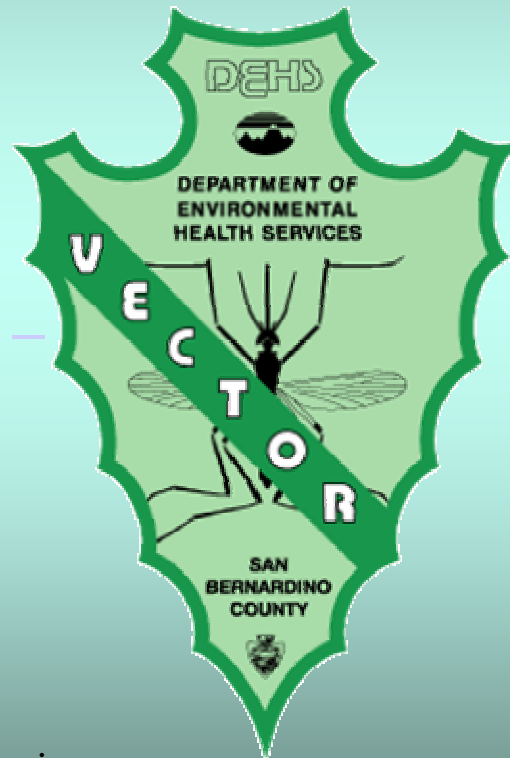


# San Bernardino County Vector Control Program



San Bernardino County  
Department of Public Health  
Division of Environmental Health Services

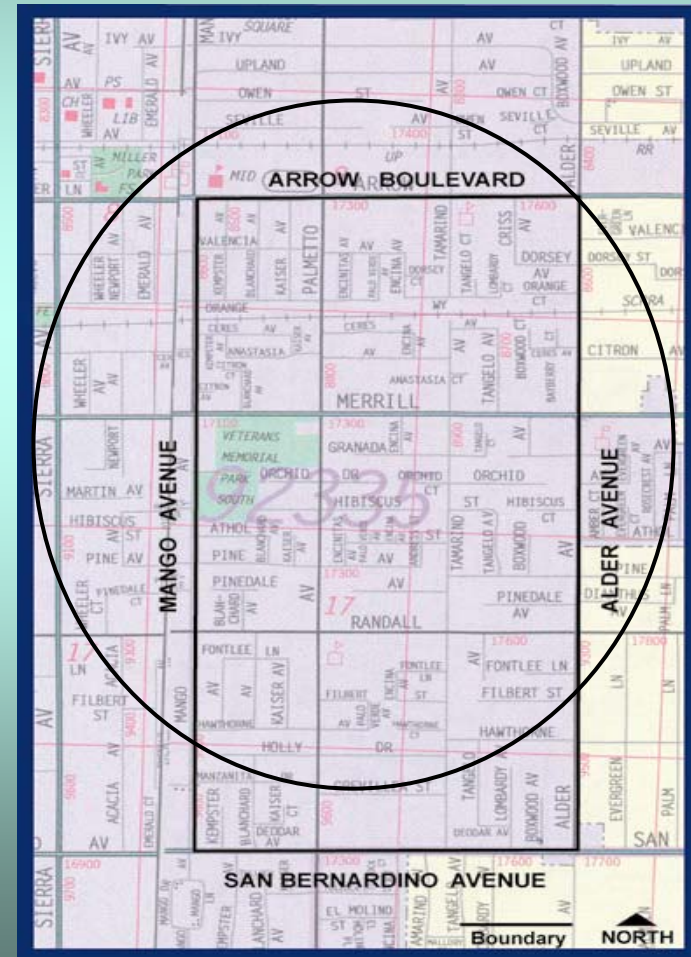
**J. Wakoli Wekesa**  
**Joan K. Mulcare**



