

CANYON COUNTY MOSQUITO ABATEMENT DISTRICT
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Members: IMVCA, ECA of Idaho,
 NWMVCA, AMCA , NPMA

2010 Annual Report

Submitted to the Canyon County Board of Commissioners

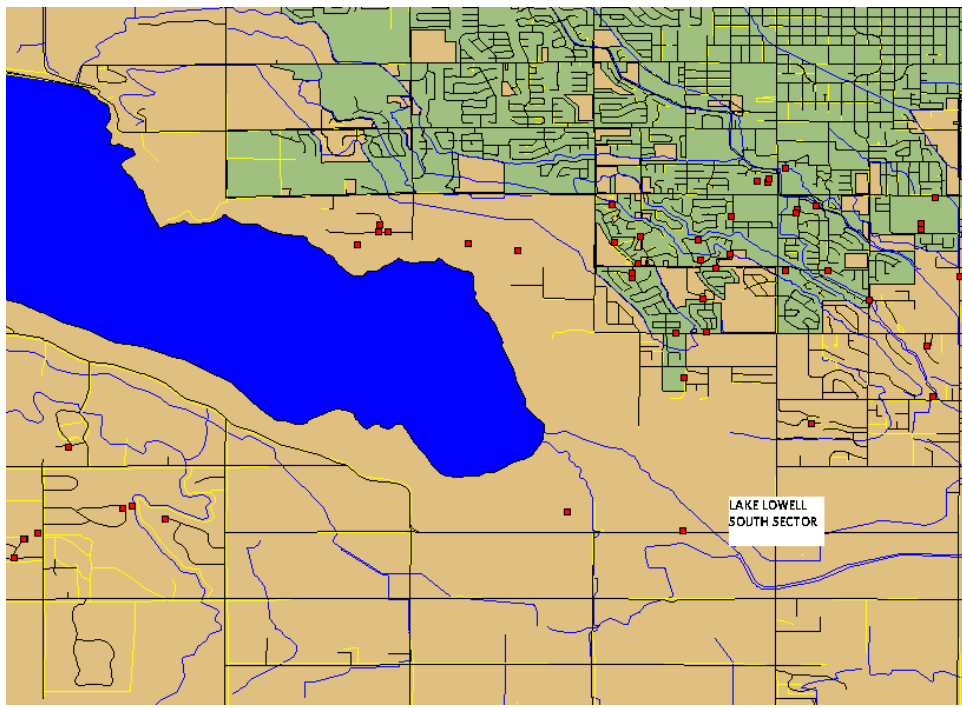
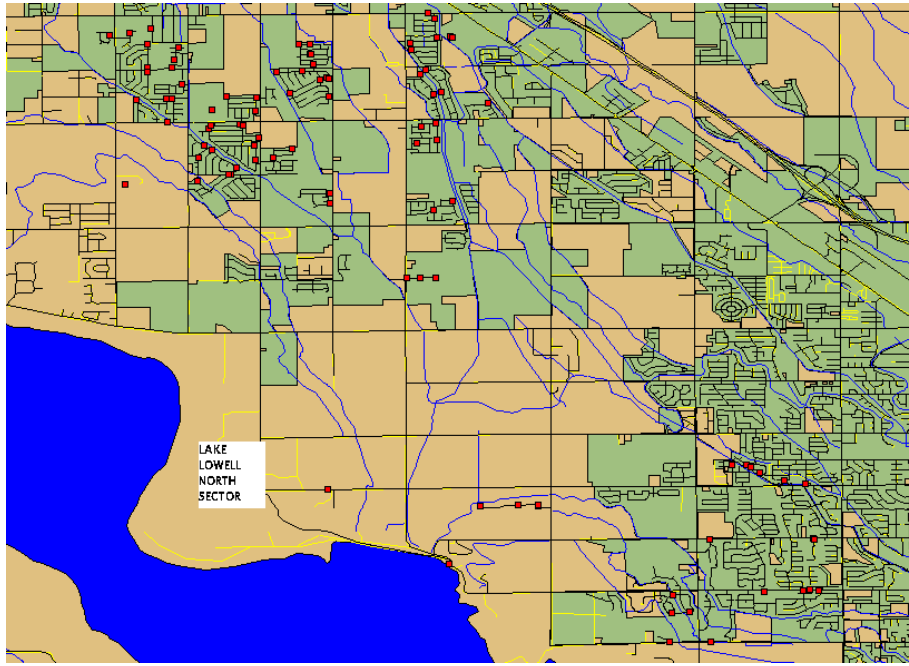
Authority: Idaho Mosquito and Vermin Abatement Act of 2007
 Idaho Code Title 39 Health and Safety, Chapter 28.

