Vector Index	Vector Index	Vector Index
Week 23 (June 2-8)	----	----	----
Week 24 (June 9-15)	0.00	0.00	0.00
Week 25 (June 16-22)	0.00	0.00	0.00
Week 26 (June 23-29)	0.00	0.00	0.00
Week 27 (June 30-July 6)	0.00	0.00	0.00
Week 28 (July 7-13)	0.00	0.00	0.00
Week 29 (July 14-20)	0.00	0.00	0.00
Week 30 (July 21-27)	0.00	0.00	0.00
Week 31 (July 28 -Aug 3)	0.00	0.00	0.00
Week 32 (August 4-10)	0.00	0.32	0.00
Week 33 (August 11-17)	0.23	0.71	0.00
Week 34 (August 18-24)	0.24	0.00	0.27
Week 35 (August 25-31)	0.00	0.30	0.20
Week 36 (September 1-7)	----	----	----
1. Reported by BCPH as of September 9, 2019			
2. City of Boulder; 3. Longmont; 4. Erie, Lafayette, Louisville, Superior			

Larval Mosquito Control

Larval mosquito control is the foundation of the Boulder County Mosquito Control District's Mosquito Control program and can be an extremely effective way to manage mosquitoes, thereby reducing the number of potential disease vectors and annoyances associated with biting adults. Years of research and practical experience have shown that the most effective way to control mosquito populations is through an aggressive Integrated Mosquito Management (IMM) approach. This approach aims at using a variety of concepts, tools, and products to reduce mosquito populations to a tolerable level.

Pre-season larval control work involved ground truthing GIS maps, remapping areas where new development and altered landscapes occurred. VDCI began larval site inspections in many areas in May. Hiring of seasonal field technicians began in March and continued into May. VDCI's Annual Field Technician Classroom Training Day took place on May 21st with over 60 new and returning field technicians in attendance. Field training by VDCI management and veteran employees lasted through May and full time field activities were in force by early June.

In 2019, a cold wet spring delayed larval site inspections until mid-May (approximately 3 weeks later than 2018) and Vector Disease Control International performed 9,326 larval site inspections at 1869 active breeding sites throughout the District. Of these individual inspections, 7,299 sites (78.3%) were wet upon inspection and 3,299 (45.2%) were producing mosquito larvae in the Boulder County Mosquito Control District. These inspections resulted in 3,118 (42.7%) applications in which VDCI applied 5,201.8 lbs. of VectoBac G (*Bti*), 867.4 lbs. of Vectolex FG (*Bs*), 7.4 lbs. of Vectolex WDG (*Bs*), 4 Altosid briquets (S-Methoprene), 1.0 oz. Altosid XRG (S-Methoprene), and 79.4 gallons of BVA 2 larvicide oil (**Table 2; Figures 8 and 9**) to 865.8 acres of land within the Boulder County Mosquito Control District.



By comparison, in 2018 VDCI performed 12,697 larval site inspections at 1,921 documented breeding sites throughout the District. Of these individual inspections, 8,618 sites (67.9%) were wet upon inspection and 2,711 (31.5%) were producing mosquito larvae in the Boulder County Mosquito Control District. These inspections resulted in 2,678 applications in which VDCI applied 2,129.5 lbs. of VectoBac G (*Bti*), 372.1 lbs. of Vectolex FG (*Bs*), 3.6 lbs. of Vectolex WDG (*Bs*), 1.1 oz. Altosid XRG, and 118.7 gallons of BVA 2 larvicide oil (**Table 2 and Figure 9**) to 385 acres of land within the Boulder County Mosquito Control District.

Larval mosquito control can be achieved in several ways including biological, biochemical, chemical, and mechanical means. No single larvicide product will work effectively in every habitat where mosquito larvae are found, so a variety of products and methods should be employed. Additionally, although there are a variety of methods for reducing larval populations, some may have negative consequences that outweigh their benefits. Mechanical or physical habitat modification is a technique which VDCI uses on relatively small scale projects, as the area to be modified must be carefully reviewed.



VDCI's favored method of larval mosquito control is through the use of bacterial bio-rational products. The main product used by VDCI is a variety of bacteria (*Bacillus thuringiensis var. israeliensis*). *Bti*, as it is known,

has become the cornerstone of mosquito control programs throughout the world. The benefits include its efficacy and lack of environmental impacts. When used in accordance with its label, successful control of mosquito larvae can be achieved without impact to non-target species such as other aquatic invertebrates, birds, mammals, fish, amphibians, reptiles, or humans. The label allows for the use of the product in the majority of the habitats throughout the service area. Another bacterial product closely related to *Bti* is *Bacillus sphaericus* (*Bs*). *Bs* provides similar benefits to *Bti* while also providing residual control of certain species of mosquitoes. It is used specifically in difficult to treat areas where *Culex* larvae are the predominant species due to its limitations and high cost.

Other larval control products include the insect growth regulator S-methoprene (Altosid), and light mineral oils (BVA 2 larvicide oil). Methoprene is a synthetic version of a juvenile growth hormone in larval mosquitoes. The hormone prevents the normal development of larval mosquitoes into pupae and adults, eventually causing death. VDCI limits the use of chemical larvicides to areas with little biodiversity, such as road side ditches, or areas that chronically produce high mosquito populations. They are only used after a thorough assessment has been made of any habitat where their use is being considered. Mineral oil is the only product effective in controlling mosquito pupae and therefore is an essential tool when pupae are present.

VDCI made available predatory fathead minnows (*Pimephales promelas*) in limited habitats to serve as a biological control for mosquito larvae. Fathead minnows are a native fish species in Colorado that regularly feed off of surface-dwelling aquatic organisms, including mosquito larvae. VDCI will provide minnows to residents that have “closed system” habitats such as ornamental ponds or small farm ponds that are isolated from streams or other areas so the minnows cannot expand indiscriminately. VDCI received no requests for fathead minnows in 2019.

Table 2 2019 Summary of Larval Control Product Applications by Type

Larval Control Product Types	2017	2018	2019
<i>Bacillus thuringiensis israelensis (Bti)</i>			
Vectobac G (lbs) EPA Reg. #73049-10	4,025.2	2,129.5	5,201.8
Aquabac 200g (lbs) EPA Reg. #62637-3	31.6	-	-
<i>Bacillus sphaericus (Bs)</i>			
Vectolex FG (lbs) EPA Reg. #73049-20	96.7	372.1	867.4
Vectolex WDG (lbs) EPA Reg. #73049-57	5.2	3.6	7.4
Spheratax SPH (lbs) EPA Reg. #84268-2	12.3	-	-
S-Methoprene			
Altosid Briquet (oz) EPA Reg. #2724-375	1.0	0.0	4.0
Altosid XRG (oz) EPA Reg. #2724-451	-	1.1	1.0
Mineral Oil			
BVA 2 Larvicide Oil (gal) EPA Reg. #70589-1	76.7	118.7	79.4

Figure 8 2019 Larval Site Inspections and Applications by Month

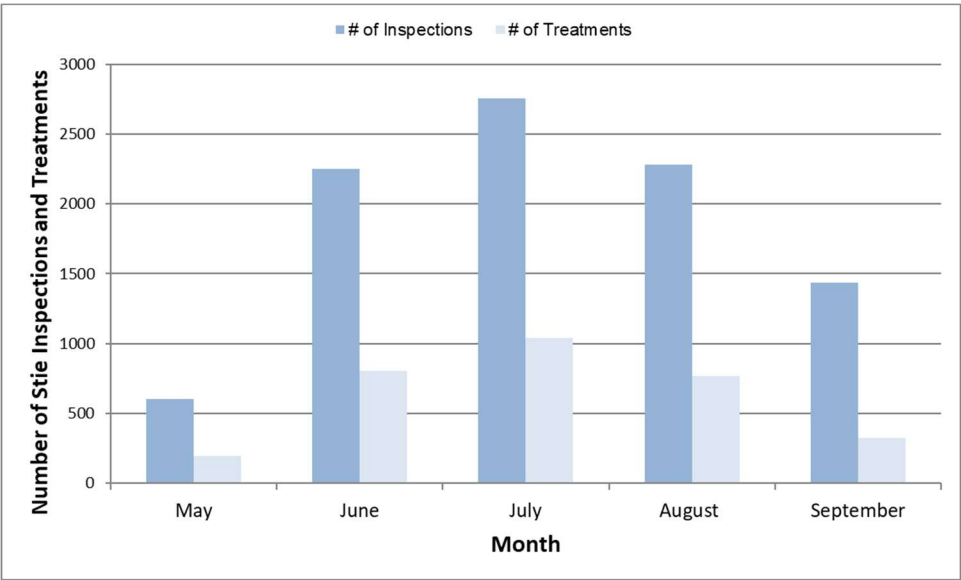
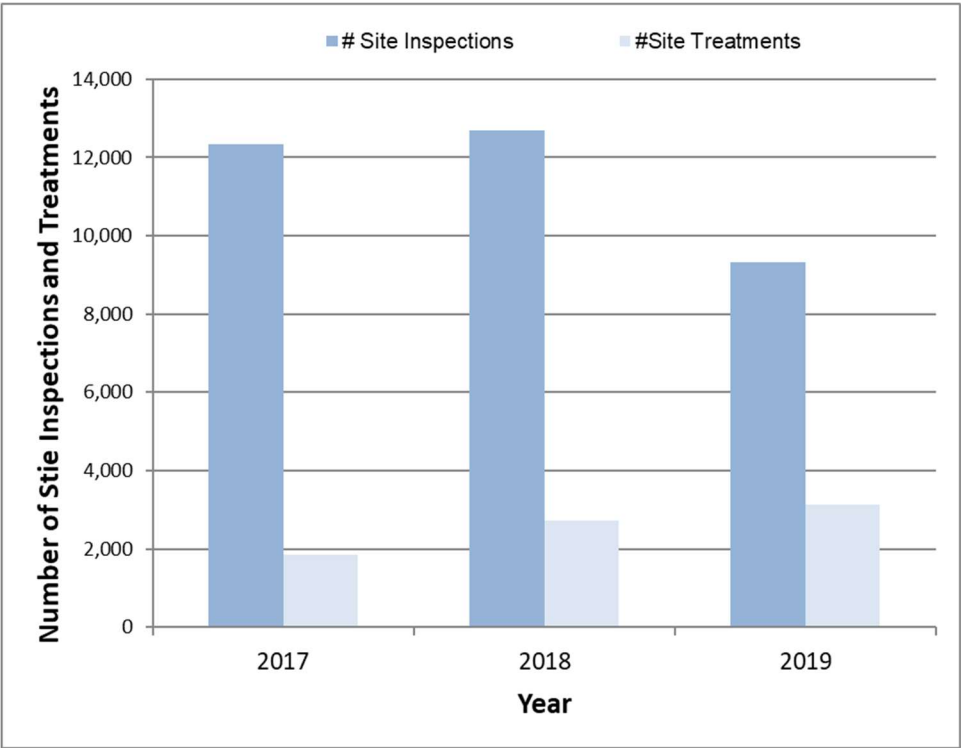


Figure 9 Comparison of Larval Site Inspections and Applications by Year



VDCI Adult Mosquito Surveillance and Laboratory





Information about mosquito abundance and species diversity is essential to any IMM program. Vector Disease Control International's most commonly used adult mosquito surveillance tool is the CDC light trap which uses carbon-dioxide from dry ice as bait to attract female mosquitoes seeking a blood meal from a breathing animal. Once attracted by the CO₂, the mosquitoes are lured by a small light to a fan that pulls them into a net for collection. Traps are set overnight at carefully selected sites with abundant harborage. They are collected the following morning and returned to VDCI's laboratory, where the contents of the trap nets are counted and speciated by trained technicians.

In 2019, Vector Disease Control International monitored a statewide network of hundreds of weekly trap sites, collecting 873,309 adult mosquitoes that were counted and identified to species by the VDCI Surveillance Laboratories. While individual traps provide current seasonal information, trap data can be interpreted in the context of historical records for the same trap site if such data is available. Individual traps are also compared to other traps from around the region that were set on the same night and therefore exposed to similar weather conditions. Technicians working in the Surveillance Laboratories at Vector Disease Control International are trained to provide accurate species-level identification of both larval and adult mosquitoes.



Additionally, the VDCI Surveillance Laboratory conducts an intensive larval identification program with larval mosquito samples collected by field technicians. This information is now invaluable in targeting mosquito control efforts as we gain a greater understanding of the habitat types preferred by Colorado mosquito species and the seasonality of these habitats as sites for mosquito development.

Specimens and data collected from these traps and larval identification are used in:

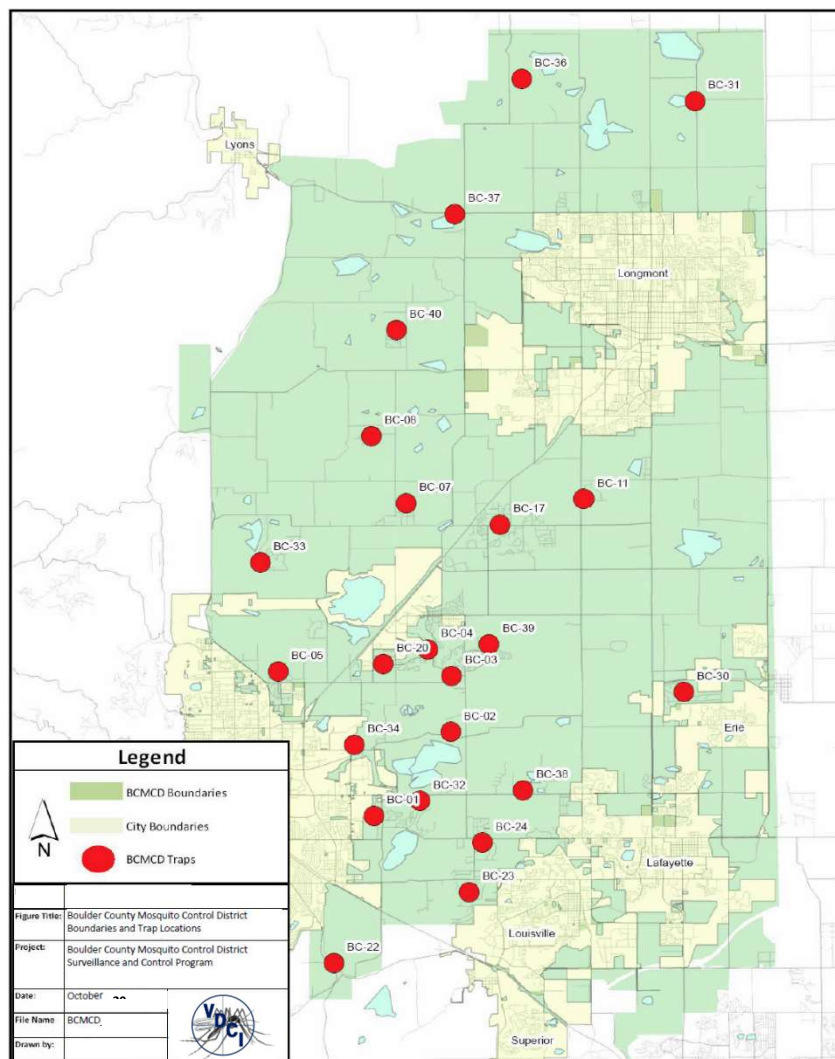
-  Determining the effect of larval control efforts. Each mosquito species prefers specific types of habitats for larval development. If a trap includes large numbers, it could indicate the presence of an unknown larval habitat and, based on the species identification and known habitat preference for that species, direct field technicians as to possible sources of the mosquitoes collected.
-  Determining larval and adult mosquito species. This helps to illustrate the threat of mosquito-borne disease amplification and transmission because different mosquito species can vector different diseases to people and animals.
-  Determining where adult control efforts were necessary. While mosquito eradication is impossible, significant population reduction is achievable. In places where larval control is insufficient, such as neighborhoods where adult mosquitoes have migrated in from outside of the control area, it may be necessary to use adulticide methods, such as ULV truck fogging or barrier sprays of harborage areas. Trap counts that exceed an acceptable threshold for an area may trigger adult control measures.
-  Surveillance for Mosquito-borne Disease. Historically, VDCI efforts were targeted primarily at controlling mosquito nuisance problems with limited disease surveillance. However, since the

arrival of the West Nile virus in Colorado in August of 2002, the paradigm has shifted toward disease prevention and control. Accurate species identification of the mosquitoes in the traps is important when monitoring species population trends. It also is necessary for evaluating whether a population spike represents an actual increase in disease transmission potential or only an increased nuisance level.

BOULDER COUNTY SURVEILLANCE LIGHT TRAP DATA

In 2019, an average of 21 surveillance light traps monitored adult mosquito populations within the Boulder County Mosquito Control District on a weekly basis (**Figure 10**). Early season surveillance began at select sites (7 traps) for only one week, May 17th, due to unseasonably cold nights. VDCI was able to begin full surveillance (21 traps) the week of June 3rd and concluded on September 17th corresponding with low adult mosquito activity.

Figure 10 2019 BCMCD Boundaries and Trap Locations

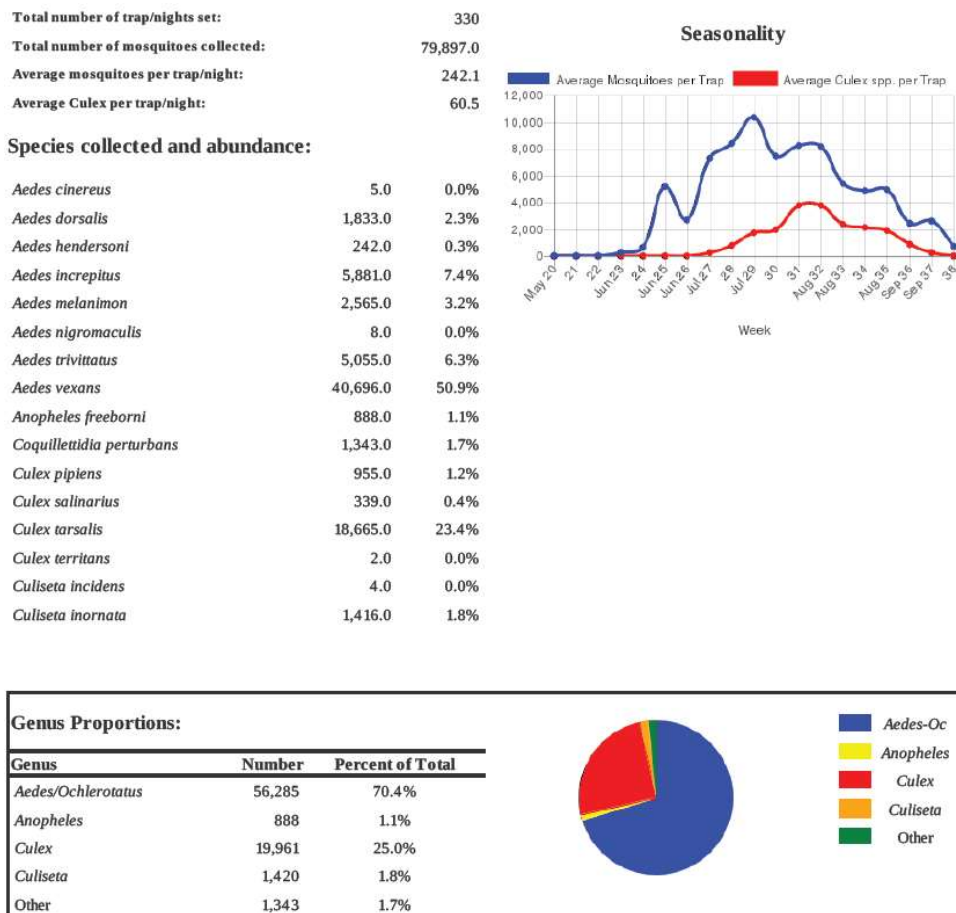


There were 330 CDC light surveillance trap nights set within Boulder County Mosquito Control District during the 2019 season. These traps collected a total of 79,897 mosquitoes. There was an average of 242 mosquitoes caught per trap per night and an average 61 *Culex spp.* mosquitoes per trap per night. The composition of mosquitoes collected was 70.4% (56,285) *Aedes/Ochlerotatus spp.*, 1.1% (888) *Anopheles spp.*, 1.7% (1,343) *Coquillettidia spp.*, 25.0% (19,961) *Culex spp.*, and 1.8% (1,420) *Culiseta spp.* (**Figure 11**). Please refer to **Appendix A** for BCMCD Individual Light Trap Summaries.