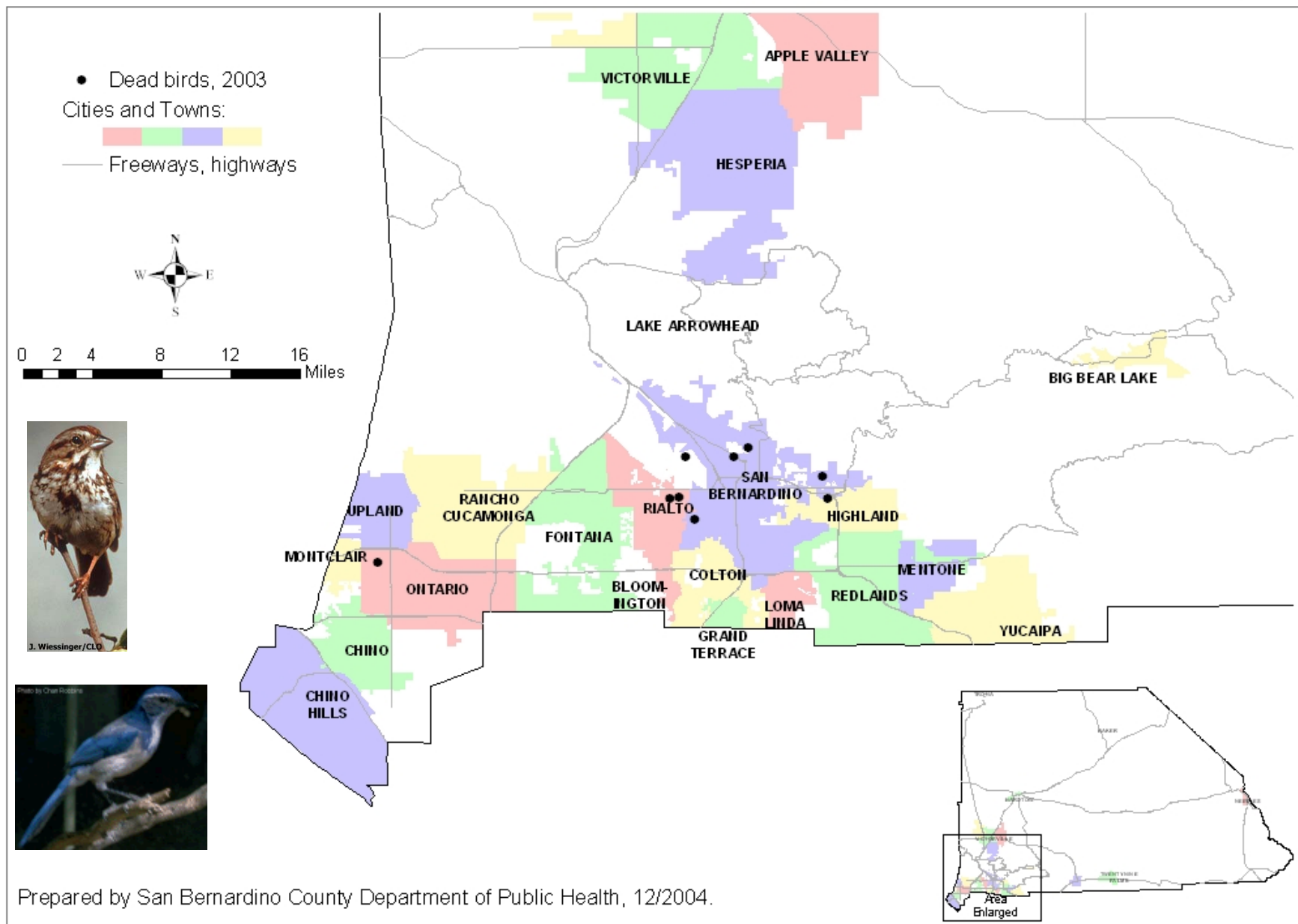


# Comprehensive WNV Control Plan in 2003

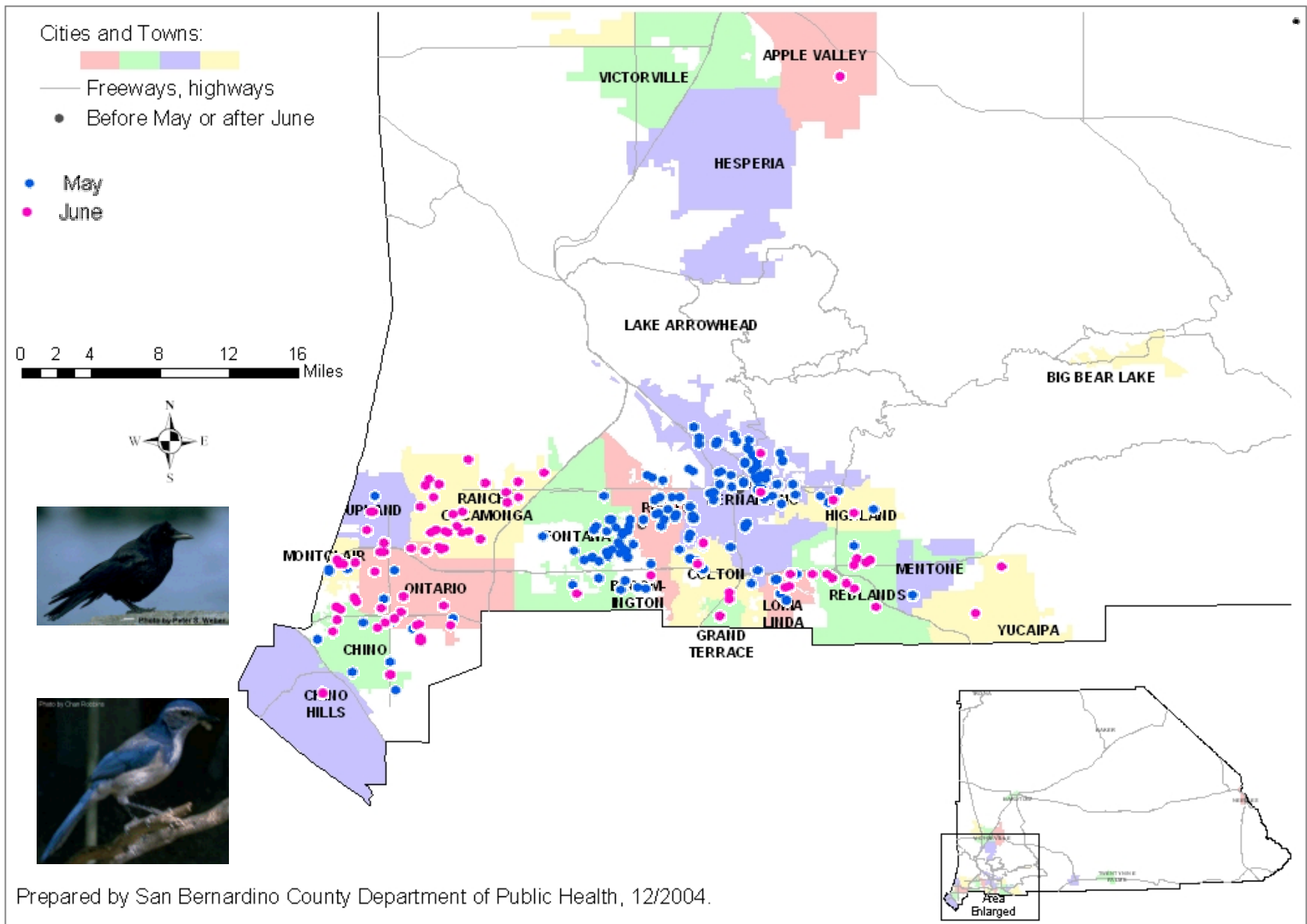
- Integrated surveillance, operation and community outreach program into 3 units
- Each unit was to target 1 mi diameter around a WNV-positive event.
- Lead technician w/ 5 other employees will go door-to-door giving pamphlets, checking for backyard sources & trapping mosquitoes.