The year 2010 constitutes the twelfth operational and eleventh tax funded year for the Canyon County Mosquito Abatement District (CCMAD). The primary emphasis of CCMAD is to abate and manage mosquito populations within the District boundaries.

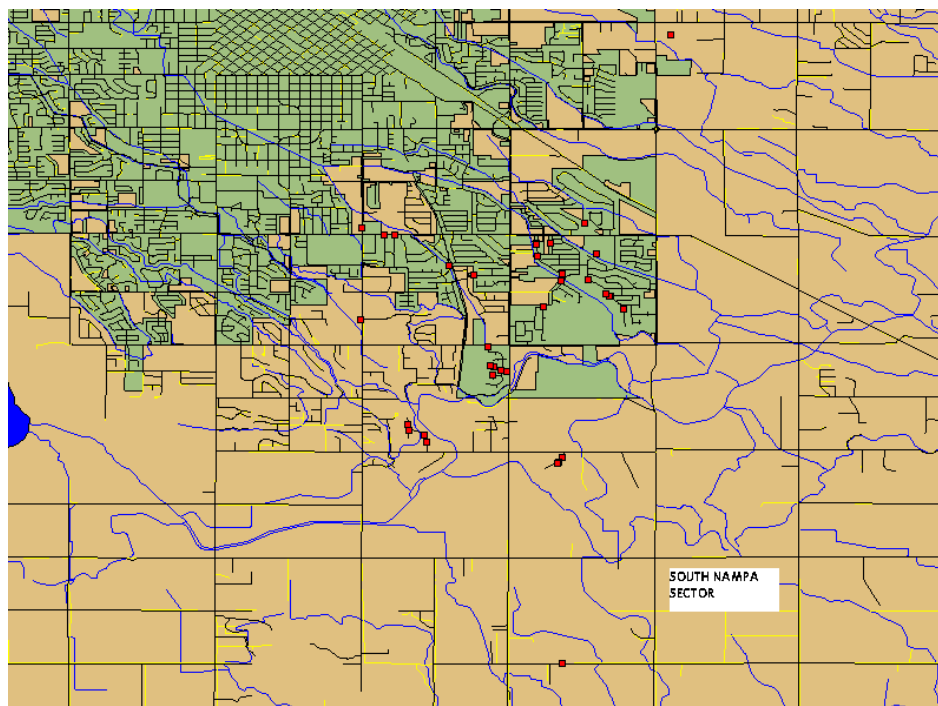
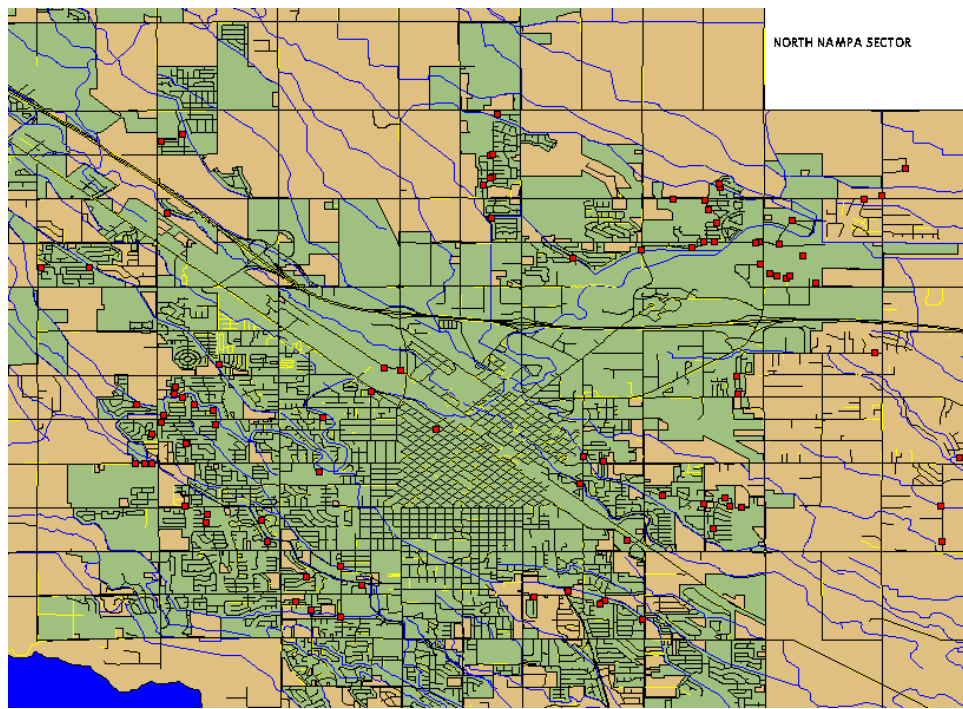
This past year was the second year of county wide mosquito abatement activity and provided the following operational successes:

- Expansion of operations facility to include added truck bays and a training/conference room.
- Successful allocation of personnel and training. (CCMAD has 12 certified/licensed personnel).
- Keeping the disease carrying mosquito population in check.
- Increased aerial mosquito larvicide operations along the Boise River between Middleton and Parma.
- Constituent educational program (neighborhood awareness flyers) and establishing CCMAD web page at canyoncountymosquito.com.
- Community outreach: CCMAD helped sponsor the Deer Flat National Wildlife Refuge Osprey Nest Web-cam. CCMAD contributed to the Rotary International youth dictionary distribution to Middleton School District third grades.
- Participated in Deer Flat National Wildlife Refuge annual “BioBlitz” with an informational and interactive booth.

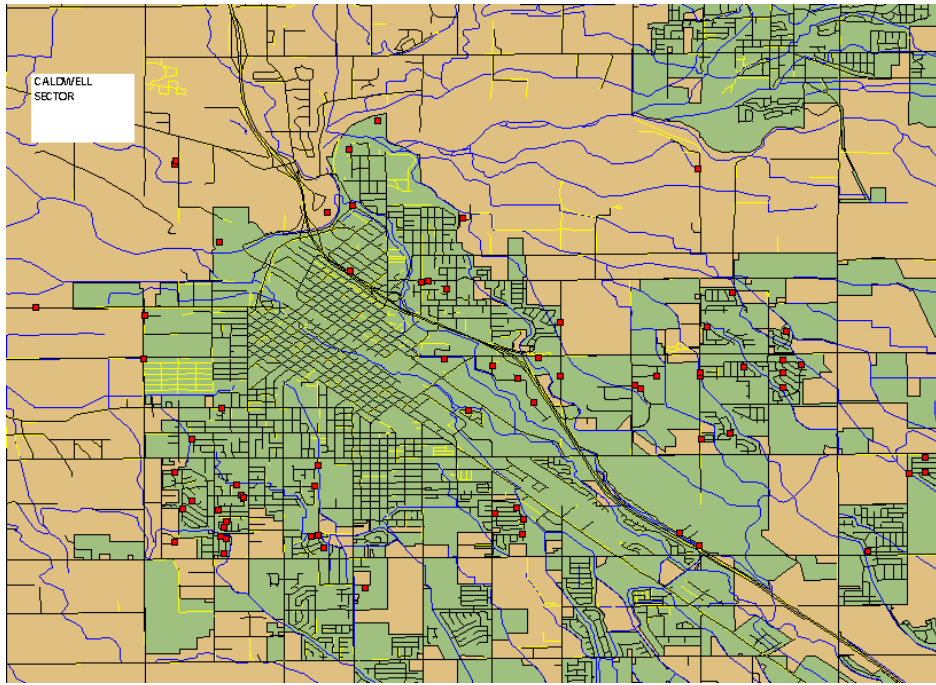
The Canyon County Mosquito Abatement District is divided into the following Control Sectors: **Red dots on maps indicate mosquito larvicide treatment sites.**