A total of 16 species were represented in 2019 in BCMCD. No exotic/introduced species (such as Asian Tiger Mosquitoes) were collected this season.

By comparison, in 2018 there were 390 CDC light surveillance trap nights set within Boulder County Mosquito Control District. These traps collected a total of 61,623 mosquitoes. There was an average of 158 mosquitoes caught per trap per night and an average 38 *Culex spp.* mosquitoes per trap per night. The composition of mosquitoes collected was 72.6% (44,712) *Aedes/Ochlerotatus spp.*, 1.1% (674) *Anopheles spp.*, 1.8% (1,129) *Coquillettidia spp.*, 23.9% (14,702) *Culex spp.*, and <1% (406) *Culiseta spp.*

Figure 11 2019 Boulder County Mosquito Control District Light Trap Composite Data



WEST NILE VIRUS MOSQUITO SAMPLE TESTING RESULTS - BOULDER COUNTY

VDCI and BCMCD used the adult mosquito data collected to help determine local areas of concern for public awareness and safety as well as to monitor the local vector mosquito populations. Many local health departments have moved towards mosquito-based surveillance indicators to assess the weekly risk of West Nile transmission and guide response decisions for adult mosquito control applications. The vector index and infection rate is derived by testing the mosquitoes VDCI collects for the presence of West Nile virus. This value is closely monitored by the CDPHE and local health departments to evaluate the risk posed by the vector mosquito population.

As defined in the CDC guidelines for West Nile virus surveillance, prevention and control, the vector index (VI) is an estimate of the number of West Nile virus infected mosquitoes in an area. This number can serve as a human health risk value. An operational value of 0.75, which was derived from the comparison of historical data for human infections, as well as relative abundance and infection in mosquitoes, serves as an indicator of high risk for West Nile virus transmission to humans in the corresponding area. As the value of the vector index increases there is a corresponding risk of human disease and this value can be used to offset epidemics.

Due to budget cutbacks associated with West Nile virus surveillance in recent years, the CDPHE does not have the ability to test mosquitoes from every trap set across the state. As a result, there is select testing done within three sentinel zones in Boulder County. *Culex species* mosquito samples are sent to CDPHE for WNV testing on a weekly basis as part of the state's Sentinel Encephalitis Surveillance program (**Figure 12**), which VDCI is contracted separately through BCPH to perform.

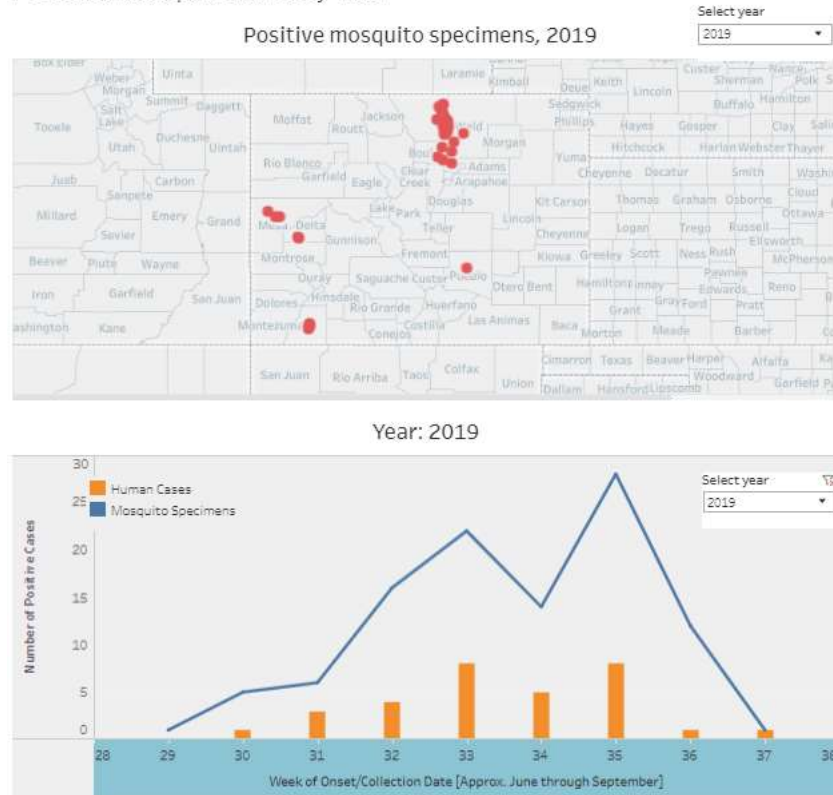
As of September 14th, 2019 (week 37), CDPHE tested a total of 206 mosquito pools from Boulder County. Of the tested mosquito pools, eight (8) pools tested positive for West Nile virus from all three sentinel zones in 2019 (**Appendix B**). The first Boulder County West Nile virus positive mosquito sample pool (1) in 2019 was on August 7th, 2019 (week 32), two weeks later than 2018, in BCZ2 (**Figure 13**).

Figure 12

Number of Colorado Positive WNV Specimens 2019

*CDPHE image <https://www.colorado.gov/pacific/cdphe/west-nile-virus-data>

Positive Mosquito Data by Year



BOULDER COUNTY PUBLIC HEALTH ADULT MOSQUITO SENTINEL ZONES

The Sentinel Encephalitis Surveillance Program was funded by the Colorado Department of Public Health and Environment and Boulder County Public Health in 2019. VDCI maintained the sentinel system with five surveillance traps at permanent locations in each of three Boulder County Sentinel Zones: City of Boulder (BCZ1); City of Longmont (BCZ2); Town of Erie, City of Lafayette, City of Louisville, Town of Superior (BCZ3) (**Figure 13**). The sentinel light traps were set once a week from June 3rd to August 26th, 2019.

Boulder County Public Health Sentinel Surveillance Zone Map



ADULT MOSQUITO CONTROL

The goal of Vector Disease Control International is to provide our customers with the best options for safe, effective, modern mosquito management. The primary emphasis of the BCMCD Integrated Mosquito Management Program is to control mosquitoes in the larval stage, using safe biological control products. When mosquito counts surpass nuisance thresholds of 100 mosquitoes, VDCI uses EPA and CDC approved adulticides to reduce mosquito populations.

In 2019, BCPH and VDCI continued to use an informal evaluation of the adult mosquito surveillance thresholds for mosquito populations in the Boulder County Mosquito Control District. BCPH's 2018 informal historical analysis postulated that a threshold of 250 nuisance mosquitoes be implemented for the 2019 season. Additionally, a weekly evaluation of several factors was utilized to determine if a neighborhood or spray zone was fogged during June through September for *Culex spp.* abundance. These factors included: the current weekly trap species diversity and abundance (*Aedes vs. Culex spp.*), previous weekly trap species diversity and abundance (*Aedes vs. Culex spp.*), was the trap diversity and abundance (*Aedes vs. Culex spp.*) declining or increasing, did the trap numbers decline the following week after a fogging event, the volume of resident calls from a neighborhood or spray zone area, the County population density around the trap, and WNV activity in the area.

BCPH plans to further analyze current and historic adult surveillance and County WNV epidemiology data to aid in the evaluation of recommended threshold numbers for Boulder County municipalities. Possible threshold updates might be for total adults, a separate *Aedes spp.* threshold and/or separate *Culex spp.* threshold. For the 2020 season, a more formal decision-making protocol for week to week evaluation of trap thresholds is planned.

During the 2019 season a total of 282.4 Ultra Low Volume (ULV) miles of roads and access paths within BCMCD were sprayed using the adulticide Aqua-Kontrol® 30-30 (Active Ingredient – Permethrin) (**Figure 14**). In addition, a total of 4 gallons of Talstar Pro (Active Ingredient – Bifenthrin) was applied as a daytime adult barrier application. A detailed summary of adulticide applications, by neighborhood, can be found in **Appendix C**.

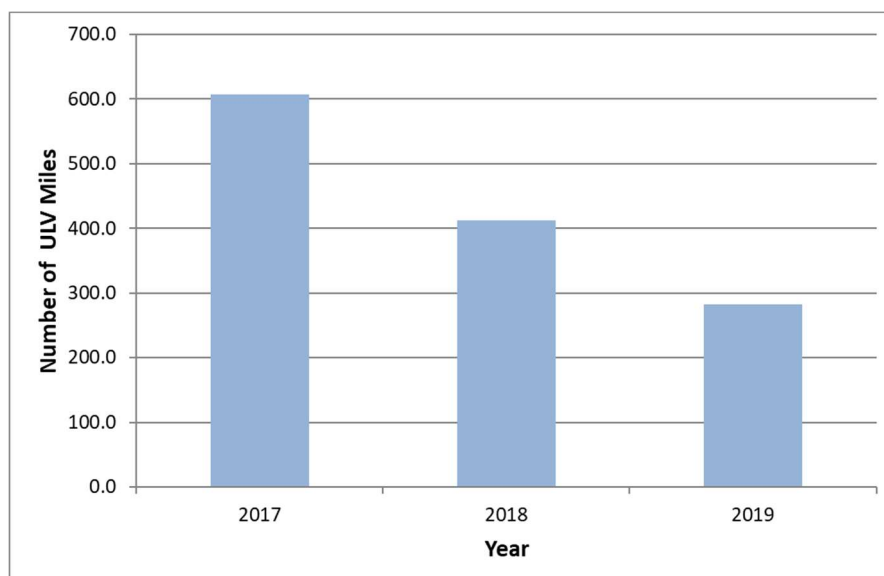
In 2018, a total of 412 Ultra Low Volume (ULV) miles of roads and access paths within BCMCD were sprayed using the adulticides Aqualuer® 20-20 and Aqua Kontrol® 30-30 (**Figure 14**).

VDCI uses state of the art technology, calibrated application timing, and least-toxic products to minimize non-target impacts. Adult mosquito control applications are accomplished using Ultra Low Volume (ULV) spray equipment and performed after dusk when the majority of mosquito species are most active. This type of equipment produces droplets averaging 10-25 microns in diameter and allows for a minimal amount of product to be put into the environment. These treatments take place in the evening when mosquitoes are flying in the greatest numbers and non-target insect activity



(for example, day-flying pollinators like bees) is greatly reduced. Using this application technique, the overall goal of minimal environmental impact and effective adult control is achieved in the targeted area.

Figure 14 Comparison of ULV Adulticide Miles by Year



CALL NOTIFICATION & SHUTOFF SYSTEM

Both VDCI and the BCMCD acknowledge that adult mosquito control can be a sensitive matter to many residents; therefore a Spray Shutoff and/or Notification request option was available to the public. Residents were able to call VDCI's MosquitoLine™ or submit a website request to be notified before adult control applications were performed and/or request that the ULV sprayer be shutoff in front of their address.

At the beginning of the 2019 season, VDCI sent out 326 letters to all Boulder County shutoff and notification households to establish a current list for the 2019 season. During the season, VDCI received 43 shut off and notification requests and 54 notification only requests via website submissions. The 2019 season shutoff and notification list concluded with 249 households for the BCMCD. Of these 249 requests, 10 were shutoff only, 98 were shutoff and notification and 140 were notification only received via returned mail or VDCI's website request form. Residents on the shutoff and notification list were notified 24 hours in advance when their community was scheduled to be sprayed. VDCI used an automated message service to contact residents and listed weekly ULV spray events on VDCI's website, www.vdci.net/colorado-schedules, which utilized Google Calendar and Maps. In 2019, VDCI completed 956 BCMCD notification calls.

Public Relations and Education

VDCI is dedicated to providing strong Public Outreach and Education Programs to residents in all of our communities. Citizen complaints, inquiry, information and satisfaction surveys can aid in evaluating the effectiveness of a program. VDCI constantly looks for ways to better serve the communities we work with and encourages both the citizen and local media involvement in order to increase the effectiveness of our

programs. We have clearly demonstrated that commitment and belief by proactively serving Boulder County Mosquito Control District (and all of our contracted communities) with numerous innovative programs, activities and services.

Customer service is always a high priority for VDCI. We take pride in training each and every technician so that they have the knowledge to provide residents with the correct answers to their questions. Each field technician spends part of their day responding to resident concerns in their work area. This in-field customer service personalizes the mosquito control program, provides VDCI with local information on mosquito activity and presents a valuable opportunity to educate our residents about mosquito biology and control.

MosquitoLine™

VDCI maintains a toll-free telephone line specific to Boulder County, (888) 774-2161 and a local line (303) 466-1892 to accept calls from the public concerning:

- * Information requests about mosquito biology and source reduction of mosquito habitats
- * Information on program components, operations and monitoring
- * Seasonal West Nile virus activity
- * Personal protection options for mosquito annoyances and West Nile virus risk
- * Reports about mosquitoes and possible larval mosquito habitats
- * Requests to perform larvicide applications and/or opt-out of any adulticide spraying
- * Request notification when adulticide spraying is planned in their neighborhood
- * Request health and safety information about mosquito control operations and pesticide products used

VDCI has provided Mosquito Hotlines to the residents in communities which we are contracted to also reduce workload by municipal personnel. This enables direct communication and response by mosquito control employees to resident's concerns about West Nile virus and larval site activity and treatment. VDCI maintains a log of calls received and will summarize call activity in monthly and annual reports.

In 2019 Vector Disease Control International received approximately 115 phone calls from residents of BCMCD. The majority of these calls (58) were for adult mosquito complaints. Of the rest, 33 calls were requests for habitat assessment, 97 requests for sprayer shut off and/or call notification (website submission) and 24 calls were requests for general information or other reasons (**Table 3; Figure 15 and 16**). Several habitat calls resulted in new or expanded or reinstated previously denied larval sites being added to the program.

By comparison, in 2018 VDCI received 150 phone calls from residents of BCMCD. 38 were requests for sprayer shut offs and/or call notifications prior to spraying, 58 calls were adult mosquito complaints, 22 calls were requests to have habitat inspected for mosquito larvae and 32 calls were requests for general information (**Figure 16**). Three of the habitat calls resulted in new larval sites being added to the program.

Table 3 **2019 Mosquito Control Calls by Category**

Call Category	2019	
	Number of Calls	Percentage
Adult Complaint	58	27.4%
Habitat Assessment	33	15.6%
Fog Shutoff/Notification	43	20.3%
Fog Notification*	54	25.5%
General Info/Other	24	11.3%
Total	212	100.0%
*VDCI website submission		

Figure 15 **2019 Mosquito Control Calls by Month**

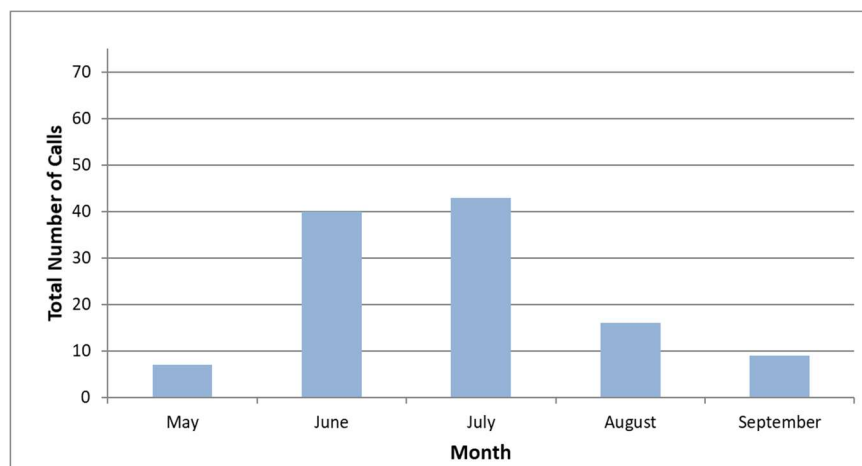
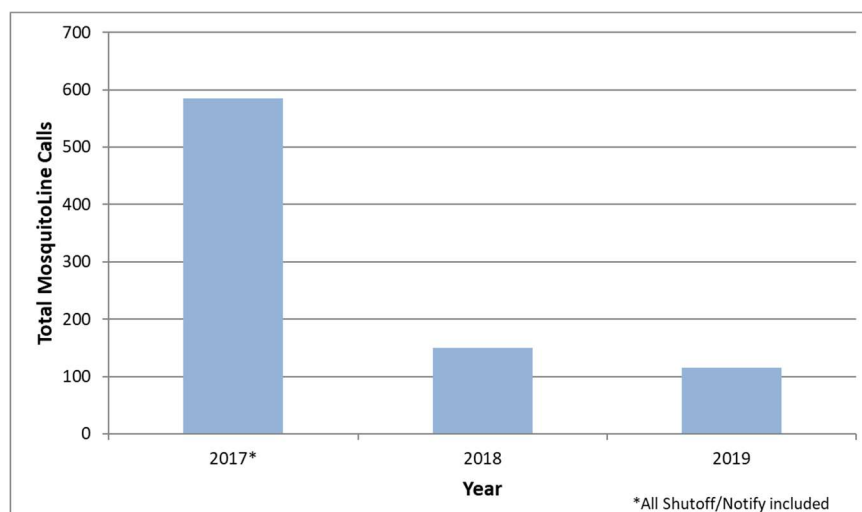


Figure 16 **Comparison of Mosquito Control Calls by Year**



*Appendix A: Boulder County Mosquito Control District Individual
Light Trap Summaries*

BC-02

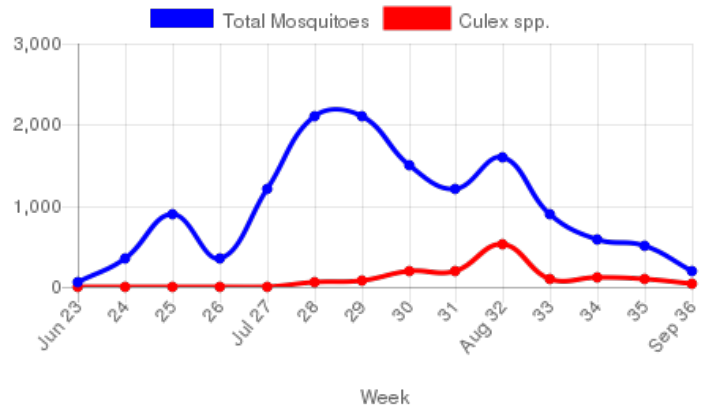
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Cottonwood Kennels
 GPS: 40.03470, -105.18325