# West Nile Virus: Dead Birds Reported in 2003, San Bernardino County

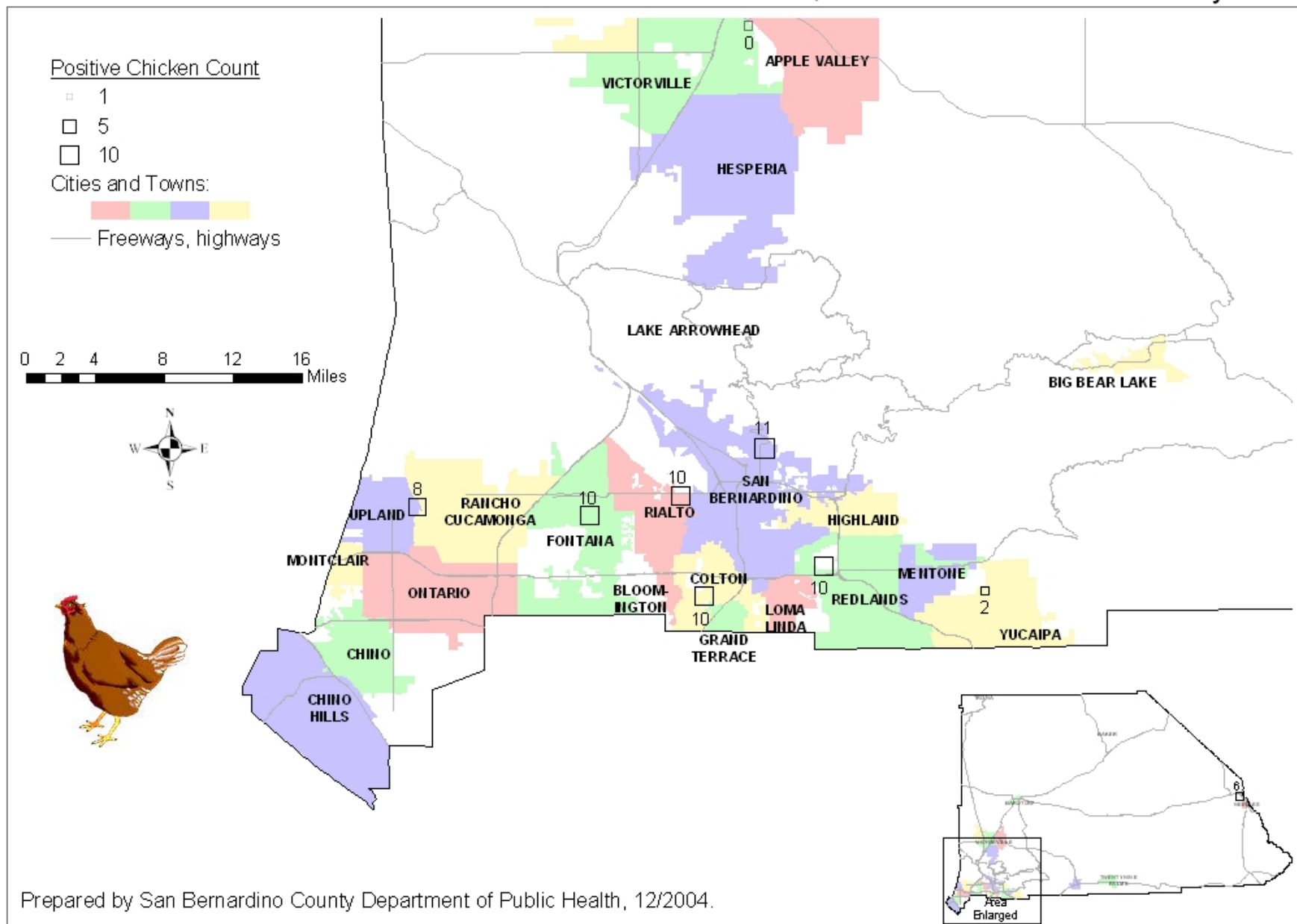


# West Nile Virus: Dead Birds Reported in 2004, San Bernardino County

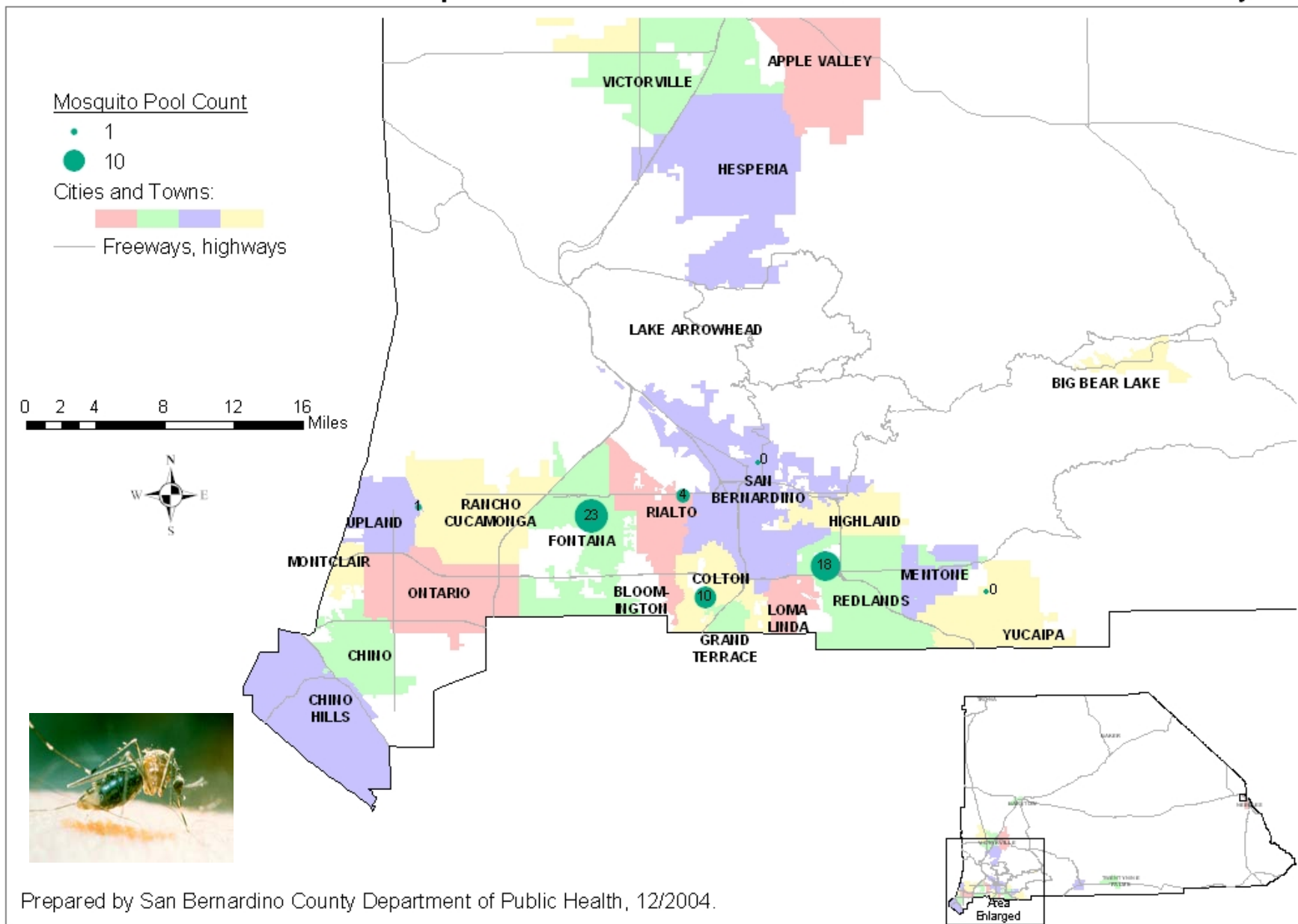


Prepared by San Bernardino County Department of Public Health, 12/2004.

# West Nile Virus: Positive Chickens in 2004, San Bernardino County



# West Nile Virus: Mosquito Pool Counts, 2004, San Bernardino County





Cities and Towns:

— Freeways, highways

▲ Human cases

+ Horse cases

0 2 4 8 12 16 Miles

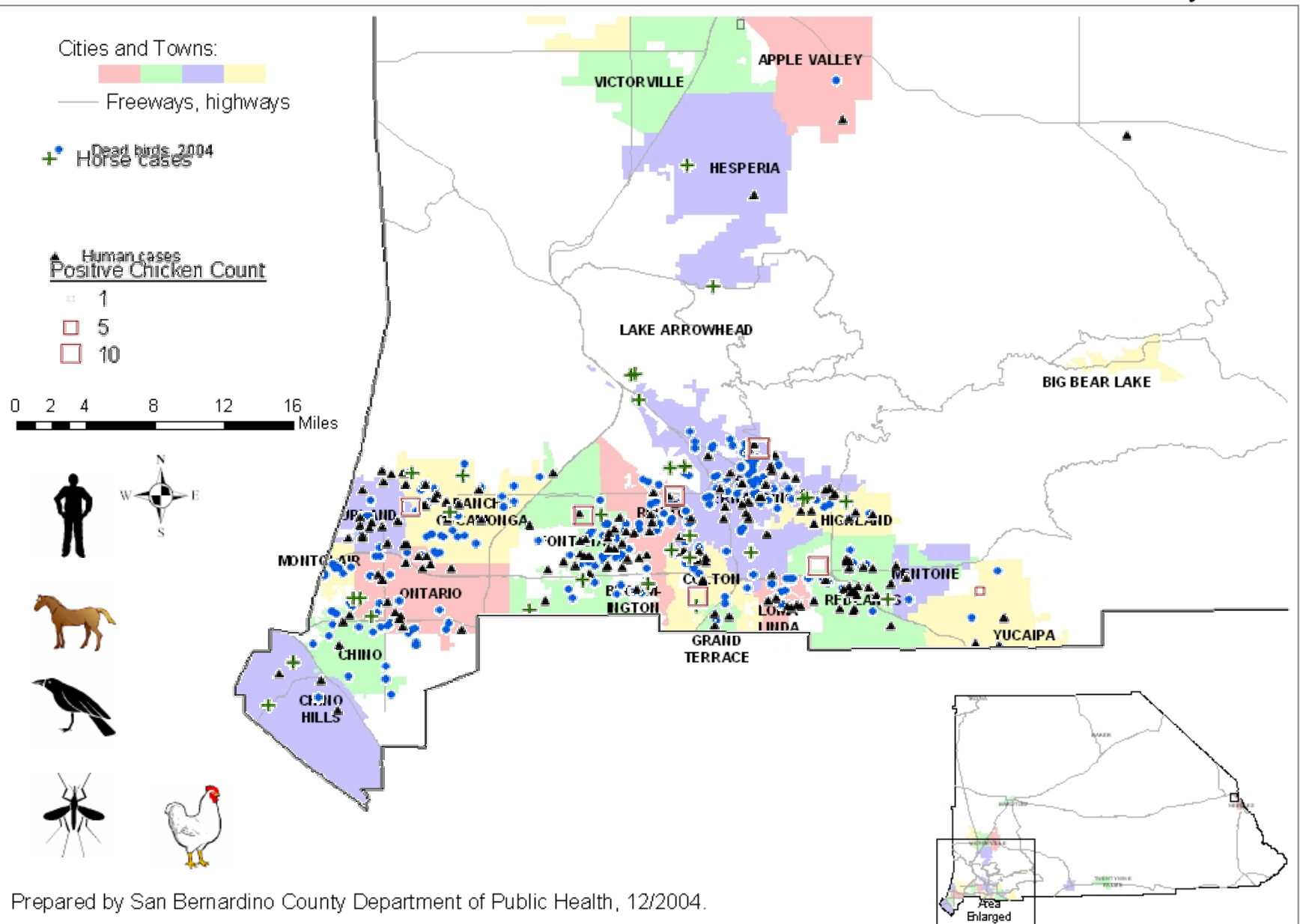
N  
W E  
S

Apple Valley  
Victorville  
Hesperia  
Lake Arrowhead  
Big Bear Lake  
Montclair  
Ontario  
Fontana  
Blythe  
Colton  
Redlands  
Montone  
Yucaipa  
Grand Terrace  
Chino Hills  
Chino

Prepared by San Bernardino County Department of Public Health, 12/2004.

Prepared by San Bernardino County Department of Public Health, 12/2004.

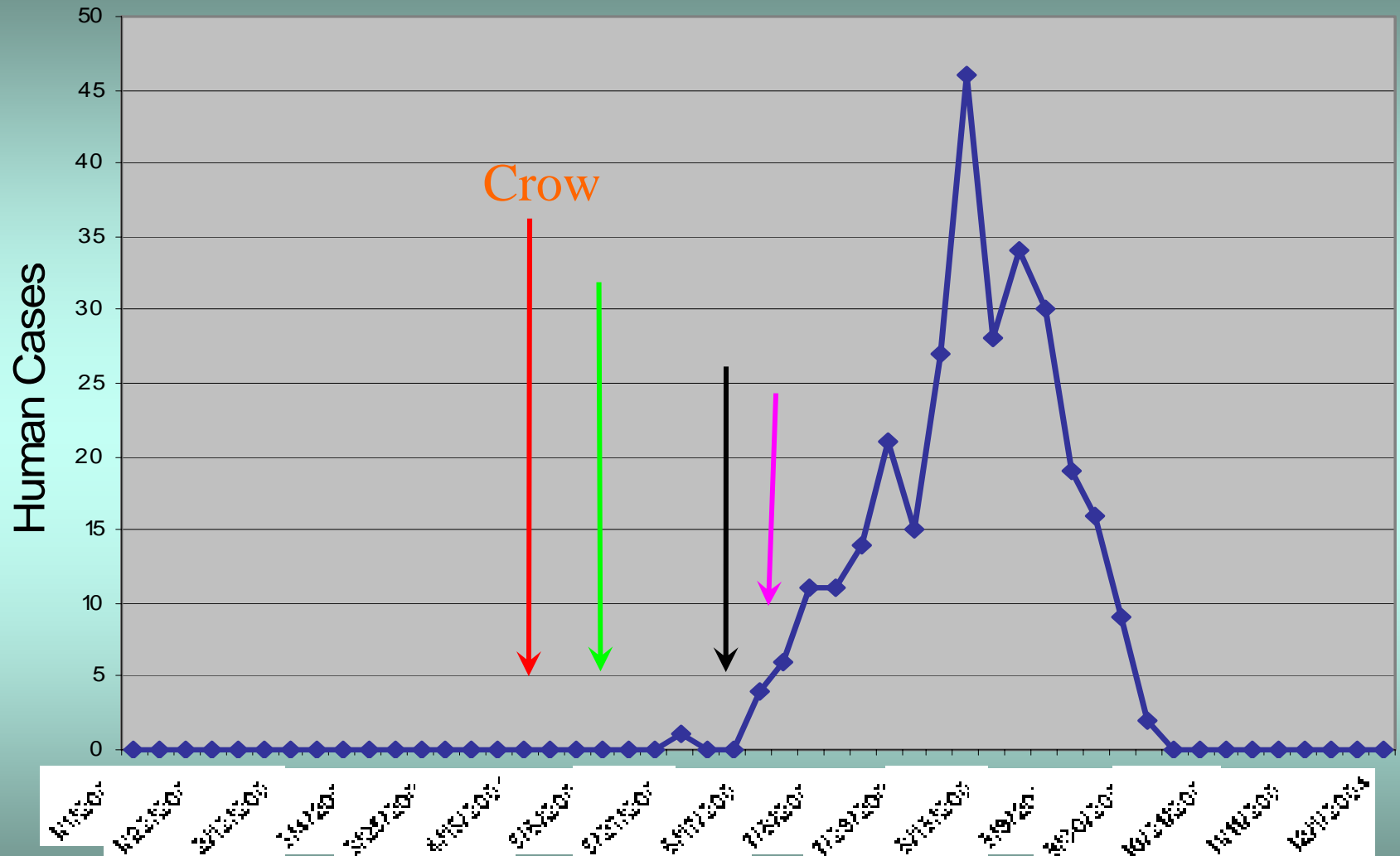
## West Nile Virus: All Positive Hosts, 2004, San Bernardino County