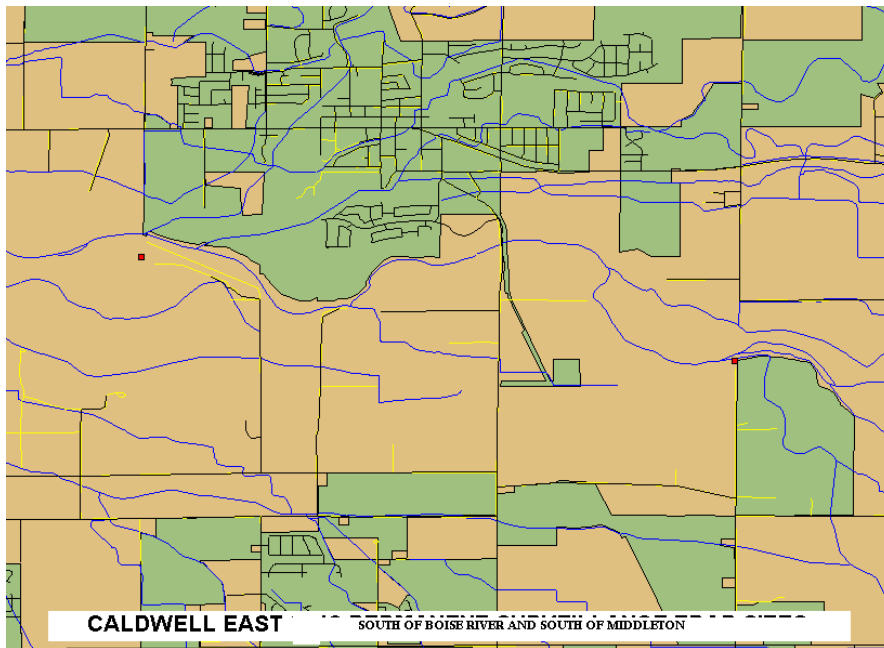
Lake Lowell Sectors: North and South: This constitutes areas around the South side, East Side and North side of Lake Lowell adjacent to the Deer Flat National Wildlife Refuge. This sector also encompasses city limits of Nampa south of Greenhurst Road.



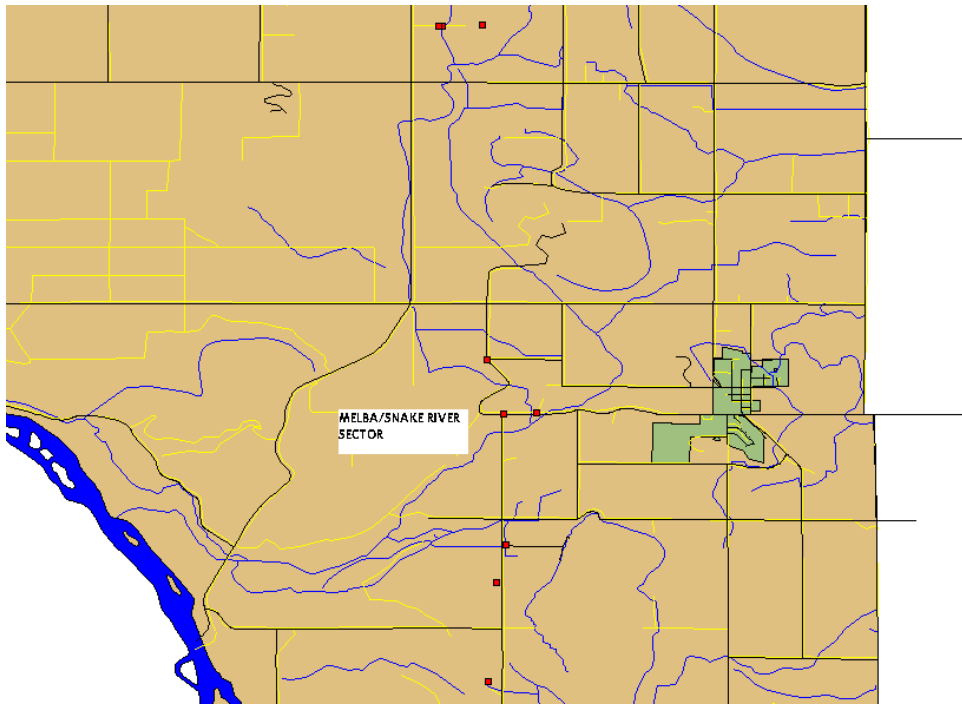
Nampa Sectors (North Nampa and South Nampa): City limits of Nampa. The main sources of mosquitoes are concentrated on the East end of the City and ends at McDermott Road/Ada County Line and to the north to Boise River south of Middleton and Star.