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 13,561.0
 Average mosquitoes per trap/night: 968.6
 Average Culex per trap/night: 103.9

Species collected and abundance:

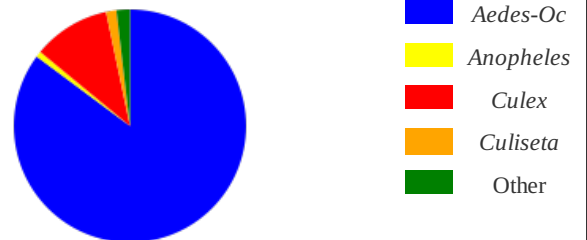
<i>Aedes dorsalis</i>	3.0	0.0%
<i>Aedes hendersoni</i>	65.0	0.5%
<i>Aedes increpitus</i>	3,811.0	28.1%
<i>Aedes melanimon</i>	321.0	2.4%
<i>Aedes trivittatus</i>	209.0	1.5%
<i>Aedes vexans</i>	7,138.0	52.6%
<i>Anopheles freeborni</i>	110.0	0.8%
<i>Coquillettidia perturbans</i>	251.0	1.9%
<i>Culex pipiens</i>	27.0	0.2%
<i>Culex salinarius</i>	18.0	0.1%
<i>Culex tarsalis</i>	1,410.0	10.4%
<i>Culiseta inornata</i>	198.0	1.5%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	11,547.0	85.1%
<i>Anopheles</i>	110.0	0.8%
<i>Culex</i>	1,455.0	10.7%
<i>Culiseta</i>	198.0	1.5%
Other	251.0	1.9%



BC-03

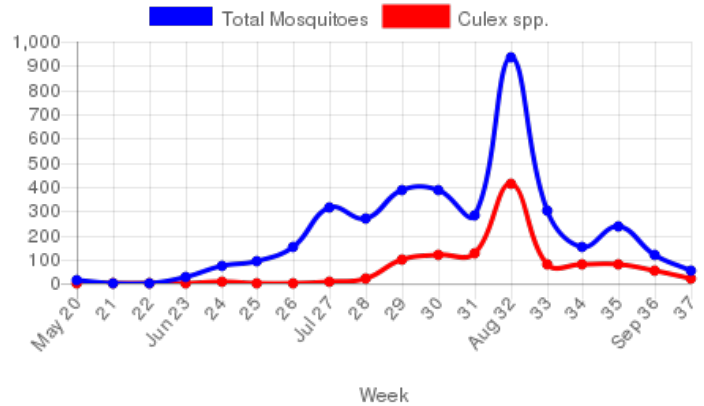
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Gunbarrel SE - Pali Way
 GPS: 40.05285, -105.18390

Total number of trap/nights set: 16.0
 Total number of mosquitoes collected: 3,813.0
 Average mosquitoes per trap/night: 238.3
 Average Culex per trap/night: 69.4

Species collected and abundance:

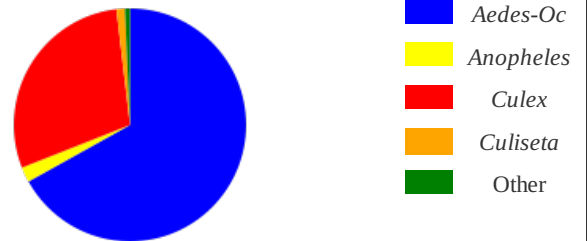
<i>Aedes cinereus</i>	1.0	0.0%
<i>Aedes dorsalis</i>	6.0	0.2%
<i>Aedes hendersoni</i>	4.0	0.1%
<i>Aedes increpitus</i>	598.0	15.7%
<i>Aedes melanimon</i>	52.0	1.4%
<i>Aedes trivittatus</i>	33.0	0.9%
<i>Aedes vexans</i>	1,858.0	48.7%
<i>Anopheles freeborni</i>	80.0	2.1%
<i>Coquillettidia perturbans</i>	26.0	0.7%
<i>Culex pipiens</i>	127.0	3.3%
<i>Culex salinarius</i>	10.0	0.3%
<i>Culex tarsalis</i>	973.0	25.5%
<i>Culiseta inornata</i>	45.0	1.2%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,552.0	66.9%
<i>Anopheles</i>	80.0	2.1%
<i>Culex</i>	1,110.0	29.1%
<i>Culiseta</i>	45.0	1.2%
Other	26.0	0.7%



BC-04

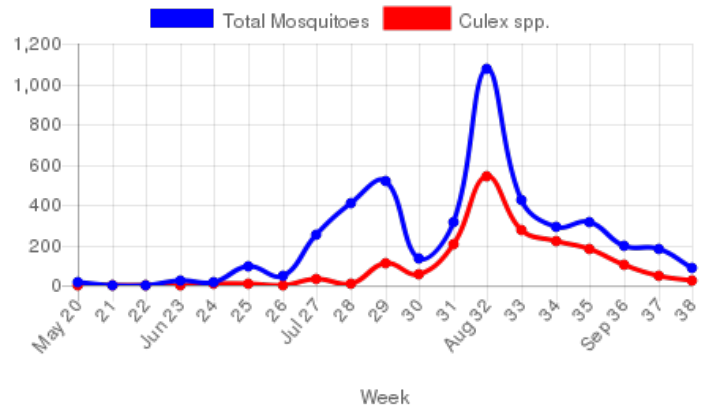
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Gunbarrel NW - Red Fox Hills
 GPS: 40.06165, -105.19395

Total number of trap/nights set: 17.0
 Total number of mosquitoes collected: 4,427.0
 Average mosquitoes per trap/night: 260.4
 Average Culex per trap/night: 109.1

Species collected and abundance:

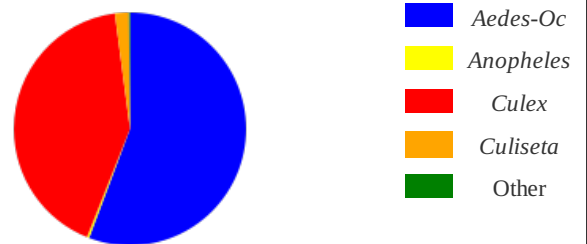
<i>Aedes dorsalis</i>	204.0	4.6%
<i>Aedes inreptus</i>	238.0	5.4%
<i>Aedes melanimon</i>	122.0	2.8%
<i>Aedes trivittatus</i>	17.0	0.4%
<i>Aedes vexans</i>	1,886.0	42.6%
<i>Anopheles freeborni</i>	14.0	0.3%
<i>Coquilletidia perturbans</i>	7.0	0.2%
<i>Culex pipiens</i>	215.0	4.9%
<i>Culex salinarius</i>	154.0	3.5%
<i>Culex tarsalis</i>	1,485.0	33.5%
<i>Culiseta inornata</i>	85.0	1.9%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,467.0	55.7%
<i>Anopheles</i>	14.0	0.3%
<i>Culex</i>	1,854.0	41.9%
<i>Culiseta</i>	85.0	1.9%
Other	7.0	0.2%



BC-05

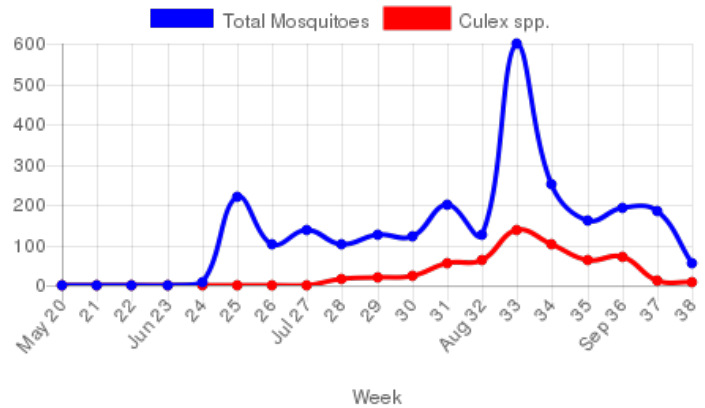
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Orange Orchard
 GPS: 40.05410, -105.25480

Total number of trap/nights set: 17.0
 Total number of mosquitoes collected: 2,604.0
 Average mosquitoes per trap/night: 153.2
 Average Culex per trap/night: 34.6

Species collected and abundance:

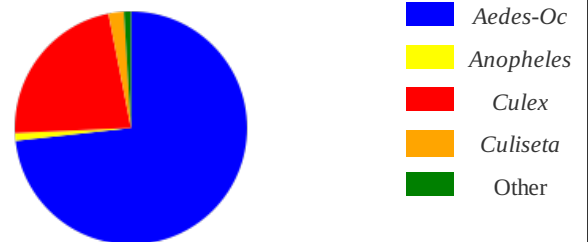
<i>Aedes dorsalis</i>	5.0	0.2%
<i>Aedes increpitus</i>	10.0	0.4%
<i>Aedes melanimon</i>	10.0	0.4%
<i>Aedes trivittatus</i>	38.0	1.5%
<i>Aedes vexans</i>	1,844.0	70.8%
<i>Anopheles freeborni</i>	28.0	1.1%
<i>Coquillettidia perturbans</i>	25.0	1.0%
<i>Culex pipiens</i>	44.0	1.7%
<i>Culex salinarius</i>	20.0	0.8%
<i>Culex tarsalis</i>	522.0	20.0%
<i>Culex territans</i>	2.0	0.1%
<i>Culiseta inornata</i>	56.0	2.2%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,907.0	73.2%
<i>Anopheles</i>	28.0	1.1%
<i>Culex</i>	588.0	22.6%
<i>Culiseta</i>	56.0	2.2%
Other	25.0	1.0%



BC-07

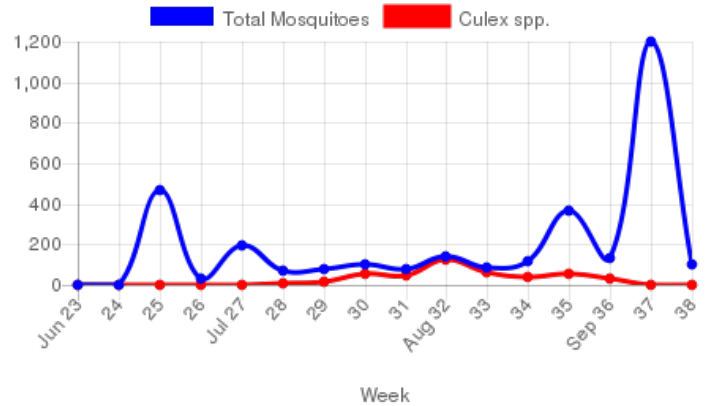
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Brigadoon Glen/Left Hand Creek
 GPS: 40.10855, -105.20235

Total number of trap/nights set: 16.0
 Total number of mosquitoes collected: 3,162.0
 Average mosquitoes per trap/night: 197.6
 Average Culex per trap/night: 28.6

Species collected and abundance:

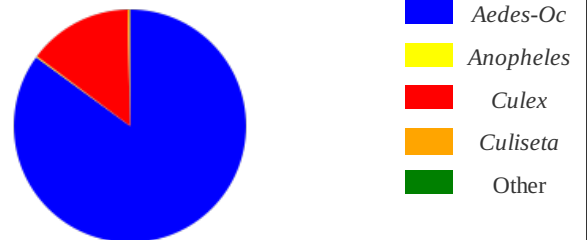
<i>Aedes dorsalis</i>	12.0	0.4%
<i>Aedes hendersoni</i>	4.0	0.1%
<i>Aedes increpitus</i>	1.0	0.0%
<i>Aedes melanimon</i>	99.0	3.1%
<i>Aedes trivittatus</i>	1,697.0	53.7%
<i>Aedes vexans</i>	876.0	27.7%
<i>Anopheles freeborni</i>	5.0	0.2%
<i>Coquillettidia perturbans</i>	1.0	0.0%
<i>Culex pipiens</i>	4.0	0.1%
<i>Culex salinarius</i>	2.0	0.1%
<i>Culex tarsalis</i>	452.0	14.3%
<i>Culiseta inornata</i>	9.0	0.3%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,689.0	85.0%
<i>Anopheles</i>	5.0	0.2%
<i>Culex</i>	458.0	14.5%
<i>Culiseta</i>	9.0	0.3%
Other	1.0	0.0%



BC-08

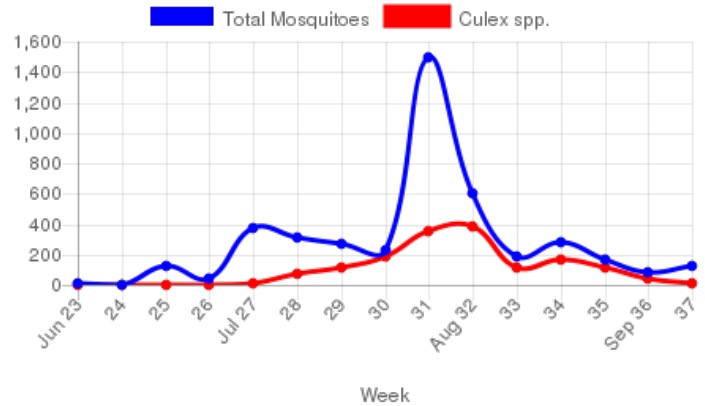
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Boulder Hills
 GPS: 40.13065, -105.21675

Total number of trap/nights set: 15.0
 Total number of mosquitoes collected: 4,300.0
 Average mosquitoes per trap/night: 286.7
 Average Culex per trap/night: 104.7

Species collected and abundance:

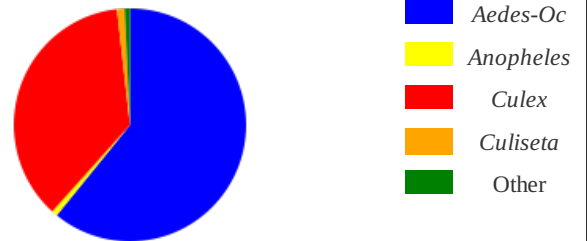
<i>Aedes dorsalis</i>	388.0	9.0%
<i>Aedes hendersoni</i>	5.0	0.1%
<i>Aedes increpitus</i>	25.0	0.6%
<i>Aedes melanimon</i>	33.0	0.8%
<i>Aedes trivittatus</i>	671.0	15.6%
<i>Aedes vexans</i>	1,495.0	34.8%
<i>Anopheles freeborni</i>	35.0	0.8%
<i>Coquillettidia perturbans</i>	31.0	0.7%
<i>Culex pipiens</i>	13.0	0.3%
<i>Culex salinarius</i>	12.0	0.3%
<i>Culex tarsalis</i>	1,546.0	36.0%
<i>Culiseta incidens</i>	1.0	0.0%
<i>Culiseta inornata</i>	45.0	1.0%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,617.0	60.9%
<i>Anopheles</i>	35.0	0.8%
<i>Culex</i>	1,571.0	36.5%
<i>Culiseta</i>	46.0	1.1%
Other	31.0	0.7%



BC-11

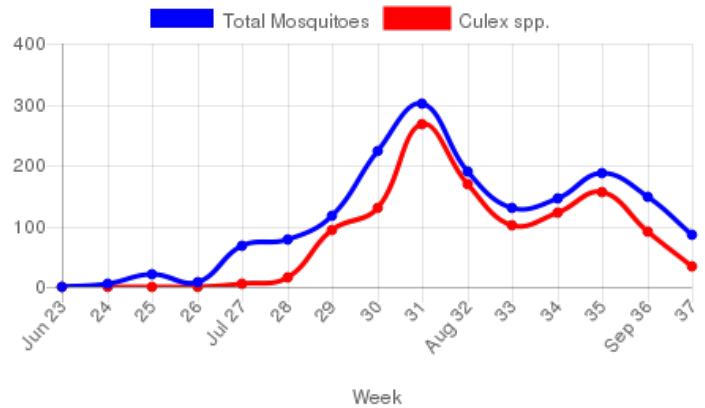
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Niwot East - Majestic Road
 GPS: 40.1099998900239, -105.13030014932157

Total number of trap/nights set: 15.0
 Total number of mosquitoes collected: 1,711.0
 Average mosquitoes per trap/night: 114.1
 Average Culex per trap/night: 79.5

Species collected and abundance:

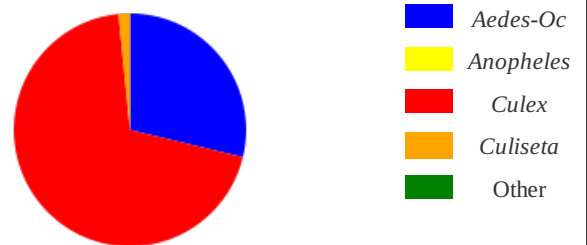
<i>Aedes dorsalis</i>	40.0	2.3%
<i>Aedes inreptus</i>	1.0	0.1%
<i>Aedes melanimon</i>	8.0	0.5%
<i>Aedes trivittatus</i>	12.0	0.7%
<i>Aedes vexans</i>	431.0	25.2%
<i>Culex pipiens</i>	49.0	2.9%
<i>Culex salinarius</i>	6.0	0.4%
<i>Culex tarsalis</i>	1,137.0	66.5%
<i>Culiseta inornata</i>	27.0	1.6%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	492.0	28.8%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	1,192.0	69.7%
<i>Culiseta</i>	27.0	1.6%
Other	0.0	0.0%



BC-17

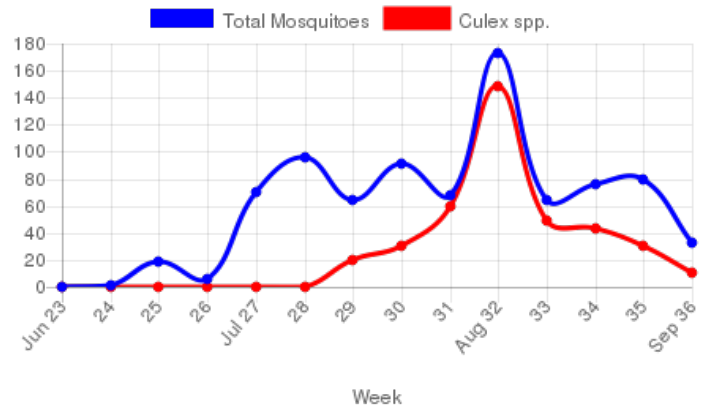
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Niwot Central
 GPS: 40.10180, -105.16405

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 840.0
 Average mosquitoes per trap/night: 60.0
 Average Culex per trap/night: 28.1

Species collected and abundance:

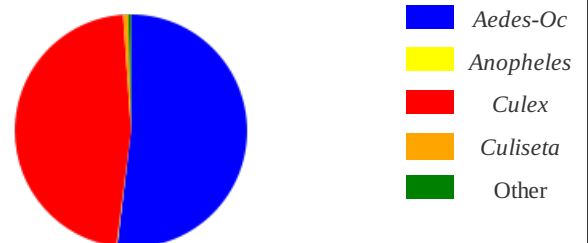
<i>Aedes dorsalis</i>	3.0	0.4%
<i>Aedes hendersoni</i>	5.0	0.6%
<i>Aedes melanimon</i>	6.0	0.7%
<i>Aedes trivittatus</i>	14.0	1.7%
<i>Aedes vexans</i>	408.0	48.6%
<i>Anopheles freeborni</i>	1.0	0.1%
<i>Coquillettidia perturbans</i>	3.0	0.4%
<i>Culex pipiens</i>	6.0	0.7%
<i>Culex tarsalis</i>	388.0	46.2%
<i>Culiseta inornata</i>	6.0	0.7%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	436.0	51.9%
<i>Anopheles</i>	1.0	0.1%
<i>Culex</i>	394.0	46.9%
<i>Culiseta</i>	6.0	0.7%
Other	3.0	0.4%



BC-20

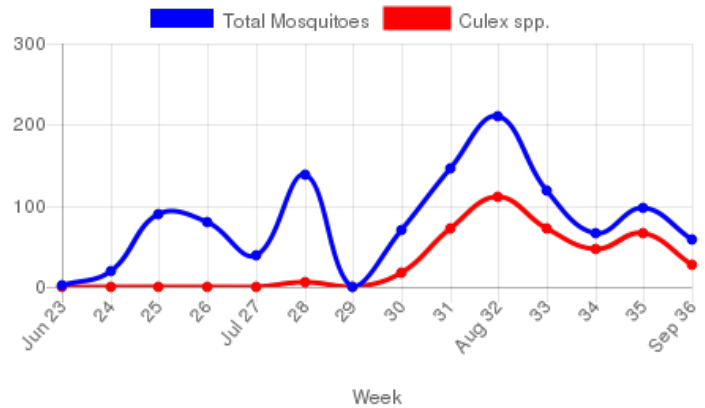
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Willows/Gunbarrel Commons Park
 GPS: 40.05680, -105.21200

Total number of trap/nights set: 13.0
 Total number of mosquitoes collected: 1,140.0
 Average mosquitoes per trap/night: 87.7
 Average Culex per trap/night: 32.5

Species collected and abundance:

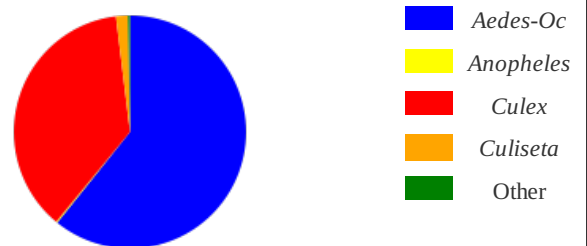
<i>Aedes dorsalis</i>	8.0	0.7%
<i>Aedes hendersoni</i>	1.0	0.1%
<i>Aedes increpitus</i>	154.0	13.5%
<i>Aedes melanimon</i>	8.0	0.7%
<i>Aedes trivittatus</i>	15.0	1.3%
<i>Aedes vexans</i>	507.0	44.5%
<i>Anopheles freeborni</i>	2.0	0.2%
<i>Coquillettidia perturbans</i>	3.0	0.3%
<i>Culex pipiens</i>	96.0	8.4%
<i>Culex salinarius</i>	33.0	2.9%
<i>Culex tarsalis</i>	294.0	25.8%
<i>Culiseta inornata</i>	19.0	1.7%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	693.0	60.8%
<i>Anopheles</i>	2.0	0.2%
<i>Culex</i>	423.0	37.1%
<i>Culiseta</i>	19.0	1.7%
Other	3.0	0.3%



BC-22

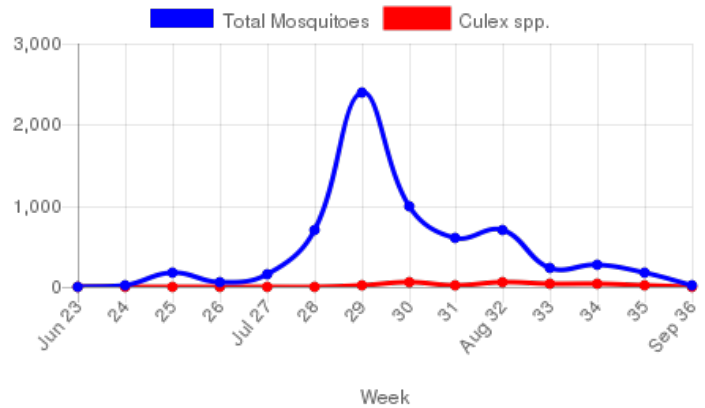
Season: 05/01/2019 - 09/30/2019
Trap Type: CDC Light Trap
Location: South Boulder Creek at Marshall
GPS: 39.95944874334226, -105.23227907717228

Total number of trap/nights set: 14.0
Total number of mosquitoes collected: 6,518.0
Average mosquitoes per trap/night: 465.6
Average Culex per trap/night: 20.1

Species collected and abundance:

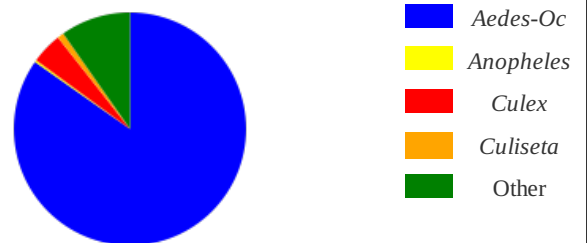
<i>Aedes dorsalis</i>	2.0	0.0%
<i>Aedes hendersoni</i>	84.0	1.3%
<i>Aedes increpitus</i>	219.0	3.4%
<i>Aedes melanimon</i>	277.0	4.2%
<i>Aedes trivittatus</i>	304.0	4.7%
<i>Aedes vexans</i>	4,638.0	71.2%
<i>Anopheles freeborni</i>	19.0	0.3%
<i>Coquillettidia perturbans</i>	635.0	9.7%
<i>Culex pipiens</i>	51.0	0.8%
<i>Culex salinarius</i>	17.0	0.3%
<i>Culex tarsalis</i>	213.0	3.3%
<i>Culiseta incidens</i>	2.0	0.0%
<i>Culiseta inornata</i>	57.0	0.9%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	5,524.0	84.7%
<i>Anopheles</i>	19.0	0.3%
<i>Culex</i>	281.0	4.3%
<i>Culiseta</i>	59.0	0.9%
Other	635.0	9.7%



BC-23

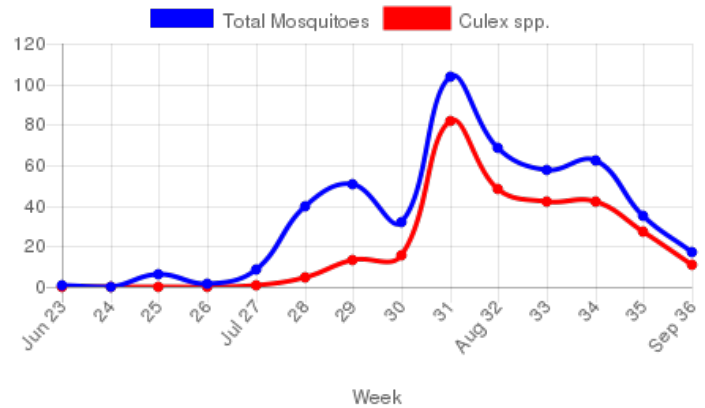
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Louisville - Spanish Hills
 GPS: 39.98265, -105.17715

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 486.0
 Average mosquitoes per trap/night: 34.7
 Average Culex per trap/night: 20.5

Species collected and abundance:

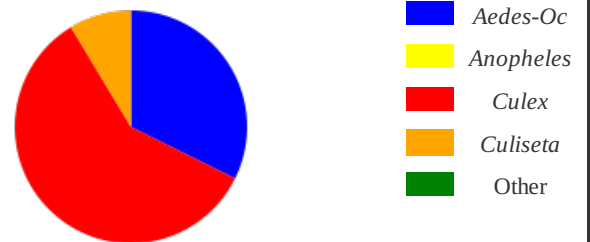
<i>Aedes dorsalis</i>	1.0	0.2%
<i>Aedes hendersoni</i>	1.0	0.2%
<i>Aedes increpitus</i>	2.0	0.4%
<i>Aedes melanimon</i>	15.0	3.1%
<i>Aedes nigromaculis</i>	1.0	0.2%
<i>Aedes trivittatus</i>	3.0	0.6%
<i>Aedes vexans</i>	134.0	27.6%
<i>Culex pipiens</i>	8.0	1.6%
<i>Culex tarsalis</i>	279.0	57.4%
<i>Culiseta incidens</i>	1.0	0.2%
<i>Culiseta inornata</i>	41.0	8.4%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	157.0	32.3%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	287.0	59.1%
<i>Culiseta</i>	42.0	8.6%
Other	0.0	0.0%



BC-24

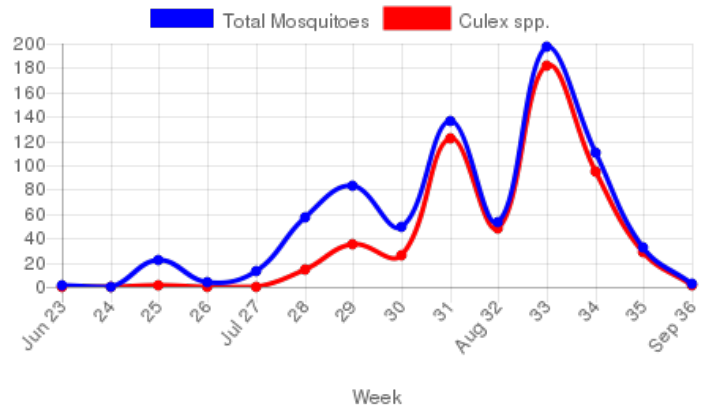
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Louisville - Wewoka Drive
 GPS: 39.99875, -105.17175

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 764.0
 Average mosquitoes per trap/night: 54.6
 Average Culex per trap/night: 39.6

Species collected and abundance:

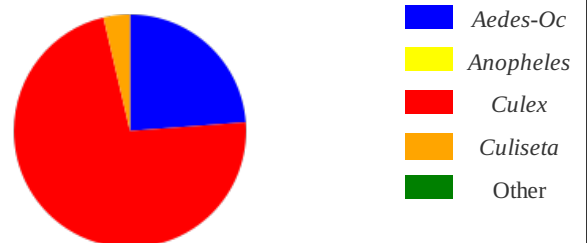
<i>Aedes dorsalis</i>	3.0	0.4%
<i>Aedes hendersoni</i>	1.0	0.1%
<i>Aedes increpitus</i>	16.0	2.1%
<i>Aedes melanimon</i>	4.0	0.5%
<i>Aedes trivittatus</i>	1.0	0.1%
<i>Aedes vexans</i>	157.0	20.5%
<i>Culex pipiens</i>	5.0	0.7%
<i>Culex salinarius</i>	4.0	0.5%
<i>Culex tarsalis</i>	545.0	71.3%
<i>Culiseta inornata</i>	28.0	3.7%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	182.0	23.8%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	554.0	72.5%
<i>Culiseta</i>	28.0	3.7%
Other	0.0	0.0%



BC-30

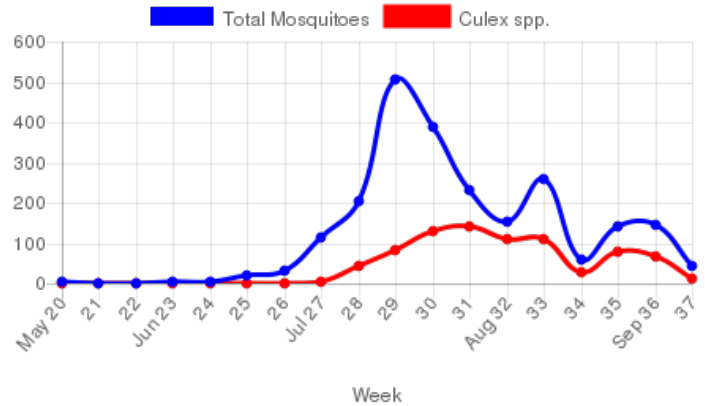
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Brownsville Random Court
 GPS: 40.04735, -105.08965

Total number of trap/nights set: 16.0
 Total number of mosquitoes collected: 2,318.0
 Average mosquitoes per trap/night: 144.9
 Average Culex per trap/night: 51.4

Species collected and abundance:

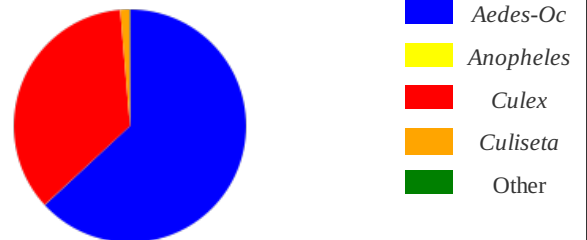
<i>Aedes dorsalis</i>	531.0	22.9%
<i>Aedes inreptus</i>	6.0	0.3%
<i>Aedes melanimon</i>	84.0	3.6%
<i>Aedes nigromaculis</i>	1.0	0.0%
<i>Aedes trivittatus</i>	3.0	0.1%
<i>Aedes vexans</i>	838.0	36.2%
<i>Anopheles freeborni</i>	1.0	0.0%
<i>Coquillettidia perturbans</i>	1.0	0.0%
<i>Culex pipiens</i>	16.0	0.7%
<i>Culex salinarius</i>	4.0	0.2%
<i>Culex tarsalis</i>	803.0	34.6%
<i>Culiseta inornata</i>	30.0	1.3%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,463.0	63.1%
<i>Anopheles</i>	1.0	0.0%
<i>Culex</i>	823.0	35.5%
<i>Culiseta</i>	30.0	1.3%
Other	1.0	0.0%



BC-31

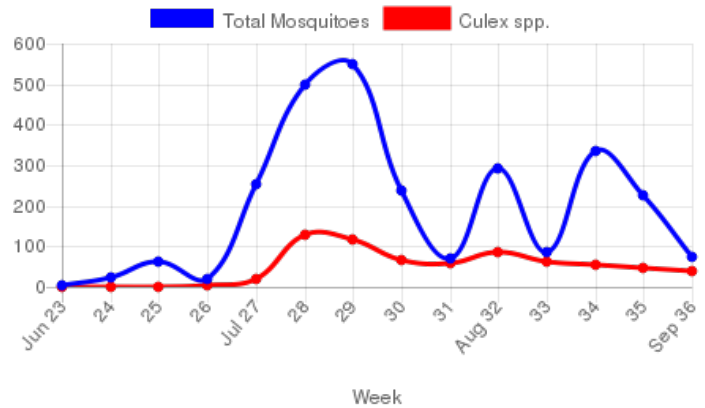
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Divide Reservoir
 GPS: 40.23900, -105.08390

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 2,733.0
 Average mosquitoes per trap/night: 195.2
 Average Culex per trap/night: 49.3

Species collected and abundance:

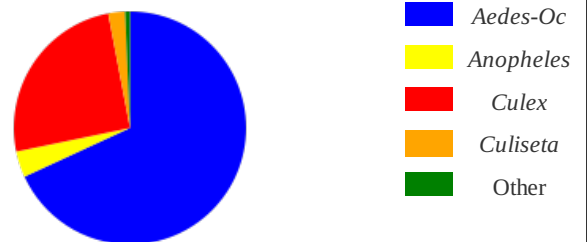
<i>Aedes dorsalis</i>	394.0	14.4%
<i>Aedes hendersoni</i>	1.0	0.0%
<i>Aedes increpitus</i>	2.0	0.1%
<i>Aedes melanimon</i>	53.0	1.9%
<i>Aedes nigromaculis</i>	1.0	0.0%
<i>Aedes trivittatus</i>	71.0	2.6%
<i>Aedes vexans</i>	1,340.0	49.0%
<i>Anopheles freeborni</i>	99.0	3.6%
<i>Coquillettidia perturbans</i>	18.0	0.7%
<i>Culex pipiens</i>	4.0	0.1%
<i>Culex tarsalis</i>	686.0	25.1%
<i>Culiseta inornata</i>	64.0	2.3%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,862.0	68.1%
<i>Anopheles</i>	99.0	3.6%
<i>Culex</i>	690.0	25.2%
<i>Culiseta</i>	64.0	2.3%
Other	18.0	0.7%



BC-33

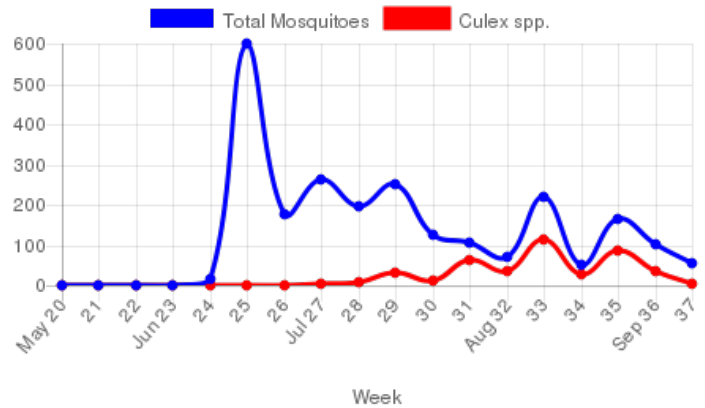
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Lake Valley Estates
 GPS: 40.08965, -105.26250

Total number of trap/nights set: 16.0
 Total number of mosquitoes collected: 2,412.0
 Average mosquitoes per trap/night: 150.8
 Average Culex per trap/night: 27.9

Species collected and abundance:

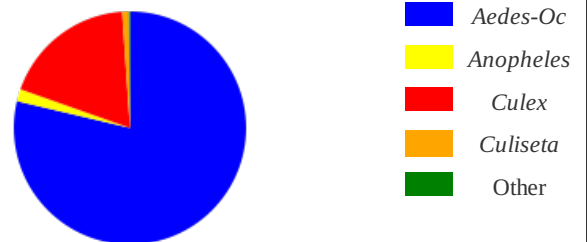
<i>Aedes cinereus</i>	2.0	0.1%
<i>Aedes dorsalis</i>	4.0	0.2%
<i>Aedes increpitus</i>	34.0	1.4%
<i>Aedes melanimon</i>	28.0	1.2%
<i>Aedes trivittatus</i>	412.0	17.1%
<i>Aedes vexans</i>	1,418.0	58.8%
<i>Anopheles freeborni</i>	41.0	1.7%
<i>Coquillettidia perturbans</i>	4.0	0.2%
<i>Culex pipiens</i>	29.0	1.2%
<i>Culex salinarius</i>	9.0	0.4%
<i>Culex tarsalis</i>	409.0	17.0%
<i>Culiseta inornata</i>	22.0	0.9%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,898.0	78.7%
<i>Anopheles</i>	41.0	1.7%
<i>Culex</i>	447.0	18.5%
<i>Culiseta</i>	22.0	0.9%
Other	4.0	0.2%