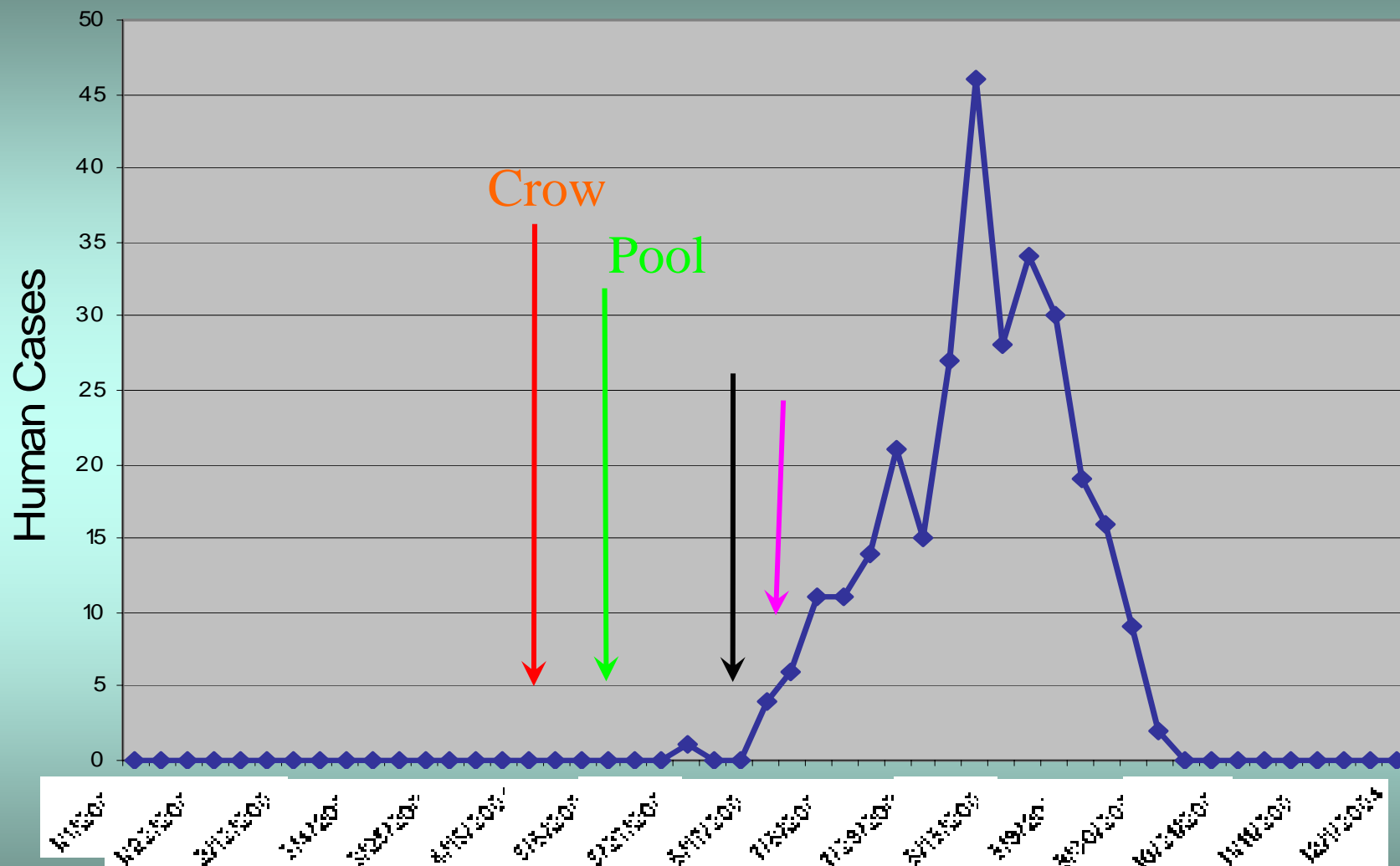


# Time line of WNV Positive Hosts in San Bernardino County



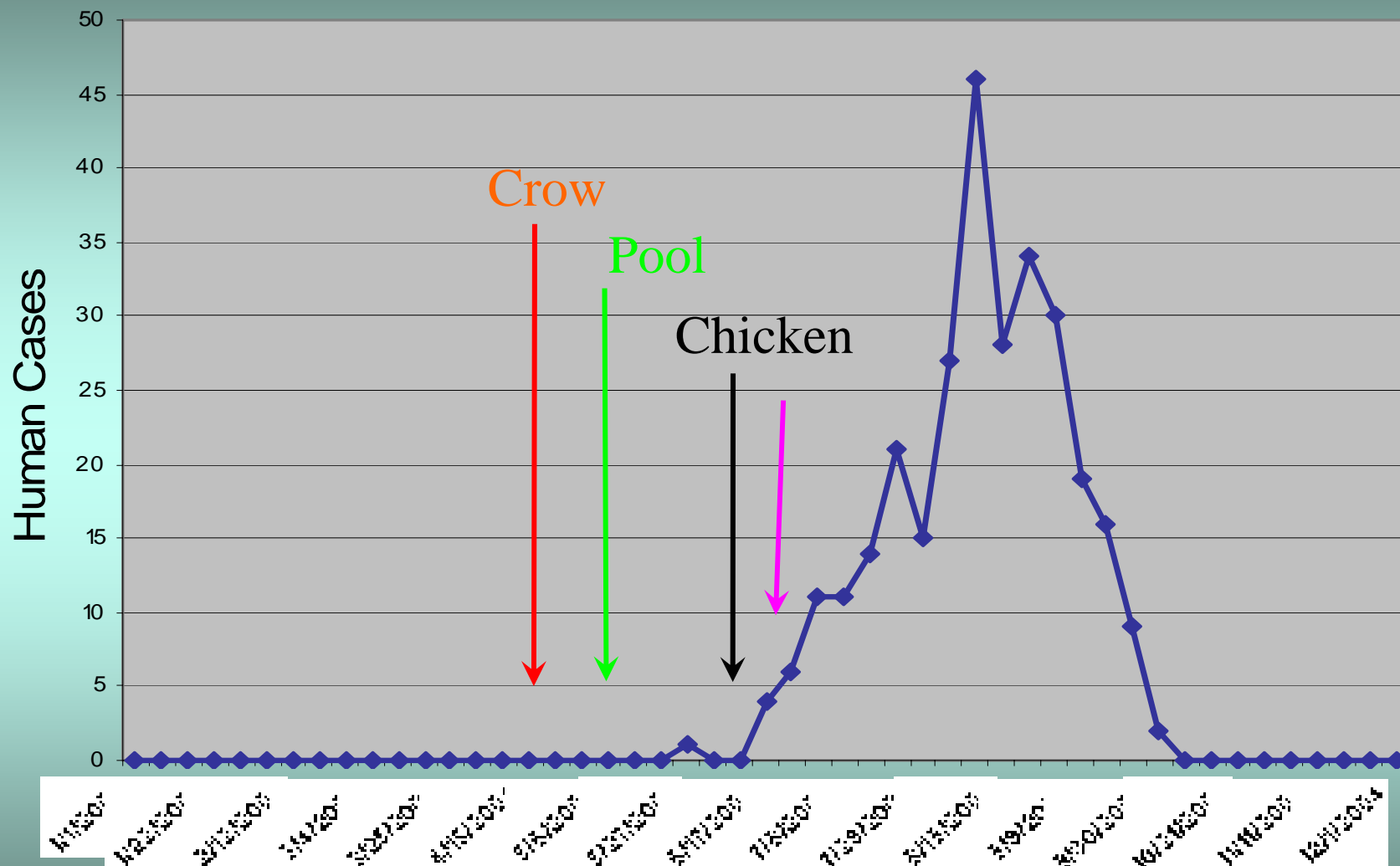


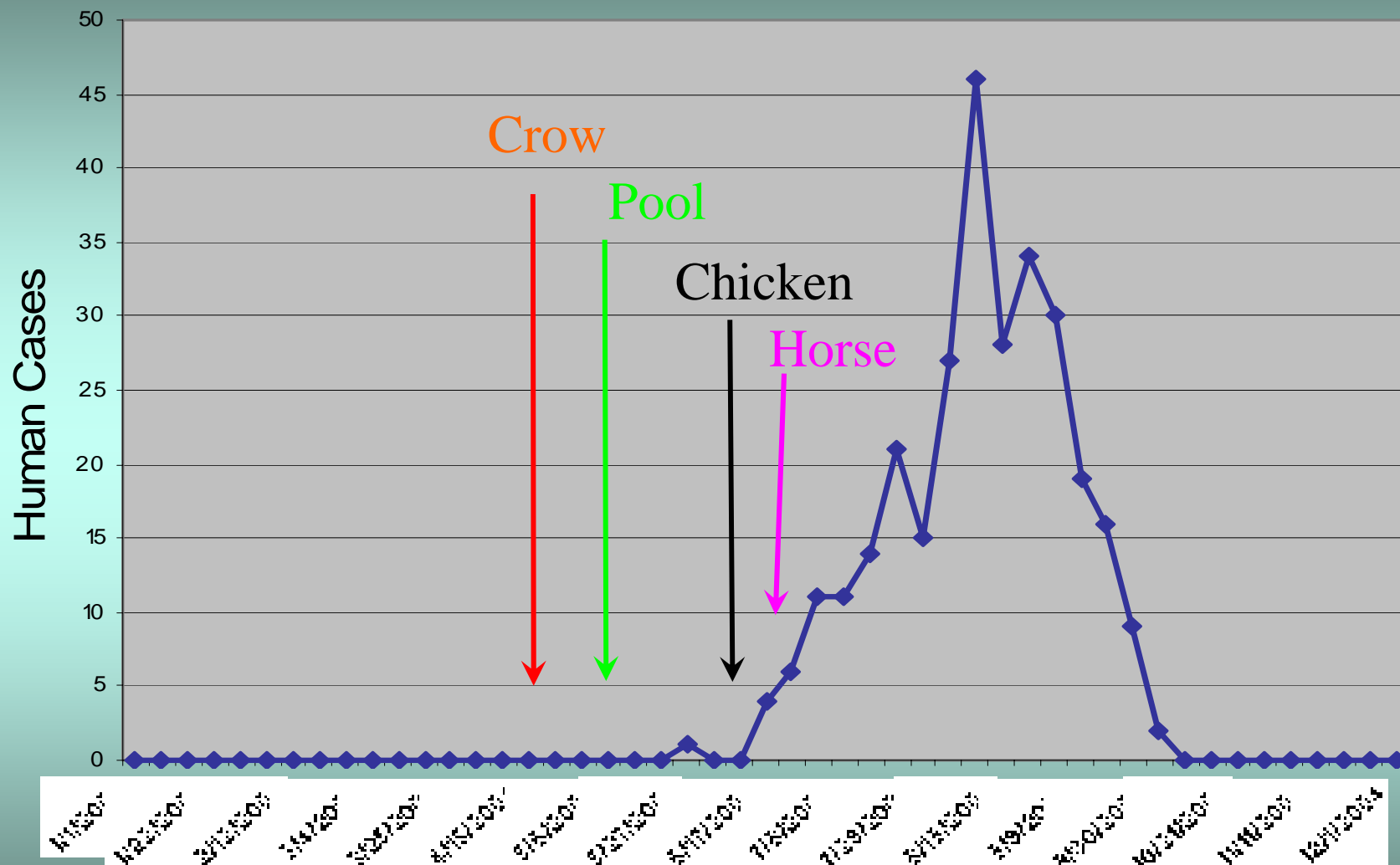
# Time line of WNV Positive Hosts in San Bernardino County