Caldwell Sector: The City Limits of Caldwell. There are several main sources for mosquitoes for this sector: Boise River area, Simplot Potato Processing Plant area and the Canyon Hill area and to the East to Middleton city limits.

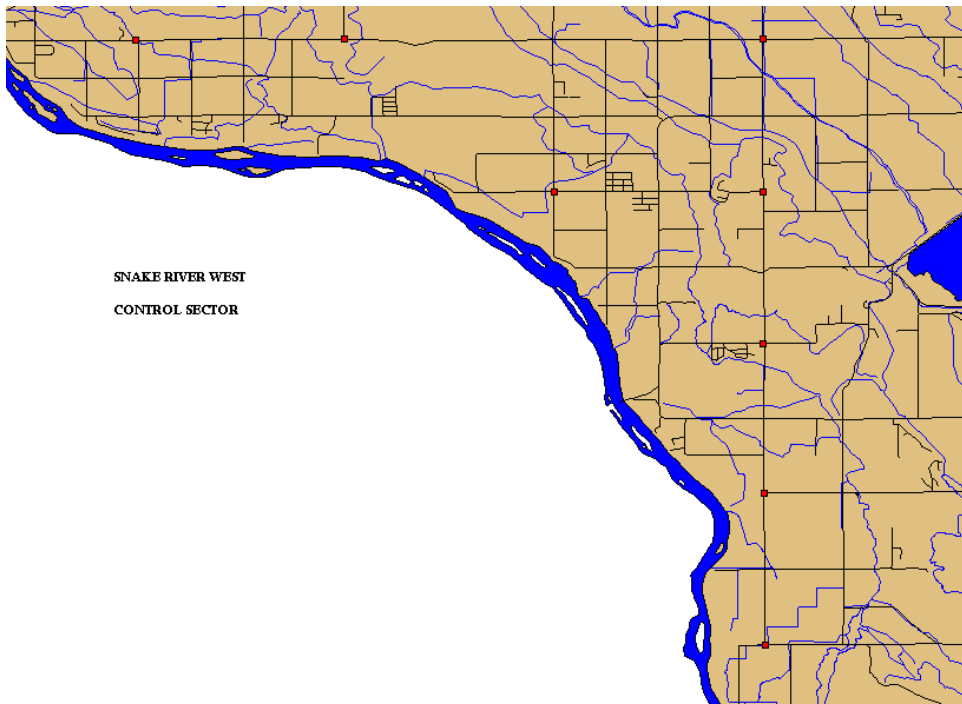


Caldwell East Sector: South of the city of Middleton, south of the Boise River, north of Marble Front Road to the Boise River. North of Nampa and East of Caldwell.