BC-34

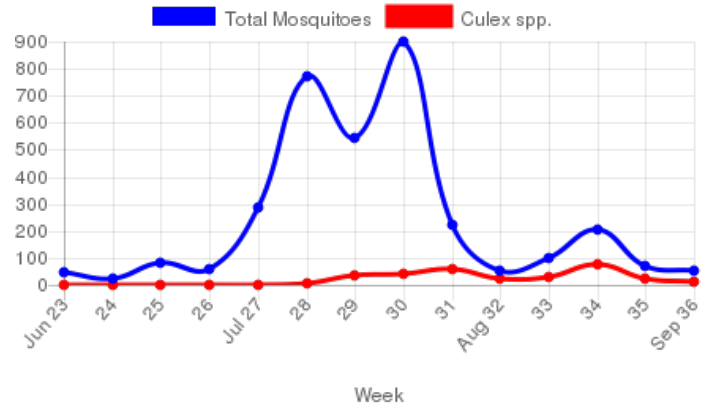
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Cline Trout Farm
 GPS: 40.03300, -105.22270

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 3,417.0
 Average mosquitoes per trap/night: 244.1
 Average Culex per trap/night: 23.2

Species collected and abundance:

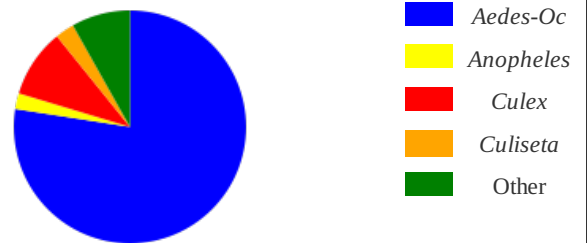
<i>Aedes cinereus</i>	1.0	0.0%
<i>Aedes dorsalis</i>	6.0	0.2%
<i>Aedes hendersoni</i>	13.0	0.4%
<i>Aedes increpitus</i>	307.0	9.0%
<i>Aedes melanimon</i>	249.0	7.3%
<i>Aedes trivittatus</i>	446.0	13.1%
<i>Aedes vexans</i>	1,625.0	47.6%
<i>Anopheles freeborni</i>	75.0	2.2%
<i>Coquillettidia perturbans</i>	279.0	8.2%
<i>Culex pipiens</i>	28.0	0.8%
<i>Culex salinarius</i>	1.0	0.0%
<i>Culex tarsalis</i>	296.0	8.7%
<i>Culiseta inornata</i>	91.0	2.7%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,647.0	77.5%
<i>Anopheles</i>	75.0	2.2%
<i>Culex</i>	325.0	9.5%
<i>Culiseta</i>	91.0	2.7%
Other	279.0	8.2%



BC-36

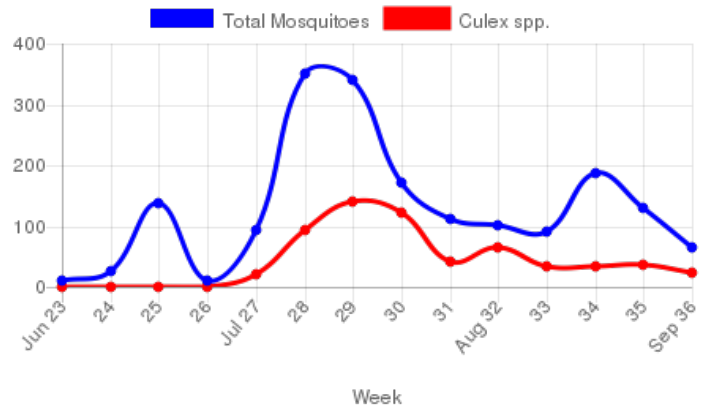
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Yellowstone Road
 GPS: 40.24680, -105.15225

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 1,831.0
 Average mosquitoes per trap/night: 130.8
 Average Culex per trap/night: 43.6

Species collected and abundance:

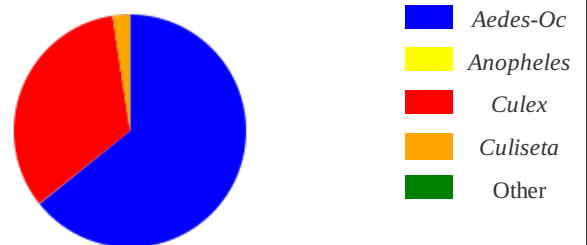
<i>Aedes dorsalis</i>	50.0	2.7%
<i>Aedes hendersoni</i>	14.0	0.8%
<i>Aedes increpitus</i>	50.0	2.7%
<i>Aedes melanimon</i>	107.0	5.8%
<i>Aedes trivittatus</i>	292.0	15.9%
<i>Aedes vexans</i>	663.0	36.2%
<i>Anopheles freeborni</i>	1.0	0.1%
<i>Culex pipiens</i>	7.0	0.4%
<i>Culex tarsalis</i>	603.0	32.9%
<i>Culiseta inornata</i>	44.0	2.4%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,176.0	64.2%
<i>Anopheles</i>	1.0	0.1%
<i>Culex</i>	610.0	33.3%
<i>Culiseta</i>	44.0	2.4%
Other	0.0	0.0%



BC-37

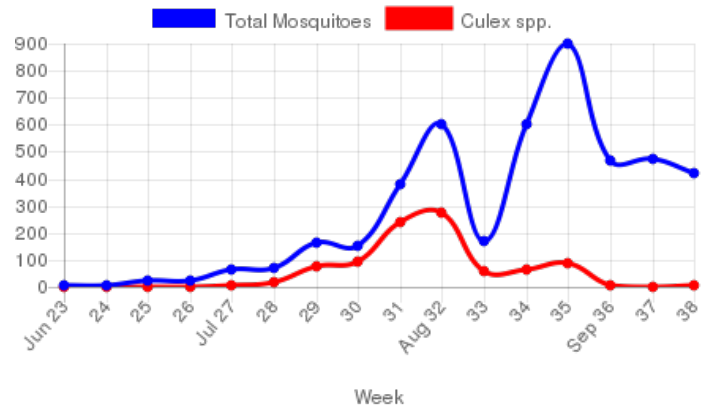
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Burch Reservoir
 GPS: 40.20255, -105.18225

Total number of trap/nights set: 16.0
 Total number of mosquitoes collected: 4,532.0
 Average mosquitoes per trap/night: 283.3
 Average Culex per trap/night: 58.9

Species collected and abundance:

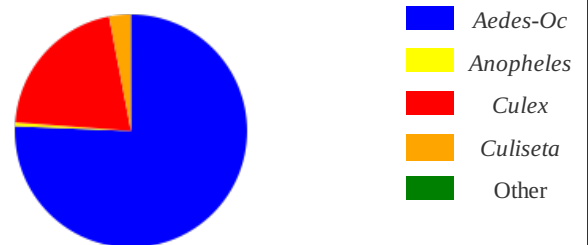
<i>Aedes cinereus</i>	1.0	0.0%
<i>Aedes dorsalis</i>	7.0	0.2%
<i>Aedes hendersoni</i>	18.0	0.4%
<i>Aedes increpitus</i>	27.0	0.6%
<i>Aedes melanimon</i>	10.0	0.2%
<i>Aedes trivittatus</i>	222.0	4.9%
<i>Aedes vexans</i>	3,143.0	69.4%
<i>Anopheles freeborni</i>	24.0	0.5%
<i>Coquillettidia perturbans</i>	1.0	0.0%
<i>Culex pipiens</i>	69.0	1.5%
<i>Culex salinarius</i>	8.0	0.2%
<i>Culex tarsalis</i>	866.0	19.1%
<i>Culiseta inornata</i>	136.0	3.0%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	3,428.0	75.6%
<i>Anopheles</i>	24.0	0.5%
<i>Culex</i>	943.0	20.8%
<i>Culiseta</i>	136.0	3.0%
Other	1.0	0.0%



BC-38

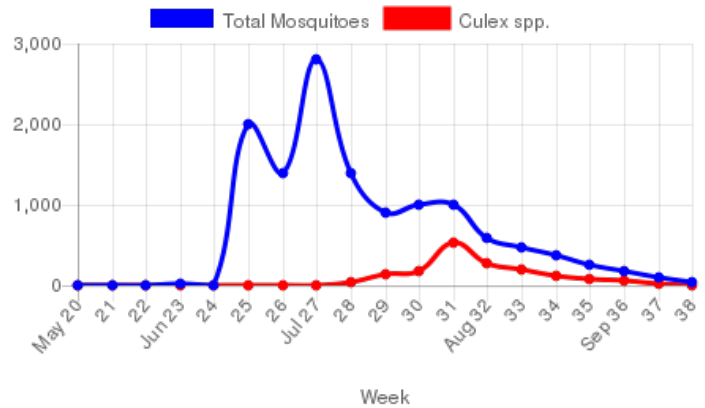
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Willow Glenn -Teller Lakes
 GPS: 40.01695, -105.15480

Total number of trap/nights set: 17.0
 Total number of mosquitoes collected: 12,589.0
 Average mosquitoes per trap/night: 740.5
 Average Culex per trap/night: 100.4

Species collected and abundance:

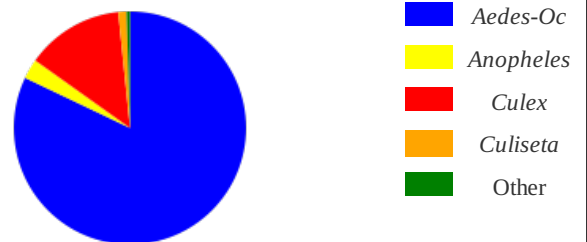
<i>Aedes dorsalis</i>	44.0	0.3%
<i>Aedes hendersoni</i>	2.0	0.0%
<i>Aedes increpitus</i>	246.0	2.0%
<i>Aedes melanimon</i>	962.0	7.6%
<i>Aedes trivittatus</i>	2.0	0.0%
<i>Aedes vexans</i>	9,076.0	72.1%
<i>Anopheles freeborni</i>	348.0	2.8%
<i>Coquillettidia perturbans</i>	57.0	0.5%
<i>Culex pipiens</i>	13.0	0.1%
<i>Culex salinarius</i>	5.0	0.0%
<i>Culex tarsalis</i>	1,688.0	13.4%
<i>Culiseta inornata</i>	146.0	1.2%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	10,332.0	82.1%
<i>Anopheles</i>	348.0	2.8%
<i>Culex</i>	1,706.0	13.6%
<i>Culiseta</i>	146.0	1.2%
Other	57.0	0.5%



BC-39

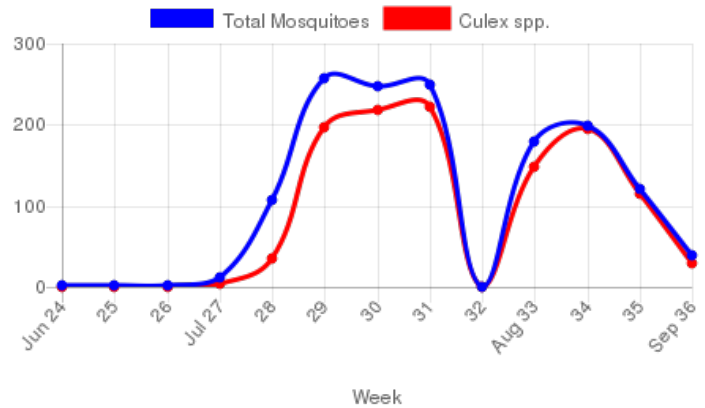
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Heatherwood
 GPS: 40.06215, -105.16925

Total number of trap/nights set: 12.0
 Total number of mosquitoes collected: 1,421.0
 Average mosquitoes per trap/night: 118.4
 Average Culex per trap/night: 97.3

Species collected and abundance:

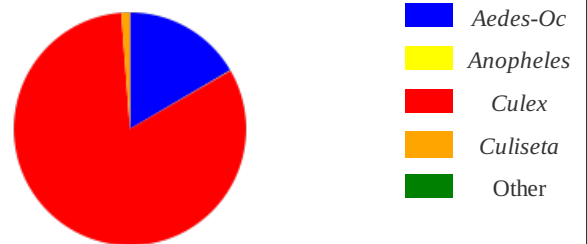
<i>Aedes dorsalis</i>	42.0	3.0%
<i>Aedes increpitus</i>	4.0	0.3%
<i>Aedes melanimon</i>	39.0	2.7%
<i>Aedes nigromaculis</i>	5.0	0.4%
<i>Aedes trivittatus</i>	5.0	0.4%
<i>Aedes vexans</i>	141.0	9.9%
<i>Anopheles freeborni</i>	1.0	0.1%
<i>Culex pipiens</i>	35.0	2.5%
<i>Culex salinarius</i>	9.0	0.6%
<i>Culex tarsalis</i>	1,123.0	79.0%
<i>Culiseta inornata</i>	17.0	1.2%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	236.0	16.6%
<i>Anopheles</i>	1.0	0.1%
<i>Culex</i>	1,167.0	82.1%
<i>Culiseta</i>	17.0	1.2%
Other	0.0	0.0%



BC-40

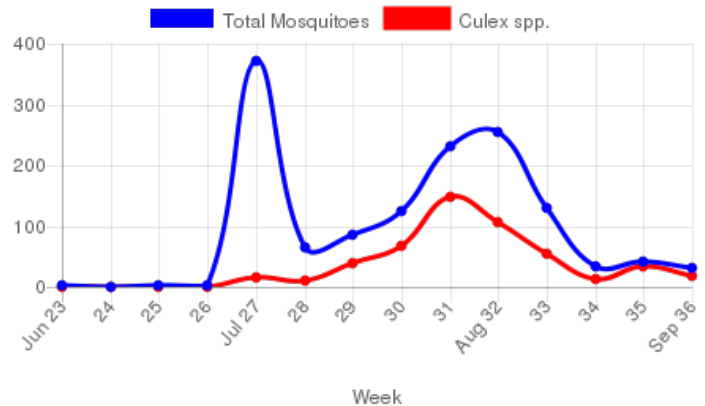
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Chance Acres
 GPS: 40.15965, -105.20590

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 1,384.0
 Average mosquitoes per trap/night: 98.9
 Average Culex per trap/night: 36.7

Species collected and abundance:

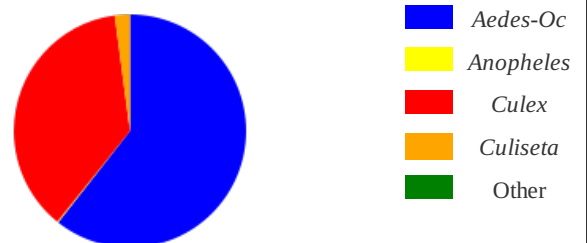
<i>Aedes dorsalis</i>	21.0	1.5%
<i>Aedes hendersoni</i>	24.0	1.7%
<i>Aedes increpitus</i>	1.0	0.1%
<i>Aedes melanimon</i>	32.0	2.3%
<i>Aedes trivittatus</i>	512.0	37.0%
<i>Aedes vexans</i>	249.0	18.0%
<i>Anopheles freeborni</i>	2.0	0.1%
<i>Culex pipiens</i>	19.0	1.4%
<i>Culex tarsalis</i>	495.0	35.8%
<i>Culiseta inornata</i>	29.0	2.1%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	839.0	60.6%
<i>Anopheles</i>	2.0	0.1%
<i>Culex</i>	514.0	37.1%
<i>Culiseta</i>	29.0	2.1%
Other	0.0	0.0%



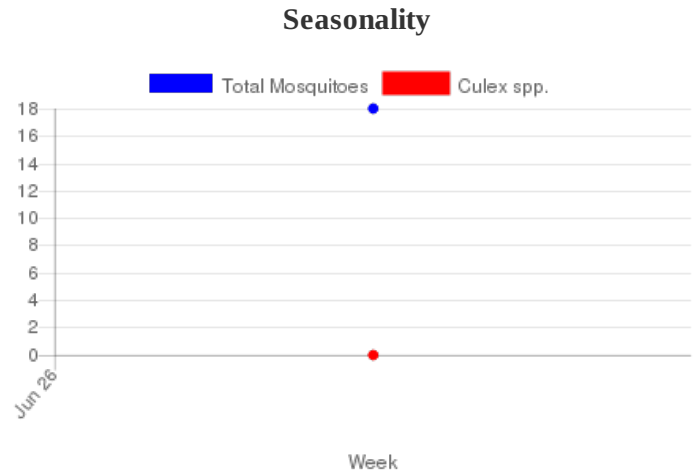
BC-45

Season: 05/01/2019 - 09/30/2019
Trap Type: CDC Light Trap
Location: Anhawa Manor
GPS: 40.20982680064822, -105.1348029077053

Total number of trap/nights set: 1.0
Total number of mosquitoes collected: 18.0
Average mosquitoes per trap/night: 18.0
Average Culex per trap/night: 0.0

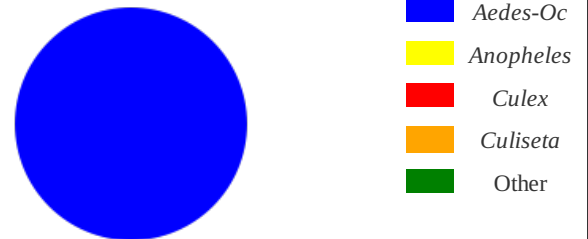
Species collected and abundance:

<i>Aedes dorsalis</i>	2.0	11.1%
<i>Aedes vexans</i>	16.0	88.9%



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	18.0	100.0%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	0.0	0.0%
<i>Culiseta</i>	0.0	0.0%
Other	0.0	0.0%



BC-47

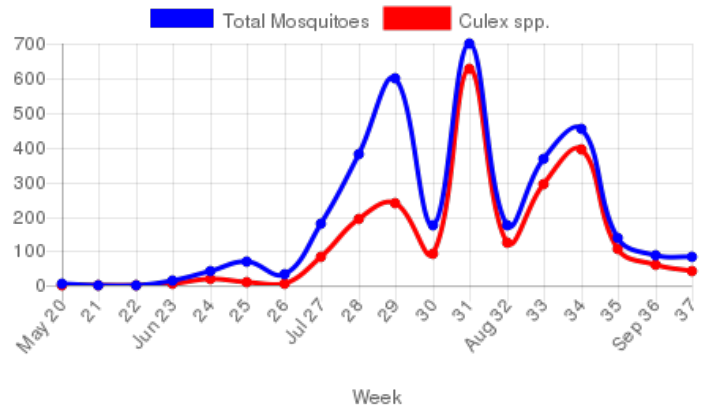
Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Baseline Heights Chinook
 GPS: 40.00951213723779, -105.19707709550858

Total number of trap/nights set: 16.0
 Total number of mosquitoes collected: 3,513.0
 Average mosquitoes per trap/night: 219.6
 Average Culex per trap/night: 144.0

Species collected and abundance:

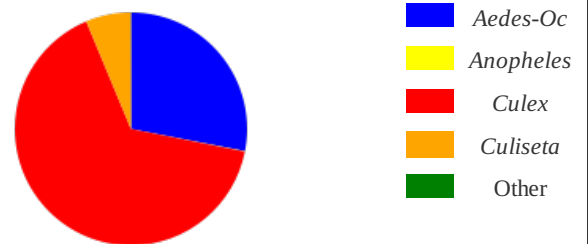
<i>Aedes dorsalis</i>	57.0	1.6%
<i>Aedes inepitus</i>	129.0	3.7%
<i>Aedes melanimon</i>	45.0	1.3%
<i>Aedes trivittatus</i>	10.0	0.3%
<i>Aedes vexans</i>	745.0	21.2%
<i>Anopheles freeborni</i>	2.0	0.1%
<i>Coquillettia perturbans</i>	1.0	0.0%
<i>Culex pipiens</i>	57.0	1.6%
<i>Culex salinarius</i>	22.0	0.6%
<i>Culex tarsalis</i>	2,225.0	63.3%
<i>Culiseta inornata</i>	220.0	6.3%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	986.0	28.1%
<i>Anopheles</i>	2.0	0.1%
<i>Culex</i>	2,304.0	65.6%
<i>Culiseta</i>	220.0	6.3%
Other	1.0	0.0%