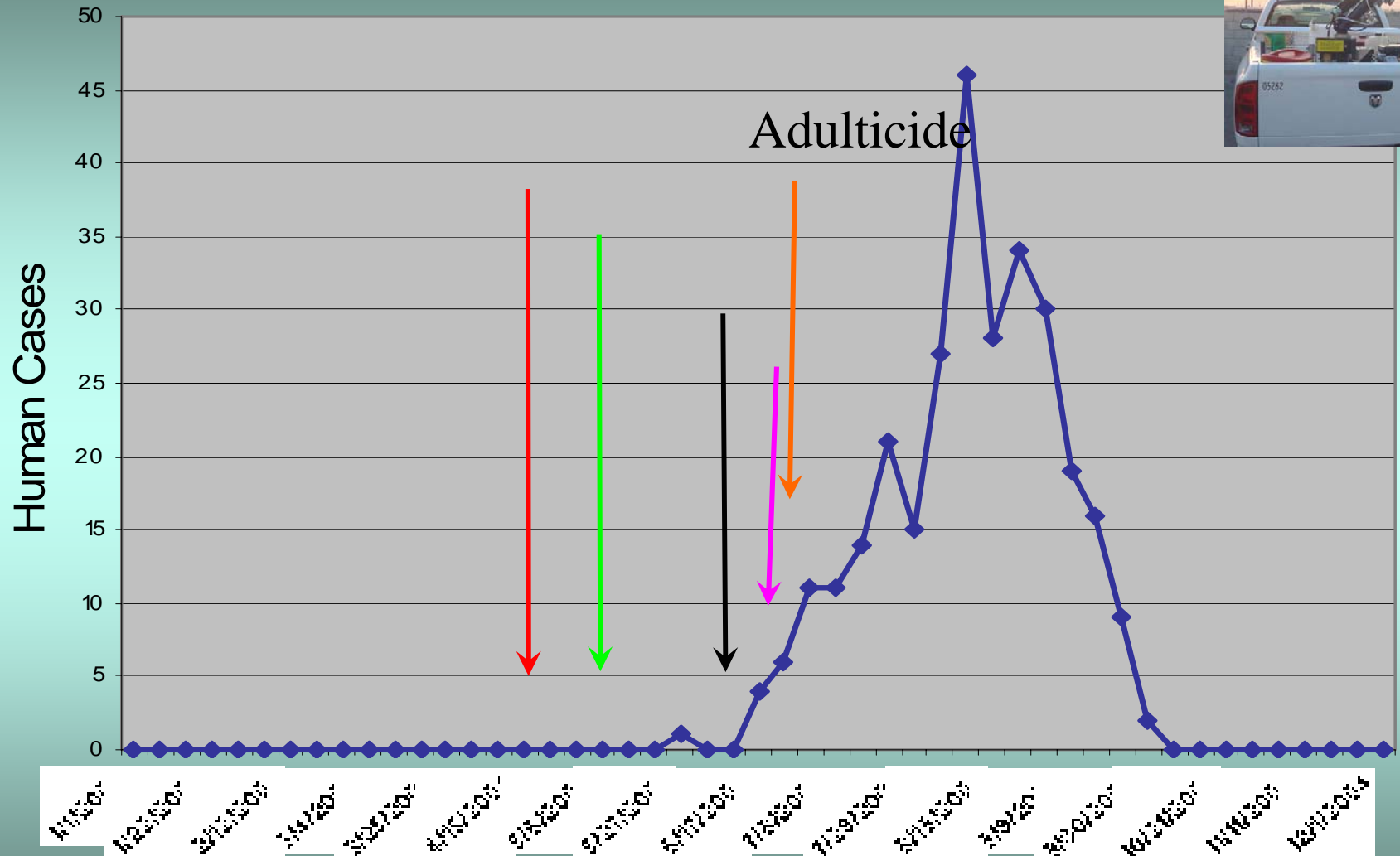


# Time line of WNV Positive Hosts in San Bernardino County

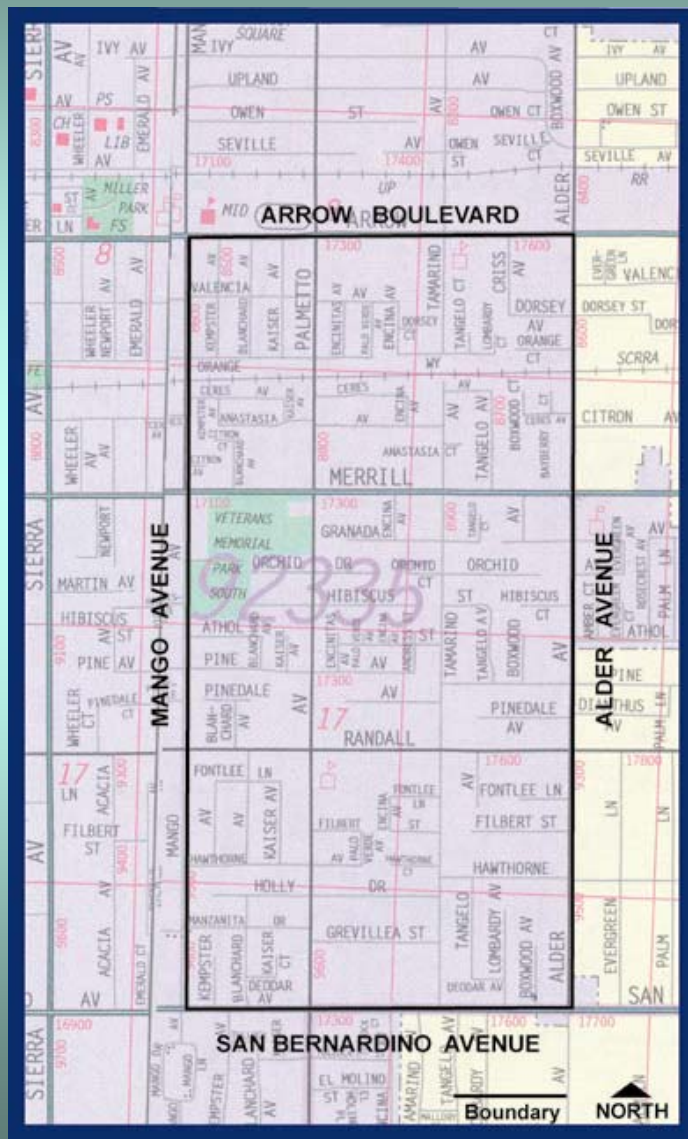




# Time line of WNV Positive Hosts in San Bernardino County



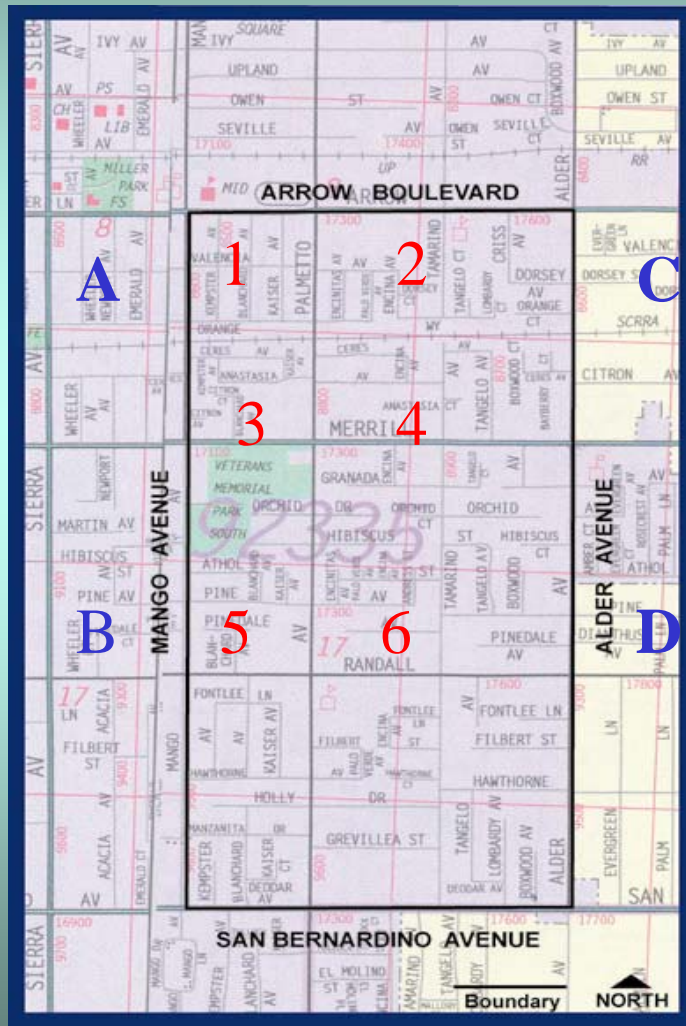
# Entomological Conditions Prior to Adulticiding



## Mosquito count by CO2 traps

- June 22, 2004– 15 traps, Pre-treatment average no. of mosquitoes/trap was 32, with a range of 17-196 mosquitoes.
- June 25, 2004- ULV spray @ 5-6:30AM using Scourge®
- June 30, 2004- ULV repeat treatment.
- July 1, 2004, Post-treatment 15 traps with average 6 mosq/trap (range 0-58 mosq.)

# Adulticide Treatment Efficacy



Trapped mosquitoes were exposed to the spray- June 30<sup>th</sup>

| Control<br>Live/Total<br>% survival | Treat<br>Live/Total<br>% survival | Treat<br>Live/Total<br>% survival | Control<br>Live/Total<br>% survival |
|-------------------------------------|-----------------------------------|-----------------------------------|-------------------------------------|
| 37/45<br>82.2                       | 12/89<br>13.5                     | 8/76<br>10.5                      | 32/36<br>88.9                       |
|                                     | 24/137<br>17.5                    | 2/58<br>3.4                       |                                     |
| 11/12<br>91.7                       | 31/56<br>55.4                     | 11/29<br>37.9                     | 8/13<br>61.5                        |





# MIR and the WNV Risk Assessment



| WN Surveillance Factor   | Assessment Value | Benchmark  | Assigned Value |
|--|------------------|--|----------------|
| <b>1. Environmental Conditions</b><br>Favorable environmental conditions in California unknown. Rural transmission may favor El Niño conditions, whereas urban transmission may favor La Niña conditions.                                  | 1                | Temperature well below average   |                |
|  | 2                | Temperature below average  |                |
|  | 3                | Temperature average  |                |
|  | 4                | Temperature above average  |                |
|  | 5                | Temperature well above average   |                |
| <b>2. Adult <i>Culex tarsalis</i> and <i>Cx. pipiens</i> complex abundance</b><br>Determined by trapping adults, identifying them to species, and comparing numbers to those previously documented for an area.                            | 1                | Vector abundance well below average (<50%)   |                |
|  | 2                | Vector abundance below average (50-90%)  |                |
|  | 3                | Vector abundance average (90-150%)   |                |
|  | 4                | Vector abundance above average (150-300%)  |                |
|  | 5                | Vector abundance well above average (>300%)  |                |
| <b>3. Virus isolation rate in <i>Culex tarsalis</i> and <i>Cx. pipiens</i> complex mosquitoes</b><br>Tested in pools of 50. Test results expressed as minimum infection rate (MIR) per 1,000 female mosquitoes tested (or per 20 pools).   | 1                | MIR / 1000 = 0   |                |
|  | 2                | MIR / 1000 = 0-1.0   |                |
|  | 3                | MIR / 1000 = 1.1-2.0   |                |
|  | 4                | MIR / 1000 = 2.1-5.0   |                |
|  | 5                | MIR / 1000 > 5.0   |                |
| <b>4. Sentinel chicken seroconversion</b><br>Number of chickens in a flock that develop antibodies to WN virus. If more than one flock is present in a region, number of flocks with seropositive chickens is an additional consideration. | 1                | No seroconversions in California   |                |
|  | 2                | Seroconversion in neighboring state, but not CA  |                |
|  | 3                | One seroconversion in single flock over broad area                                     |                |
|  | 4                | One seroconversion in one or more flocks in region                                     |                |
|  | 5                | Two or more seroconversions per flock in one or more flocks in region                  |                |
| <b>5. Dead bird infection</b><br>Includes zoo collections.   | 1                | No WN positive dead birds in California  |                |
|  | 2                | WN positive dead bird in neighboring state, but not CA                                 |                |
|  | 3                | One confirmed WN positive dead bird in California, but none in specific region         |                |
|  | 4                | One confirmed WN positive dead bird reported in specific region                        |                |
|  | 5                | Multiple confirmed WN positive dead birds and multiple reports of dead birds in region |                |
| <b>6. Equine cases</b>   | 1                | No equine cases  |                |
|  | 3                | One equine case in broad region  |                |
|  | 4                | One equine case in specific region   |                |
|  | 5                | Multiple equine cases in specific region   |                |
|  | 5                | Multiple equine cases in specific region   |                |
| <b>7. Human cases</b>  | 1                | No human cases   |                |
|  | 3                | One human case statewide (but not within specific region)                              |                |
|  | 4                | One human case in specific region  |                |
|  | 5                | Multiple human cases in specific region  |                |
|  | 5                | Multiple human cases in specific region  |                |
| <b>8. Proximity to urban or suburban regions</b> (score only if virus activity detected)<br>Risk of outbreak is highest in urban areas because of high likelihood of contact between humans and vectors.                                   | 1                | Virus activity in remote area  |                |
|  | 2                | Virus activity in rural areas  |                |
|  | 3                | Virus activity in small towns  |                |
|  | 4                | Virus activity in suburban areas   |                |
|  | 5                | Virus activity in urban area   |                |
| <b>Response Level / Average Rating:</b><br>Normal Season (1.0 to 2.5)<br>Emergency Planning (2.6 to 4.0)<br>Epidemic (4.1 to 5.0)  |                  | <b>TOTAL</b>   |                |
|  |                  | <b>AVERAGE</b>   |                |