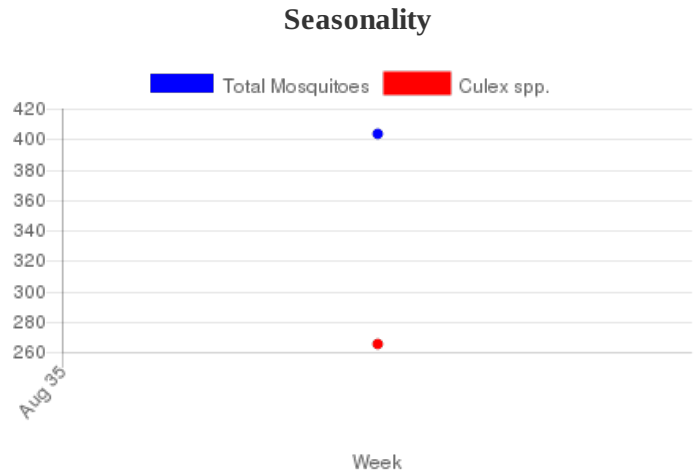
BC-48

Season: 05/01/2019 - 09/30/2019
 Trap Type: CDC Light Trap
 Location: Gunbarrel Estates
 GPS: 40.07825767706422, -105.18403518944979

Total number of trap/nights set: 1.0
 Total number of mosquitoes collected: 403.0
 Average mosquitoes per trap/night: 403.0
 Average Culex per trap/night: 265.0

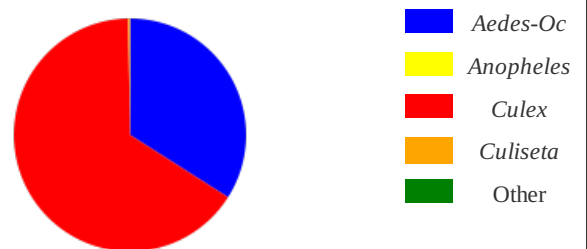
Species collected and abundance:

<i>Aedes melanimon</i>	1.0	0.2%
<i>Aedes trivittatus</i>	66.0	16.4%
<i>Aedes vexans</i>	70.0	17.4%
<i>Culex pipiens</i>	33.0	8.2%
<i>Culex salinarius</i>	5.0	1.2%
<i>Culex tarsalis</i>	227.0	56.3%
<i>Culiseta inornata</i>	1.0	0.2%



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	137.0	34.0%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	265.0	65.8%
<i>Culiseta</i>	1.0	0.2%
Other	0.0	0.0%



*Appendix B: Adult Sample Pool Test Results for West Nile Virus
Positive Location*



Arboviral Surveillance Results

Start Date: 06/01/2019 End Date: 08/31/2019

City of Boulder

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area BO-01 Test Results								
BO-11	06/11/2019	CDC Light Trap	06/12/2019	S321902	<i>Culex tarsalis</i>	2	Negative	RT-PCR
BO-11	06/18/2019	CDC Light Trap	06/19/2019	S321909	<i>Culex tarsalis</i>	4	Negative	RT-PCR
BO-11	06/25/2019	CDC Light Trap	06/26/2019	S321917	<i>Culex tarsalis</i>	18	Negative	RT-PCR
BO-11	07/09/2019	CDC Light Trap	07/10/2019	S321968	<i>Culex tarsalis</i>	10	Negative	RT-PCR
BO-11	07/09/2019	CDC Light Trap	07/10/2019	S321969	<i>Culex tarsalis</i>	15	Negative	RT-PCR
BO-11	07/16/2019	CDC Light Trap	07/17/2019	S322353	<i>Culex tarsalis</i>	51	Negative	RT-PCR
BO-11	07/16/2019	CDC Light Trap	07/17/2019	S322358	<i>Culex pipiens</i>	5	Negative	RT-PCR
BO-11	07/23/2019	CDC Light Trap	07/24/2019	S322435	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-11	07/23/2019	CDC Light Trap	07/24/2019	S322436	<i>Culex tarsalis</i>	64	Negative	RT-PCR
BO-11	07/23/2019	CDC Light Trap	07/24/2019	S322445	<i>Culex pipiens</i>	2	Negative	RT-PCR
BO-11	07/30/2019	CDC Light Trap	07/31/2019	S322515	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-11	07/30/2019	CDC Light Trap	07/31/2019	S322516	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-11	08/13/2019	CDC Light Trap	08/14/2019	S322754	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-11	08/20/2019	CDC Light Trap	08/21/2019	S322812	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-11	08/20/2019	CDC Light Trap	08/21/2019	S322815	<i>Culex tarsalis</i>	15	WNV+	RT-PCR
BO-11	08/20/2019	CDC Light Trap	08/21/2019	S322816	<i>Culex tarsalis</i>	15	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
BO-11	08/20/2019	CDC Light Trap	08/21/2019	S322817	<i>Culex tarsalis</i>	15	Negative	RT-PCR
BO-11	08/27/2019	CDC Light Trap	08/28/2019	S323068	<i>Culex tarsalis</i>	13	Negative	RT-PCR
BO-22	06/11/2019	CDC Light Trap	06/12/2019	S321902	<i>Culex tarsalis</i>	21	Negative	RT-PCR
BO-22	06/25/2019	CDC Light Trap	06/26/2019	S321917	<i>Culex tarsalis</i>	31	Negative	RT-PCR
BO-22	07/02/2019	CDC Light Trap	07/03/2019	S321931	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-22	07/02/2019	CDC Light Trap	07/03/2019	S321932	<i>Culex tarsalis</i>	41	Negative	RT-PCR
BO-22	07/09/2019	CDC Light Trap	07/10/2019	S321966	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-22	07/09/2019	CDC Light Trap	07/10/2019	S321967	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-22	07/09/2019	CDC Light Trap	07/10/2019	S321968	<i>Culex tarsalis</i>	2	Negative	RT-PCR
BO-22	07/16/2019	CDC Light Trap	07/17/2019	S322354	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-22	07/16/2019	CDC Light Trap	07/17/2019	S322355	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-22	07/16/2019	CDC Light Trap	07/17/2019	S322356	<i>Culex tarsalis</i>	19	Negative	RT-PCR
BO-22	07/16/2019	CDC Light Trap	07/17/2019	S322358	<i>Culex pipiens</i>	1	Negative	RT-PCR
BO-22	07/23/2019	CDC Light Trap	07/24/2019	S322437	<i>Culex tarsalis</i>	62	Negative	RT-PCR
BO-22	07/23/2019	CDC Light Trap	07/24/2019	S322438	<i>Culex tarsalis</i>	62	Negative	RT-PCR
BO-22	07/23/2019	CDC Light Trap	07/24/2019	S322439	<i>Culex tarsalis</i>	63	Negative	RT-PCR
BO-22	07/23/2019	CDC Light Trap	07/24/2019	S322445	<i>Culex pipiens</i>	2	Negative	RT-PCR
BO-22	07/30/2019	CDC Light Trap	07/31/2019	S322517	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-22	07/30/2019	CDC Light Trap	07/31/2019	S322518	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-22	07/30/2019	CDC Light Trap	07/31/2019	S322519	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-22	07/30/2019	CDC Light Trap	07/31/2019	S322520	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-22	07/30/2019	CDC Light Trap	07/31/2019	S322521	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-22	07/30/2019	CDC Light Trap	07/31/2019	S322522	<i>Culex tarsalis</i>	10	Negative	RT-PCR
BO-22	07/30/2019	CDC Light Trap	07/31/2019	S322526	<i>Culex pipiens</i>	2	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
BO-22	08/06/2019	CDC Light Trap	08/07/2019	S322595	<i>Culex tarsalis</i>	56	Negative	RT-PCR
BO-22	08/06/2019	CDC Light Trap	08/07/2019	S322596	<i>Culex tarsalis</i>	56	Negative	RT-PCR
BO-22	08/06/2019	CDC Light Trap	08/07/2019	S322597	<i>Culex tarsalis</i>	56	Negative	RT-PCR
BO-22	08/06/2019	CDC Light Trap	08/07/2019	S322602	<i>Culex pipiens</i>	9	Negative	RT-PCR
BO-22	08/13/2019	CDC Light Trap	08/14/2019	S322755	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BO-22	08/20/2019	CDC Light Trap	08/21/2019	S322815	<i>Culex tarsalis</i>	50	WNV+	RT-PCR
BO-22	08/27/2019	CDC Light Trap	08/28/2019	S323068	<i>Culex tarsalis</i>	19	Negative	RT-PCR
BO-24	06/11/2019	CDC Light Trap	06/12/2019	S321902	<i>Culex tarsalis</i>	8	Negative	RT-PCR
BO-24	06/25/2019	CDC Light Trap	06/26/2019	S321917	<i>Culex tarsalis</i>	3	Negative	RT-PCR
BO-24	07/02/2019	CDC Light Trap	07/03/2019	S321932	<i>Culex tarsalis</i>	4	Negative	RT-PCR
BO-24	07/09/2019	CDC Light Trap	07/10/2019	S321969	<i>Culex tarsalis</i>	17	Negative	RT-PCR
BO-24	07/16/2019	CDC Light Trap	07/17/2019	S322356	<i>Culex tarsalis</i>	40	Negative	RT-PCR
BO-24	07/16/2019	CDC Light Trap	07/17/2019	S322358	<i>Culex pipiens</i>	1	Negative	RT-PCR
BO-24	07/30/2019	CDC Light Trap	07/31/2019	S322522	<i>Culex tarsalis</i>	55	Negative	RT-PCR
BO-24	07/30/2019	CDC Light Trap	07/31/2019	S322526	<i>Culex pipiens</i>	3	Negative	RT-PCR
BO-24	08/06/2019	CDC Light Trap	08/07/2019	S322599	<i>Culex tarsalis</i>	26	Negative	RT-PCR
BO-24	08/06/2019	CDC Light Trap	08/07/2019	S322602	<i>Culex pipiens</i>	2	Negative	RT-PCR
BO-24	08/13/2019	CDC Light Trap	08/14/2019	S322757	<i>Culex tarsalis</i>	28	Negative	RT-PCR
BO-24	08/27/2019	CDC Light Trap	08/28/2019	S323067	<i>Culex tarsalis</i>	5	Negative	RT-PCR
BO-24	08/27/2019	CDC Light Trap	08/28/2019	S323068	<i>Culex tarsalis</i>	5	Negative	RT-PCR
BO-25	06/11/2019	CDC Light Trap	06/12/2019	S321902	<i>Culex tarsalis</i>	5	Negative	RT-PCR
BO-25	06/18/2019	CDC Light Trap	06/19/2019	S321909	<i>Culex tarsalis</i>	5	Negative	RT-PCR
BO-25	06/25/2019	CDC Light Trap	06/26/2019	S321017	<i>Culex tarsalis</i>	4	Negative	RT-PCR
BO-25	07/02/2019	CDC Light Trap	07/03/2019	S321932	<i>Culex tarsalis</i>	4	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
BO-25	07/09/2019	CDC Light Trap	07/10/2019	S321969	<i>Culex tarsalis</i>	33	Negative	RT-PCR
BO-25	07/23/2019	CDC Light Trap	07/24/2019	S322441	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-25	07/23/2019	CDC Light Trap	07/24/2019	S322444	<i>Culex tarsalis</i>	24	Negative	RT-PCR
BO-25	07/23/2019	CDC Light Trap	07/24/2019	S322445	<i>Culex pipiens</i>	3	Negative	RT-PCR
BO-25	07/30/2019	CDC Light Trap	07/31/2019	S322523	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-25	07/30/2019	CDC Light Trap	07/31/2019	S322526	<i>Culex pipiens</i>	2	Negative	RT-PCR
BO-25	08/13/2019	CDC Light Trap	08/14/2019	S322757	<i>Culex tarsalis</i>	37	Negative	RT-PCR
BO-26	06/11/2019	CDC Light Trap	06/12/2019	S321902	<i>Culex tarsalis</i>	8	Negative	RT-PCR
BO-26	06/18/2019	CDC Light Trap	06/19/2019	S321909	<i>Culex tarsalis</i>	1	Negative	RT-PCR
BO-26	07/16/2019	CDC Light Trap	07/17/2019	S322357	<i>Culex tarsalis</i>	50	Negative	RT-PCR
BO-26	07/16/2019	CDC Light Trap	07/17/2019	S322358	<i>Culex pipiens</i>	1	Negative	RT-PCR
BO-26	07/23/2019	CDC Light Trap	07/24/2019	S322442	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-26	07/23/2019	CDC Light Trap	07/24/2019	S322443	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-26	07/23/2019	CDC Light Trap	07/24/2019	S322444	<i>Culex tarsalis</i>	14	Negative	RT-PCR
BO-26	07/23/2019	CDC Light Trap	07/24/2019	S322445	<i>Culex pipiens</i>	7	Negative	RT-PCR
BO-26	07/30/2019	CDC Light Trap	07/31/2019	S322524	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-26	07/30/2019	CDC Light Trap	07/31/2019	S322525	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-26	07/30/2019	CDC Light Trap	07/31/2019	S322526	<i>Culex pipiens</i>	3	Negative	RT-PCR
BO-26	08/06/2019	CDC Light Trap	08/07/2019	S322600	<i>Culex tarsalis</i>	60	Negative	RT-PCR
BO-26	08/06/2019	CDC Light Trap	08/07/2019	S322601	<i>Culex tarsalis</i>	59	Negative	RT-PCR
BO-26	08/06/2019	CDC Light Trap	08/07/2019	S322602	<i>Culex pipiens</i>	3	Negative	RT-PCR
BO-26	08/13/2019	CDC Light Trap	08/14/2019	S322756	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BO-26	08/27/2019	CDC Light Trap	08/28/2019	S323068	<i>Culex tarsalis</i>	28	Negative	RT-PCR

Total Pools Tested: 87 Total Mosquitoes Tested: 2834 Total Negative: 84 Total Positive: 3

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Arboviral Surveillance Results