# MIR and the WNV Risk Assessment

- June 23, 2004 MIR/1000 for *Cx. tarsalis* in Fontana was 22.7, and three times higher in *Cx. stigmatosoma*
- WNV Risk Assessment from the State comprehensive plan was 3.7.
- Response Level/Average Rating:  
Normal Season (1.0 to 2.5)  
Emergency Planning (2.6 to 4.0)  
Epidemic (4.1 to 5.0)





# Summary

- WNV in San Bernardino Co. could be considered a “perfect storm.”
- Coordination between Vector Control Agencies, Co. Public Health Dept., State DHS, greatly mitigated the impact of WNV.
- Interagency communication, WNV Task Force, and media management was key to reducing public anxiety, and eventually allowing Vector Control to determine their operations solely based on the entomological and epidemiological factors.



# **San Bernardino County Vector Control Program**

## **West Nile Virus**

### **Pre-Planning**

- **West Nile Task Force**
- **Public Health Collaboration and Coordination**
- **Requests for Increase in Equipment and Supplies**
- **Increase in Health Education Information**
- **Approval of new staff positions**
- **Reallocation of Resources**



# San Bernardino County Vector Control

## Program

### West Nile Virus

### The Surprises

- Hit earlier than we anticipated
- Media exposure was intense



# RENO GAZETTE-JOURNAL



California authorities spray West Nile 'hot spot'

## Los Angeles Times

Six cases of West Nile Virus are confirmed in city; S.B. County officials use fogging to fight mosquitoes

CNN

The Sacramento Bee  
*Life. Captured daily.*

NBC

Health officials in San Bernardino County, following an outbreak of West Nile virus that has sent two people to the hospital, plan Friday to take the unusual step of spraying pesticide in a mosquito- infested neighborhood.

## West Nile Virus Hits Hard in The West

### 800 Birds Killed In California County

CBS

Special to **The Washington Post**

SAN BERNARDINO, Calif. -- When the big black crows started dropping dead out of the sky, littering the highways and Little League fields by the dozens, the phones at the San Bernardino County Vector Control office started ringing.

# DEPARTMENT OF PUBLIC HEALTH

COUNTY OF SAN BERNARDINO

## FOR IMMEDIATE RELEASE

June 23, 2004  
PHD # 4-45

Contact: Joan Mulcare, REHS  
Program Manager  
(909) 387-4688

### **ADULT MOSQUITO SUPPRESSION for CONTROL OF WEST NILE VIRUS**

In response to 7 confirmed human cases of West Nile Virus (WNV) and the presence of adult mosquitoes in the central Fontana area, San Bernardino County Vector Control Program (SBCVCP) will begin truck-mounted adult mosquito suppression using ultra-low volume fogging on Friday, June 25, 2004, weather permitting.

In accordance with the California Mosquito-Borne Virus Surveillance and Response Plan, a risk-assessment of the area indicated that adulticiding would be the most effective treatment method for immediate reduction of the adult mosquito population. "This decision was made in order to provide the greatest protection available from WNV for County residents," said Eric Frykman, M.D., interim County Health Officer. "Since we know the virus is here and has caused illness in humans, fogging decreases the mosquito population, thus minimizing possible WNV infections."

The area to be treated is bounded by Arrow Boulevard on the north, San Bernardino Avenue to the south, Alder Avenue to the east and Mango Avenue to the west. (see attached map)

Residents in this area can expect to see SBCVCP truck fogging along streets between the hours of 5:00 a.m. and 6:30 a.m. However, residents should avoid direct exposure by staying indoors during the application. Signs will be posted prior to the application on telephone poles or other posts in the affected area describing the fogging agent and any precautions. Ponds containing fish should be covered prior to the application as the agent is harmful to fish. Cars and other outdoor items will not be affected.

Additional information about prevention of WNV infection and surveillance data is available from the San Bernardino County website at [www.sbcounty.gov/dehs/VECTORCONTROL](http://www.sbcounty.gov/dehs/VECTORCONTROL). For questions about WNV illness or for physicians to report a case, call the Epidemiology Program at (909) 383-3050.



# West Nile spray area expanding

**REDLANDS:** Mosquito-eradication efforts will target the northwest part of the city.

**REDLANDS** - County officials next week will spray a partly agricultural area of northwest Redlands as part of a continuing effort to eradicate mosquitoes that may spread the West Nile virus. Officials already have sprayed the fog-like pesticide in Fontana and Colton.



# San Bernardino County Vector Control Program

## West Nile Virus

### The Surprises

- Hit earlier than we anticipated
- Media exposure was intense
- Work load for clerical was greater than anticipated



# PHONE CALLS REGARDING WEST NILE VIRUS

| Month   | WNV          |              |             | Totals       |
|---|--------------|--------------|-------------|--------------|
|   | Hilda        | Raúl         | Addie       |              |
| January   | 16           | 1            | 0           | 17           |
| February  | 4            | 2            | 0           | 6            |
| March   | 30           | 5            | 0           | 35           |
| April   | 26           | 19           | 0           | 45           |
| May   | 302          | 234          | 0           | 536          |
| June  | 435          | 649          | 57          | 1141         |
| July  | 145          | 329          | 402         | 876          |
| August  | 210          | 342          | 368         | 920          |
| September   | 20           | 111          | 139         | 270          |
| October   | 9            | 27           | 28          | 64           |
| November  | 0            | 10           | 17          | 27           |
| December  |              |              |             | 0            |
| <b>Total</b>  | <b>1197</b>  | <b>1729</b>  | <b>1011</b> | <b>3937</b>  |
| <b>Avg/Month</b>                                    | <b>108.8</b> | <b>157.2</b> | <b>91.9</b> | <b>328.1</b> |
| <b>Previous Year's<br/>Totals<br/>(03/03-12/03)</b> | <b>122</b>   | <b>103</b>   | <b>0</b>    | <b>225.0</b> |

(these calls were in addition to approx. 20,000  
other Vector phone service/information requests for 2004)



# San Bernardino County Vector Control

## Program

### West Nile Virus

### The Surprises

- Hit earlier then we anticipated
- Media exposure was intense
- Work load for clerical was greater then anticipated
- Public was very cooperative but changing behaviors is difficult



# San Bernardino County Vector Control

## Program

### West Nile Virus

### The Surprises

- Hit earlier then we anticipated
- Media exposure was intense
- Work load for clerical was greater then anticipated
- Public was very cooperative but changing behaviors is difficult
- This is a REALLY BIG county



# San Bernardino County



# San Bernardino County Vector Control Program

## West Nile Virus

### 2005

- Stay Alert/Continue Surveillance
- Maintain adequate staffing/supplies/equip.
- Secure additional funding/contracts
- Maintain Media Contacts
- Continue Health Education
- Continue WNV Task Force
- Use data collected to forecast



QUESTIONS?