Start Date: 06/01/2019

End Date: 08/31/2019

Longmont

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area LM - Longmont Test Results								
LM-03	06/10/2019	CDC Light Trap	06/11/2019	S321900	<i>Culex tarsalis</i>	2	Negative	RT-PCR
LM-03	06/24/2019	CDC Light Trap	06/25/2019	S321915	<i>Culex tarsalis</i>	1	Negative	RT-PCR
LM-03	07/01/2019	CDC Light Trap	07/02/2019	S321928	<i>Culex tarsalis</i>	18	Negative	RT-PCR
LM-03	07/08/2019	CDC Light Trap	07/09/2019	S321959	<i>Culex tarsalis</i>	29	Negative	RT-PCR
LM-03	07/08/2019	CDC Light Trap	07/09/2019	S321961	<i>Culex pipiens</i>	3	Negative	RT-PCR
LM-03	07/15/2019	CDC Light Trap	07/16/2019	S322329	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	07/15/2019	CDC Light Trap	07/16/2019	S322330	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	07/15/2019	CDC Light Trap	07/16/2019	S322331	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	07/22/2019	CDC Light Trap	07/23/2019	S322415	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	07/22/2019	CDC Light Trap	07/23/2019	S322416	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	07/22/2019	CDC Light Trap	07/23/2019	S322417	<i>Culex tarsalis</i>	29	Negative	RT-PCR
LM-03	07/22/2019	CDC Light Trap	07/23/2019	S322425	<i>Culex pipiens</i>	4	Negative	RT-PCR
LM-03	07/29/2019	CDC Light Trap	07/30/2019	S322491	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	07/29/2019	CDC Light Trap	07/30/2019	S322502	<i>Culex pipiens</i>	8	Negative	RT-PCR
LM-03	08/05/2019	CDC Light Trap	08/06/2019	S322571	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	08/05/2019	CDC Light Trap	08/06/2019	S322582	<i>Culex pipiens</i>	9	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LM-03	08/12/2019	CDC Light Trap	08/13/2019	S322742	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	08/12/2019	CDC Light Trap	08/13/2019	S322743	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	08/12/2019	CDC Light Trap	08/13/2019	S322744	<i>Culex tarsalis</i>	20	Negative	RT-PCR
LM-03	08/19/2019	CDC Light Trap	08/20/2019	S322800	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	08/19/2019	CDC Light Trap	08/20/2019	S322805	<i>Culex tarsalis</i>	20	Negative	RT-PCR
LM-03	08/26/2019	CDC Light Trap	08/27/2019	S323056	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	08/26/2019	CDC Light Trap	08/27/2019	S323057	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	08/26/2019	CDC Light Trap	08/27/2019	S323061	<i>Culex tarsalis</i>	25	Negative	RT-PCR
LM-17	07/01/2019	CDC Light Trap	07/02/2019	S321928	<i>Culex tarsalis</i>	3	Negative	RT-PCR
LM-17	07/08/2019	CDC Light Trap	07/09/2019	S321959	<i>Culex tarsalis</i>	15	Negative	RT-PCR
LM-17	07/15/2019	CDC Light Trap	07/16/2019	S322332	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-17	07/22/2019	CDC Light Trap	07/23/2019	S322417	<i>Culex tarsalis</i>	36	Negative	RT-PCR
LM-17	07/29/2019	CDC Light Trap	07/30/2019	S322492	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-17	07/29/2019	CDC Light Trap	07/30/2019	S322502	<i>Culex pipiens</i>	5	Negative	RT-PCR
LM-17	08/05/2019	CDC Light Trap	08/06/2019	S322572	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-17	08/12/2019	CDC Light Trap	08/13/2019	S322744	<i>Culex tarsalis</i>	45	Negative	RT-PCR
LM-17	08/19/2019	CDC Light Trap	08/20/2019	S322805	<i>Culex tarsalis</i>	20	Negative	RT-PCR
LM-17	08/26/2019	CDC Light Trap	08/27/2019	S323061	<i>Culex tarsalis</i>	15	Negative	RT-PCR
LM-28	06/10/2019	CDC Light Trap	06/11/2019	S321900	<i>Culex tarsalis</i>	12	Negative	RT-PCR
LM-28	06/17/2019	CDC Light Trap	06/18/2019	S321907	<i>Culex tarsalis</i>	3	Negative	RT-PCR
LM-28	06/24/2019	CDC Light Trap	06/25/2019	S321915	<i>Culex tarsalis</i>	5	Negative	RT-PCR
LM-28	07/08/2019	CDC Light Trap	07/09/2019	S321951	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/08/2019	CDC Light Trap	07/09/2019	S321952	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/08/2019	CDC Light Trap	07/09/2019	S321953	<i>Culex tarsalis</i>	65	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LM-28	07/08/2019	CDC Light Trap	07/09/2019	S321954	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/08/2019	CDC Light Trap	07/09/2019	S321955	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/08/2019	CDC Light Trap	07/09/2019	S321956	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/08/2019	CDC Light Trap	07/09/2019	S321957	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/08/2019	CDC Light Trap	07/09/2019	S321960	<i>Culex tarsalis</i>	12	Negative	RT-PCR
LM-28	07/08/2019	CDC Light Trap	07/09/2019	S321961	<i>Culex pipiens</i>	10	Negative	RT-PCR
LM-28	07/15/2019	CDC Light Trap	07/16/2019	S322333	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/15/2019	CDC Light Trap	07/16/2019	S322334	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/15/2019	CDC Light Trap	07/16/2019	S322335	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/15/2019	CDC Light Trap	07/16/2019	S322340	<i>Culex pipiens</i>	12	Negative	RT-PCR
LM-28	07/22/2019	CDC Light Trap	07/23/2019	S322418	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/22/2019	CDC Light Trap	07/23/2019	S322420	<i>Culex tarsalis</i>	48	Negative	RT-PCR
LM-28	07/22/2019	CDC Light Trap	07/23/2019	S322425	<i>Culex pipiens</i>	10	Negative	RT-PCR
LM-28	07/29/2019	CDC Light Trap	07/30/2019	S322493	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/29/2019	CDC Light Trap	07/30/2019	S322494	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/29/2019	CDC Light Trap	07/30/2019	S322495	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/29/2019	CDC Light Trap	07/30/2019	S322496	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/29/2019	CDC Light Trap	07/30/2019	S322501	<i>Culex pipiens</i>	65	Negative	RT-PCR
LM-28	07/29/2019	CDC Light Trap	07/30/2019	S322502	<i>Culex pipiens</i>	6	Negative	RT-PCR
LM-28	08/05/2019	CDC Light Trap	08/06/2019	S322573	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LM-28	08/05/2019	CDC Light Trap	08/06/2019	S322574	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	08/05/2019	CDC Light Trap	08/06/2019	S322575	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	08/05/2019	CDC Light Trap	08/06/2019	S322576	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	08/05/2019	CDC Light Trap	08/06/2019	S322582	<i>Culex pipiens</i>	14	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LM-28	08/12/2019	CDC Light Trap	08/13/2019	S322745	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LM-28	08/19/2019	CDC Light Trap	08/20/2019	S322801	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	08/19/2019	CDC Light Trap	08/20/2019	S322802	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	08/26/2019	CDC Light Trap	08/27/2019	S323058	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	08/26/2019	CDC Light Trap	08/27/2019	S323059	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LM-34	06/10/2019	CDC Light Trap	06/11/2019	S321900	<i>Culex tarsalis</i>	2	Negative	RT-PCR
LM-34	06/17/2019	CDC Light Trap	06/18/2019	S321907	<i>Culex tarsalis</i>	2	Negative	RT-PCR
LM-34	06/24/2019	CDC Light Trap	06/25/2019	S321915	<i>Culex tarsalis</i>	2	Negative	RT-PCR
LM-34	07/01/2019	CDC Light Trap	07/02/2019	S321928	<i>Culex tarsalis</i>	28	Negative	RT-PCR
LM-34	07/08/2019	CDC Light Trap	07/09/2019	S321958	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	07/08/2019	CDC Light Trap	07/09/2019	S321960	<i>Culex tarsalis</i>	6	Negative	RT-PCR
LM-34	07/08/2019	CDC Light Trap	07/09/2019	S321961	<i>Culex pipiens</i>	6	Negative	RT-PCR
LM-34	07/15/2019	CDC Light Trap	07/16/2019	S322336	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	07/15/2019	CDC Light Trap	07/16/2019	S322337	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	07/15/2019	CDC Light Trap	07/16/2019	S322338	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	07/15/2019	CDC Light Trap	07/16/2019	S322340	<i>Culex pipiens</i>	46	Negative	RT-PCR
LM-34	07/22/2019	CDC Light Trap	07/23/2019	S322421	<i>Culex tarsalis</i>	56	Negative	RT-PCR
LM-34	07/22/2019	CDC Light Trap	07/23/2019	S322422	<i>Culex tarsalis</i>	57	Negative	RT-PCR
LM-34	07/22/2019	CDC Light Trap	07/23/2019	S322423	<i>Culex tarsalis</i>	57	Negative	RT-PCR
LM-34	07/22/2019	CDC Light Trap	07/23/2019	S322424	<i>Culex tarsalis</i>	57	Negative	RT-PCR
LM-34	07/22/2019	CDC Light Trap	07/23/2019	S322425	<i>Culex pipiens</i>	13	Negative	RT-PCR
LM-34	07/29/2019	CDC Light Trap	07/30/2019	S322497	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	07/29/2019	CDC Light Trap	07/30/2019	S322498	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	07/29/2019	CDC Light Trap	07/30/2019	S322499	<i>Culex tarsalis</i>	65	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LM-34	07/29/2019	CDC Light Trap	07/30/2019	S322502	<i>Culex pipiens</i>	29	Negative	RT-PCR
LM-34	08/05/2019	CDC Light Trap	08/06/2019	S322577	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	08/05/2019	CDC Light Trap	08/06/2019	S322578	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	08/05/2019	CDC Light Trap	08/06/2019	S322579	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	08/05/2019	CDC Light Trap	08/06/2019	S322580	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	08/05/2019	CDC Light Trap	08/06/2019	S322582	<i>Culex pipiens</i>	11	Negative	RT-PCR
LM-34	08/12/2019	CDC Light Trap	08/13/2019	S322746	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LM-34	08/19/2019	CDC Light Trap	08/20/2019	S322803	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	08/19/2019	CDC Light Trap	08/20/2019	S322805	<i>Culex tarsalis</i>	20	Negative	RT-PCR
LM-34	08/26/2019	CDC Light Trap	08/27/2019	S323060	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-42	06/10/2019	CDC Light Trap	06/11/2019	S321900	<i>Culex tarsalis</i>	1	Negative	RT-PCR
LM-42	06/17/2019	CDC Light Trap	06/18/2019	S321907	<i>Culex tarsalis</i>	1	Negative	RT-PCR
LM-42	06/24/2019	CDC Light Trap	06/25/2019	S321915	<i>Culex tarsalis</i>	2	Negative	RT-PCR
LM-42	07/01/2019	CDC Light Trap	07/02/2019	S321928	<i>Culex tarsalis</i>	1	Negative	RT-PCR
LM-42	07/08/2019	CDC Light Trap	07/09/2019	S321960	<i>Culex tarsalis</i>	33	Negative	RT-PCR
LM-42	07/08/2019	CDC Light Trap	07/09/2019	S321961	<i>Culex pipiens</i>	2	Negative	RT-PCR
LM-42	07/15/2019	CDC Light Trap	07/16/2019	S322339	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-42	07/15/2019	CDC Light Trap	07/16/2019	S322340	<i>Culex pipiens</i>	7	Negative	RT-PCR
LM-42	07/22/2019	CDC Light Trap	07/23/2019	S322419	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-42	07/22/2019	CDC Light Trap	07/23/2019	S322420	<i>Culex tarsalis</i>	7	Negative	RT-PCR
LM-42	07/22/2019	CDC Light Trap	07/23/2019	S322425	<i>Culex pipiens</i>	18	Negative	RT-PCR
LM-42	07/29/2019	CDC Light Trap	07/30/2019	S322500	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-42	07/29/2019	CDC Light Trap	07/30/2019	S322502	<i>Culex pipiens</i>	15	Negative	RT-PCR
LM-42	08/05/2019	CDC Light Trap	08/06/2019	S322581	<i>Culex tarsalis</i>	65	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LM-42	08/05/2019	CDC Light Trap	08/06/2019	S322582	<i>Culex pipiens</i>	12	Negative	RT-PCR
LM-42	08/12/2019	CDC Light Trap	08/13/2019	S322747	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-42	08/19/2019	CDC Light Trap	08/20/2019	S322804	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-42	08/19/2019	CDC Light Trap	08/20/2019	S322805	<i>Culex tarsalis</i>	5	Negative	RT-PCR
LM-42	08/26/2019	CDC Light Trap	08/27/2019	S323061	<i>Culex tarsalis</i>	25	Negative	RT-PCR
Total Pools Tested: 117 Total Mosquitoes Tested: 4860 Total Negative: 113 Total Positive: 4								



Arboviral Surveillance Results

Start Date: 06/01/2019 End Date: 08/31/2019

City of Louisville

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area LO-01 Test Results								
LO-01	06/17/2019	CDC Light Trap	06/18/2019	S321908	<i>Culex tarsalis</i>	1	Negative	RT-PCR
LO-01	07/01/2019	CDC Light Trap	07/02/2019	S321929	<i>Culex tarsalis</i>	3	Negative	RT-PCR
LO-01	07/15/2019	CDC Light Trap	07/16/2019	S322346	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-01	07/15/2019	CDC Light Trap	07/16/2019	S322348	<i>Culex tarsalis</i>	25	Negative	RT-PCR
LO-01	07/15/2019	CDC Light Trap	07/16/2019	S322349	<i>Culex pipiens</i>	2	Negative	RT-PCR
LO-01	07/22/2019	CDC Light Trap	07/23/2019	S322431	<i>Culex tarsalis</i>	24	Negative	RT-PCR
LO-01	07/29/2019	CDC Light Trap	07/30/2019	S322510	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-01	07/29/2019	CDC Light Trap	07/30/2019	S322511	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-01	07/29/2019	CDC Light Trap	07/30/2019	S322514	<i>Culex pipiens</i>	9	Negative	RT-PCR
LO-01	08/05/2019	CDC Light Trap	08/06/2019	S322592	<i>Culex tarsalis</i>	46	Negative	RT-PCR
LO-01	08/05/2019	CDC Light Trap	08/06/2019	S322594	<i>Culex pipiens</i>	7	Negative	RT-PCR
LO-01	08/12/2019	CDC Light Trap	08/13/2019	S322752	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-01	08/19/2019	CDC Light Trap	08/20/2019	S322811	<i>Culex tarsalis</i>	26	Negative	RT-PCR
LO-01	08/26/2019	CDC Light Trap	08/27/2019	S323065	<i>Culex tarsalis</i>	6	Negative	RT-PCR
LO-01	08/26/2019	CDC Light Trap	08/27/2019	S323066	<i>Culex tarsalis</i>	21	Negative	RT-PCR
LO-08	06/10/2019	CDC Light Trap	06/12/2019	S321901	<i>Culex tarsalis</i>	3	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LO-08	07/01/2019	CDC Light Trap	07/02/2019	S321929	<i>Culex tarsalis</i>	15	Negative	RT-PCR
LO-08	07/01/2019	CDC Light Trap	07/02/2019	S321930	<i>Culex pipiens</i>	2	Negative	RT-PCR
LO-08	07/08/2019	CDC Light Trap	07/09/2019	S321964	<i>Culex tarsalis</i>	26	Negative	RT-PCR
LO-08	07/08/2019	CDC Light Trap	07/09/2019	S321965	<i>Culex pipiens</i>	8	Negative	RT-PCR
LO-08	07/15/2019	CDC Light Trap	07/16/2019	S322347	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-08	07/15/2019	CDC Light Trap	07/16/2019	S322348	<i>Culex tarsalis</i>	13	Negative	RT-PCR
LO-08	07/15/2019	CDC Light Trap	07/16/2019	S322349	<i>Culex pipiens</i>	8	Negative	RT-PCR
LO-08	07/22/2019	CDC Light Trap	07/23/2019	S322432	<i>Culex tarsalis</i>	55	Negative	RT-PCR
LO-08	07/22/2019	CDC Light Trap	07/23/2019	S322433	<i>Culex tarsalis</i>	54	Negative	RT-PCR
LO-08	07/22/2019	CDC Light Trap	07/23/2019	S322434	<i>Culex pipiens</i>	7	Negative	RT-PCR
LO-08	07/29/2019	CDC Light Trap	07/30/2019	S322512	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-08	07/29/2019	CDC Light Trap	07/30/2019	S322513	<i>Culex tarsalis</i>	50	Negative	RT-PCR
LO-08	07/29/2019	CDC Light Trap	07/30/2019	S322514	<i>Culex pipiens</i>	10	Negative	RT-PCR
LO-08	08/05/2019	CDC Light Trap	08/06/2019	S322593	<i>Culex tarsalis</i>	39	Negative	RT-PCR
LO-08	08/05/2019	CDC Light Trap	08/06/2019	S322594	<i>Culex pipiens</i>	9	Negative	RT-PCR
LO-08	08/12/2019	CDC Light Trap	08/13/2019	S322753	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-08	08/26/2019	CDC Light Trap	08/27/2019	S323066	<i>Culex tarsalis</i>	27	Negative	RT-PCR

Total Pools Tested: 33 Total Mosquitoes Tested: 951 Total Negative: 33 Total Positive: 0



Arboviral Surveillance Results

Start Date: 06/01/2019 **End Date:** 08/31/2019

City of Lafayette

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area LA-01 Test Results								
LA-11	06/10/2019	CDC Light Trap	06/11/2019	S321901	<i>Culex tarsalis</i>	3	Negative	RT-PCR
LA-11	06/17/2019	CDC Light Trap	06/18/2019	S321908	<i>Culex tarsalis</i>	7	Negative	RT-PCR
LA-11	06/24/2019	CDC Light Trap	06/25/2019	S321916	<i>Culex tarsalis</i>	13	Negative	RT-PCR
LA-11	07/15/2019	CDC Light Trap	07/16/2019	S322343	<i>Culex tarsalis</i>	63	Negative	RT-PCR
LA-11	07/15/2019	CDC Light Trap	07/16/2019	S322344	<i>Culex tarsalis</i>	63	Negative	RT-PCR
LA-11	07/15/2019	CDC Light Trap	07/16/2019	S322345	<i>Culex tarsalis</i>	64	Negative	RT-PCR
LA-11	07/15/2019	CDC Light Trap	07/16/2019	S322349	<i>Culex pipiens</i>	8	Negative	RT-PCR
LA-11	07/22/2019	CDC Light Trap	07/23/2019	S322428	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/22/2019	CDC Light Trap	07/23/2019	S322429	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/22/2019	CDC Light Trap	07/23/2019	S322430	<i>Culex tarsalis</i>	22	Negative	RT-PCR
LA-11	07/22/2019	CDC Light Trap	07/23/2019	S322434	<i>Culex pipiens</i>	6	Negative	RT-PCR
LA-11	07/29/2019	CDC Light Trap	07/30/2019	S322506	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/29/2019	CDC Light Trap	07/30/2019	S322507	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/29/2019	CDC Light Trap	07/30/2019	S322508	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/29/2019	CDC Light Trap	07/30/2019	S322509	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/29/2019	CDC Light Trap	07/30/2019	S322514	<i>Culex pipiens</i>	34	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LA-11	08/05/2019	CDC Light Trap	08/06/2019	S322586	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/05/2019	CDC Light Trap	08/06/2019	S322587	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/05/2019	CDC Light Trap	08/06/2019	S322588	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/05/2019	CDC Light Trap	08/06/2019	S322589	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/05/2019	CDC Light Trap	08/06/2019	S322590	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/05/2019	CDC Light Trap	08/06/2019	S322591	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/05/2019	CDC Light Trap	08/06/2019	S322592	<i>Culex tarsalis</i>	19	Negative	RT-PCR
LA-11	08/05/2019	CDC Light Trap	08/06/2019	S322593	<i>Culex tarsalis</i>	18	Negative	RT-PCR
LA-11	08/05/2019	CDC Light Trap	08/06/2019	S322594	<i>Culex pipiens</i>	7	Negative	RT-PCR
LA-11	08/19/2019	CDC Light Trap	08/20/2019	S322808	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/19/2019	CDC Light Trap	08/20/2019	S322809	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LA-11	08/19/2019	CDC Light Trap	08/20/2019	S322810	<i>Culex tarsalis</i>	32	Negative	RT-PCR
LA-11	08/26/2019	CDC Light Trap	08/27/2019	S323063	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/26/2019	CDC Light Trap	08/27/2019	S323064	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/26/2019	CDC Light Trap	08/27/2019	S323065	<i>Culex tarsalis</i>	35	Negative	RT-PCR
Total Pools Tested: 31 Total Mosquitoes Tested: 1434 Total Negative: 30 Total Positive: 1								



Arboviral Surveillance Results

Start Date: 06/01/2019 End Date: 08/31/2019

Town of Erie

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area ER-01 Test Results								
ER-03	06/10/2019	CDC Light Trap	06/11/2019	S321901	<i>Culex tarsalis</i>	2	Negative	RT-PCR
ER-03	06/24/2019	CDC Light Trap	06/25/2019	S321916	<i>Culex tarsalis</i>	3	Negative	RT-PCR
ER-03	07/01/2019	CDC Light Trap	07/02/2019	S321929	<i>Culex tarsalis</i>	8	Negative	RT-PCR
ER-03	07/01/2019	CDC Light Trap	07/02/2019	S321930	<i>Culex pipiens</i>	4	Negative	RT-PCR
ER-03	07/08/2019	CDC Light Trap	07/09/2019	S321963	<i>Culex tarsalis</i>	46	Negative	RT-PCR
ER-03	07/08/2019	CDC Light Trap	07/09/2019	S321965	<i>Culex pipiens</i>	4	Negative	RT-PCR
ER-03	07/15/2019	CDC Light Trap	07/16/2019	S322341	<i>Culex tarsalis</i>	63	Negative	RT-PCR
ER-03	07/15/2019	CDC Light Trap	07/16/2019	S322342	<i>Culex tarsalis</i>	62	Negative	RT-PCR
ER-03	07/15/2019	CDC Light Trap	07/16/2019	S322349	<i>Culex pipiens</i>	3	Negative	RT-PCR
ER-03	07/22/2019	CDC Light Trap	07/23/2019	S322426	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/22/2019	CDC Light Trap	07/23/2019	S322427	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/22/2019	CDC Light Trap	07/23/2019	S322430	<i>Culex tarsalis</i>	39	Negative	RT-PCR
ER-03	07/22/2019	CDC Light Trap	07/23/2019	S322434	<i>Culex pipiens</i>	6	Negative	RT-PCR
ER-03	07/29/2019	CDC Light Trap	07/30/2019	S322503	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/29/2019	CDC Light Trap	07/30/2019	S322504	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/29/2019	CDC Light Trap	07/30/2019	S322505	<i>Culex tarsalis</i>	65	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
ER-03	07/29/2019	CDC Light Trap	07/30/2019	S322514	<i>Culex pipiens</i>	12	Negative	RT-PCR
ER-03	08/05/2019	CDC Light Trap	08/06/2019	S322583	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/05/2019	CDC Light Trap	08/06/2019	S322584	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/05/2019	CDC Light Trap	08/06/2019	S322585	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/05/2019	CDC Light Trap	08/06/2019	S322594	<i>Culex pipiens</i>	6	Negative	RT-PCR
ER-03	08/12/2019	CDC Light Trap	08/13/2019	S322748	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/12/2019	CDC Light Trap	08/13/2019	S322749	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/19/2019	CDC Light Trap	08/20/2019	S322806	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/19/2019	CDC Light Trap	08/20/2019	S322807	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/19/2019	CDC Light Trap	08/20/2019	S322810	<i>Culex tarsalis</i>	33	Negative	RT-PCR
ER-03	08/26/2019	CDC Light Trap	08/27/2019	S323062	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
ER-03	08/26/2019	CDC Light Trap	08/27/2019	S323065	<i>Culex tarsalis</i>	24	Negative	RT-PCR

Total Pools Tested: 28 Total Mosquitoes Tested: 1160 Total Negative: 27 Total Positive: 1



Arboviral Surveillance Results

Start Date: 06/01/2019 **End Date:** 08/31/2019

Town of Superior

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area SU-01 Test Results								
SU-02	06/17/2019	CDC Light Trap	06/18/2019	S321908	<i>Culex tarsalis</i>	1	Negative	RT-PCR
SU-02	07/08/2019	CDC Light Trap	07/09/2019	S321964	<i>Culex tarsalis</i>	5	Negative	RT-PCR
SU-02	07/15/2019	CDC Light Trap	07/16/2019	S322348	<i>Culex tarsalis</i>	10	Negative	RT-PCR
SU-02	07/22/2019	CDC Light Trap	07/23/2019	S322431	<i>Culex tarsalis</i>	37	Negative	RT-PCR
SU-02	07/22/2019	CDC Light Trap	07/23/2019	S322434	<i>Culex pipiens</i>	2	Negative	RT-PCR
SU-02	07/29/2019	CDC Light Trap	07/30/2019	S322513	<i>Culex tarsalis</i>	15	Negative	RT-PCR
SU-02	08/05/2019	CDC Light Trap	08/06/2019	S322593	<i>Culex tarsalis</i>	8	Negative	RT-PCR
SU-02	08/19/2019	CDC Light Trap	08/20/2019	S322811	<i>Culex tarsalis</i>	7	Negative	RT-PCR
SU-02	08/26/2019	CDC Light Trap	08/27/2019	S323066	<i>Culex tarsalis</i>	15	Negative	RT-PCR

Total Pools Tested: 9 Total Mosquitoes Tested: 100 Total Negative: 9 Total Positive: 0

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Appendix C: Boulder County Mosquito Control District Adulticide Application Data



Ground Adulticide Applications

Start Date: 06/01/2019

End Date: 09/30/2019

Boulder County Mosquito Control District

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
Boulder Hills Applications								
July 2019	07/02/2019		Aqua Kontrol 30-30 (73748-11)	1:5	9.2	3.6	131.6	1.1
	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	26.0	3.7	134.6	1.1
	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	16.1	3.6	129.6	1.0
	07/24/2019		Aqua Kontrol 30-30 (73748-11)	1:5	26.1	3.5	127.6	1.0
	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	11.2	3.4	123.2	1.0
August 2019	08/07/2019		Aqua Kontrol 30-30 (73748-11)	1:5	16.7	3.6	131.9	1.1
	08/21/2019		Aqua Kontrol 30-30 (73748-11)	1:5	26.1	3.4	125.1	1.0
	08/28/2019		Aqua Kontrol 30-30 (73748-11)	1:5	12.2	3.7	134.7	1.1
Total Aqua Kontrol 30-30 Applied:								8.4

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
<i>Boulder Hills Totals:</i>					143.6	28.6	1,038.2	8.4
Brigadoon Glen/Rangeview/Oriole Applications								
June 2019	06/19/2019		Aqua Kontrol 30-30 (73748-11)	1:5	6.8	3.6	129.2	1.0
July 2019	07/02/2019		Aqua Kontrol 30-30 (73748-11)	1:5	14.6	5.2	188.6	1.5
August 2019	08/28/2019		Aqua Kontrol 30-30 (73748-11)	1:5	13.9	6.1	220.8	1.8
September 2019	09/11/2019		Aqua Kontrol 30-30 (73748-11)	1:5	15.4	5.9	213.9	1.7
<i>Total Aqua Kontrol 30-30 Applied:</i>								6.1
<i>Brigadoon Glen/Rangeview/Oriole Totals:</i>					50.7	20.7	752.4	6.1
Brownsville/Canfield Applications								
July 2019	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	13.0	4.1	150.5	1.2
	07/24/2019		Aqua Kontrol 30-30 (73748-11)	1:5	15.1	4.9	179.5	1.4
August 2019	08/14/2019		Aqua Kontrol 30-30 (73748-11)	1:5	9.9	5.9	213.5	1.7
	08/29/2019		Aqua Kontrol 30-30 (73748-11)	1:5	9.1	5.8	210.2	1.7

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
September 2019	09/04/2019		Aqua Kontrol 30-30 (73748-11)	1:5	14.9	5.1	187.0	1.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>7.6</i>
<i>Brownsville/Canfield Totals:</i>					<i>62.1</i>	<i>25.9</i>	<i>940.8</i>	<i>7.6</i>

Chance Acres Applications

July 2019	07/02/2019		Aqua Kontrol 30-30 (73748-11)	1:5	24.9	1.9	68.7	0.6
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.6</i>
<i>Chance Acres Totals:</i>					<i>24.9</i>	<i>1.9</i>	<i>68.7</i>	<i>0.6</i>

Cline Trout Farm Applications

July 2019	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	9.4	0.1	5.2	0.0
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.0</i>
<i>Cline Trout Farm Totals:</i>					<i>9.4</i>	<i>0.1</i>	<i>5.2</i>	<i>0.0</i>

Divide Reservoir Applications

July 2019	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	29.3	1.4	52.2	0.4
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.4</i>

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
<i>Divide Reservoir Totals:</i>					29.3	1.4	52.2	0.4
Fairview Estates/Indian Hills Applications								
August 2019	08/14/2019		Aqua Kontrol 30-30 (73748-11)	1:5	6.9	4.2	151.7	1.2
	08/21/2019		Aqua Kontrol 30-30 (73748-11)	1:5	6.8	4.1	149.2	1.2
<i>Total Aqua Kontrol 30-30 Applied:</i>								2.4
<i>Fairview Estates/Indian Hills Totals:</i>					13.7	8.3	300.9	2.4
Gunbarrel Estates Applications								
August 2019	08/28/2019		Aqua Kontrol 30-30 (73748-11)	1:5	10.6	3.2	116.9	0.9
<i>Total Aqua Kontrol 30-30 Applied:</i>								0.9
<i>Gunbarrel Estates Totals:</i>					10.6	3.2	116.9	0.9
Gunbarrel Green Applications								
July 2019	07/03/2019		Aqua Kontrol 30-30 (73748-11)	1:5	7.0	3.4	124.1	1.0
	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	5.7	4.0	145.9	1.1

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	7.2	3.7	134.5	1.1
	07/24/2019		Aqua Kontrol 30-30 (73748-11)	1:5	10.2	3.4	121.9	1.0
	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	7.9	3.6	131.8	1.1
August 2019	08/07/2019		Aqua Kontrol 30-30 (73748-11)	1:5	7.6	3.6	130.0	1.0
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>6.3</i>
<i>Gunbarrel Green Totals:</i>					<i>45.7</i>	<i>21.7</i>	<i>788.2</i>	<i>6.3</i>

Heatherwood Applications

July 2019	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	6.3	3.5	127.0	1.0
	07/24/2019		Aqua Kontrol 30-30 (73748-11)	1:5	7.3	4.2	152.4	1.2
	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.0	1.6	59.8	0.5
August 2019	08/14/2019		Aqua Kontrol 30-30 (73748-11)	1:5	11.1	2.8	103.6	0.8
	08/21/2019		Aqua Kontrol 30-30 (73748-11)	1:5	8.4	4.1	148.0	1.2
	08/28/2019		Aqua Kontrol 30-30 (73748-11)	1:5	7.5	4.4	159.2	1.3

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>6.1</i>
<i>Heatherwood Totals:</i>					<i>43.7</i>	<i>20.6</i>	<i>750.0</i>	<i>6.1</i>
Hillcrest Heights Applications								
July 2019	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	4.7	2.9	105.5	0.8
	07/24/2019		Aqua Kontrol 30-30 (73748-11)	1:5	21.7	2.8	102.0	0.8
	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	11.1	3.0	109.9	0.9
August 2019	08/07/2019		Aqua Kontrol 30-30 (73748-11)	1:5	12.3	3.0	108.8	0.9
	08/14/2019		Aqua Kontrol 30-30 (73748-11)	1:5	19.7	3.0	108.5	0.9
	08/21/2019		Aqua Kontrol 30-30 (73748-11)	1:5	12.4	3.0	109.9	0.9
	08/28/2019		Aqua Kontrol 30-30 (73748-11)	1:5	19.6	3.0	107.8	0.9
September 2019	09/04/2019		Aqua Kontrol 30-30 (73748-11)	1:5	19.6	3.0	107.8	0.9
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>7.0</i>
<i>Hillcrest Heights Totals:</i>					<i>121.1</i>	<i>23.7</i>	<i>860.2</i>	<i>7.0</i>

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
Hygiene/Hygiene Heights Applications								
August 2019	08/28/2019		Aqua Kontrol 30-30 (73748-11)	1:5	7.7	4.7	170.4	1.4
September 2019	09/11/2019		Aqua Kontrol 30-30 (73748-11)	1:5	32.6	4.6	168.2	1.4
					<i>Total Aqua Kontrol 30-30 Applied:</i>			<i>2.7</i>
<i>Hygiene/Hygiene Heights Totals:</i>					<i>40.3</i>	<i>9.3</i>	<i>338.6</i>	<i>2.7</i>
Marshall Road Applications								
July 2019	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	6.6	1.2	42.6	0.3
	07/18/2019		Aqua Kontrol 30-30 (73748-11)	1:5	10.9	1.2	42.3	0.3
					<i>Total Aqua Kontrol 30-30 Applied:</i>			<i>0.7</i>
<i>Marshall Road Totals:</i>					<i>17.6</i>	<i>2.3</i>	<i>84.8</i>	<i>0.7</i>
McCall Lake/Hygiene Applications								
July 2019	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	38.8	6.1	221.9	1.8
August 2019	08/07/2019		Aqua Kontrol 30-30 (73748-11)	1:5	9.5	6.9	250.8	2.0
					<i>Total Aqua Kontrol 30-30 Applied:</i>			<i>3.8</i>

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
<i>McCall Lake/Hygiene Totals:</i>					<i>48.3</i>	<i>13.0</i>	<i>472.7</i>	<i>3.8</i>
Niwot - LoBo Regional Trail Applications								
August 2019	08/07/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.8	1.2	44.6	0.4
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.4</i>
<i>Niwot - LoBo Regional Trail Totals:</i>					<i>3.8</i>	<i>1.2</i>	<i>44.6</i>	<i>0.4</i>
North Rim/Lake Valley Estates Applications								
July 2019	07/02/2019		Aqua Kontrol 30-30 (73748-11)	1:5	8.5	5.1	186.6	1.5
	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	13.0	5.1	186.3	1.5
August 2019	08/14/2019		Aqua Kontrol 30-30 (73748-11)	1:5	15.5	5.1	186.0	1.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>4.5</i>
<i>North Rim/Lake Valley Estates Totals:</i>					<i>37.0</i>	<i>15.4</i>	<i>559.0</i>	<i>4.5</i>
Orange Orchard/Pleasant Ridge Applications								
July 2019	07/03/2019		Aqua Kontrol 30-30 (73748-11)	1:5	18.5	1.6	57.7	0.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.5</i>

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
<i>Orange Orchard/Pleasant Ridge Totals:</i>					18.5	1.6	57.7	0.5
Park Lake Applications								
June 2019	06/19/2019		Aqua Kontrol 30-30 (73748-11)	1:5	14.6	2.1	75.1	0.6
	06/26/2019		Aqua Kontrol 30-30 (73748-11)	1:5	2.9	2.0	72.5	0.6
July 2019	07/03/2019		Aqua Kontrol 30-30 (73748-11)	1:5	7.1	2.2	78.9	0.6
	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	12.7	2.0	74.4	0.6
	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	8.7	2.0	74.2	0.6
	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	12.4	2.1	75.9	0.6
August 2019	08/21/2019		Aqua Kontrol 30-30 (73748-11)	1:5	2.9	2.1	76.1	0.6
<i>Total Aqua Kontrol 30-30 Applied:</i>								4.3
<i>Park Lake Totals:</i>					61.3	14.5	527.2	4.3

Red Fox Hills Applications								
July 2019	07/03/2019		Aqua Kontrol 30-30 (73748-11)	1:5	5.9	0.9	34.4	0.3

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
August 2019	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	17.3	1.2	43.3	0.4
	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	1.5	0.7	30.0	0.2
	08/07/2019		Aqua Kontrol 30-30 (73748-11)	1:5	1.8	1.1	38.9	0.3
	08/14/2019		Aqua Kontrol 30-30 (73748-11)	1:5	1.7	1.0	35.1	0.3
	08/21/2019		Aqua Kontrol 30-30 (73748-11)	1:5	1.8	1.0	36.0	0.3
	08/28/2019		Aqua Kontrol 30-30 (73748-11)	1:5	1.8	1.0	36.6	0.3
September 2019	09/04/2019		Aqua Kontrol 30-30 (73748-11)	1:5	1.8	1.0	37.6	0.3
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>2.3</i>
<i>Red Fox Hills Totals:</i>					<i>33.5</i>	<i>7.9</i>	<i>291.8</i>	<i>2.3</i>

Red Fox Hill/Twin Lakes Applications

July 2019	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	20.0	2.6	93.1	0.8
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.8</i>
<i>Red Fox Hill/Twin Lakes Totals:</i>					<i>20.0</i>	<i>2.6</i>	<i>93.1</i>	<i>0.8</i>

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
Ridglea Hills Applications								
July 2019	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	4.2	2.0	71.1	0.6
	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	2.5	1.7	61.8	0.5
	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	4.2	1.7	63.0	0.5
August 2019	08/14/2019		Aqua Kontrol 30-30 (73748-11)	1:5	10.1	1.7	62.4	0.5
	08/21/2019		Aqua Kontrol 30-30 (73748-11)	1:5	4.2	1.7	63.1	0.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>2.6</i>
<i>Ridglea Hills Totals:</i>					<i>25.2</i>	<i>8.8</i>	<i>321.3</i>	<i>2.6</i>

San Lazaro/Cline Trout Farm Applications								
July 2019	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	12.2	0.9	34.1	0.3
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.3</i>
<i>San Lazaro/Cline Trout Farm Totals:</i>					<i>12.2</i>	<i>0.9</i>	<i>34.1</i>	<i>0.3</i>

South Meadow Applications								
July 2019	07/03/2019		Aqua Kontrol 30-30 (73748-11)	1:5	5.7	1.9	70.2	0.6

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.6	2.2	81.1	0.7
	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	4.2	2.1	75.1	0.6
	07/24/2019		Aqua Kontrol 30-30 (73748-11)	1:5	4.3	1.9	68.9	0.6
	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	2.7	1.9	68.4	0.6
August 2019	08/07/2019		Aqua Kontrol 30-30 (73748-11)	1:5	5.7	1.9	68.9	0.6
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>3.5</i>
<i>South Meadow Totals:</i>					<i>26.3</i>	<i>11.9</i>	<i>432.6</i>	<i>3.5</i>

Twin Lakes Applications

July 2019	07/03/2019		Aqua Kontrol 30-30 (73748-11)	1:5	2.5	1.2	43.4	0.4
	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	2.7	1.6	57.8	0.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.8</i>
<i>Twin Lakes Totals:</i>					<i>5.1</i>	<i>2.8</i>	<i>101.2</i>	<i>0.8</i>

Twin Lakes Regional Trail Applications

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
June 2019	06/26/2019		Aqua Kontrol 30-30 (73748-11)	1:5	17.4	1.0	35.5	0.3
July 2019	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	1.4	0.9	33.2	0.3
August 2019	08/07/2019		Aqua Kontrol 30-30 (73748-11)	1:5	16.1	0.9	34.1	0.3
	08/14/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.8	0.8	30.4	0.2
	08/21/2019		Aqua Kontrol 30-30 (73748-11)	1:5	8.0	0.9	31.0	0.3
	08/28/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.8	0.8	30.7	0.2
September 2019	09/04/2019		Aqua Kontrol 30-30 (73748-11)	1:5	9.8	0.8	28.5	0.2
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>1.8</i>
<i>Twin Lakes Regional Trail Totals:</i>					<i>60.2</i>	<i>6.1</i>	<i>223.4</i>	<i>1.8</i>

Valmont and 61st Applications

July 2019	07/03/2019		Aqua Kontrol 30-30 (73748-11)	1:5	16.1	1.8	65.5	0.5
	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.4	1.1	40.9	0.3
	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.6	1.1	39.7	0.3

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>1.2</i>
<i>Valmont and 61st Totals:</i>					<i>23.1</i>	<i>4.0</i>	<i>146.1</i>	<i>1.2</i>

Valmont and 75th Applications

June 2019	06/26/2019		Aqua Kontrol 30-30 (73748-11)	1:5	4.2	1.1	41.6	0.3
July 2019	07/03/2019		Aqua Kontrol 30-30 (73748-11)	1:5	5.5	2.3	84.9	0.7
	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.9	2.4	88.2	0.7
	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	4.2	2.4	85.9	0.7
	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	4.3	2.3	85.4	0.7
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>3.1</i>
<i>Valmont and 75th Totals:</i>					<i>22.1</i>	<i>10.6</i>	<i>386.0</i>	<i>3.1</i>

Willow Glen/Fox Run Applications

June 2019	06/19/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.7	1.3	46.4	0.4
	06/26/2019		Aqua Kontrol 30-30 (73748-11)	1:5	4.0	1.2	45.2	0.4

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
July 2019	07/03/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.7	1.3	48.9	0.4
	07/10/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.7	1.3	46.5	0.4
	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	2.4	1.2	44.9	0.4
	07/31/2019		Aqua Kontrol 30-30 (73748-11)	1:5	3.7	1.2	43.9	0.4
August 2019	08/21/2019		Aqua Kontrol 30-30 (73748-11)	1:5	4.4	1.6	58.4	0.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>2.7</i>
<i>Willow Glen/Fox Run Totals:</i>					<i>25.7</i>	<i>9.2</i>	<i>334.1</i>	<i>2.7</i>

Yellowstone Road Applications

July 2019	07/17/2019		Aqua Kontrol 30-30 (73748-11)	1:5	11.7	4.1	148.8	1.2
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>1.2</i>
<i>Yellowstone Road Totals:</i>					<i>11.7</i>	<i>4.1</i>	<i>148.8</i>	<i>1.2</i>
<i>Grand Totals:</i>					<i>1,046.5</i>	<i>282.4</i>	<i>10,270.8</i>	<i>82.9</i>



Ground Adulticide Applications

Start Date: 05/01/2019 **End Date:** 09/30/2019

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
Cline Trout Farm Applications								
July 2019	07/26/2019		Talstar Pro (279-3206)	1:128	0.0	0.0	0.1	4.0
					<i>Total Talstar Pro Applied:</i>			<i>4.0</i>
<i>Cline Trout Farm Totals:</i>					<i>0.0</i>	<i>0.0</i>	<i>0.1</i>	<i>4.0</i>
<i>Grand Totals:</i>					<i>0.0</i>	<i>0.0</i>	<i>0.1</i>	<i>4.0</i>

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