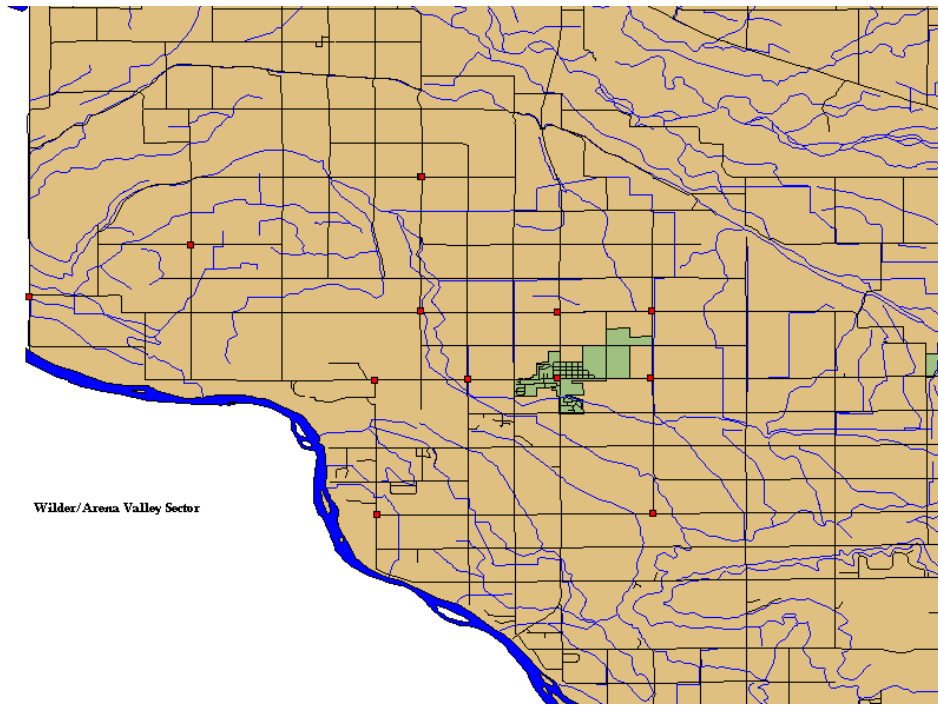


Melba/Snake River Sector:

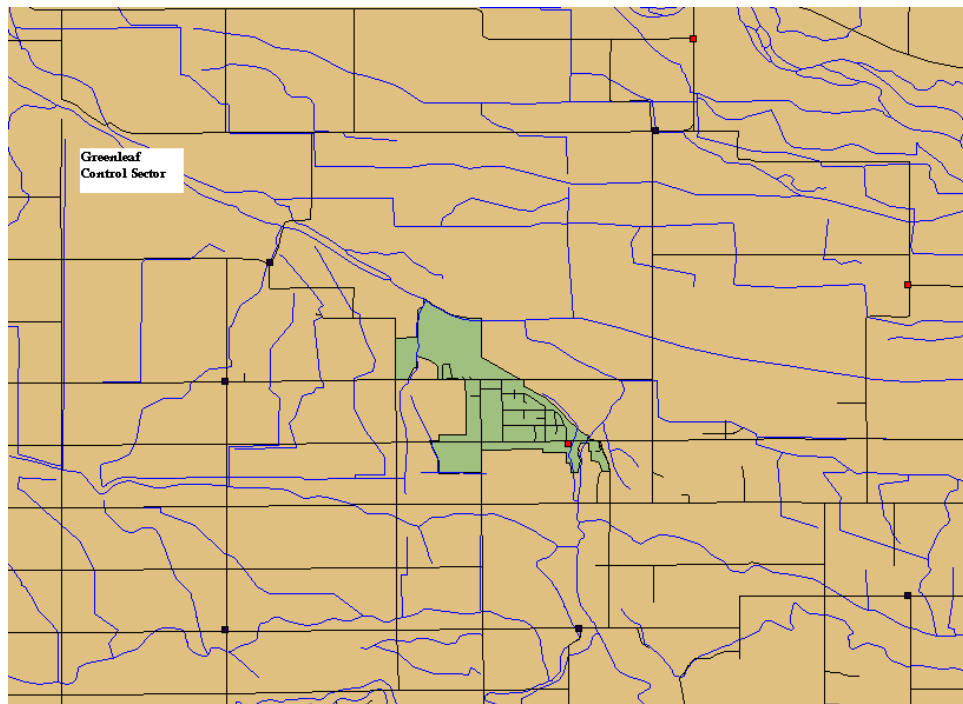
Map Rock Road to the west to Celebration Park to the east and also includes the city of Melba and borders to the north at Belmont Road.



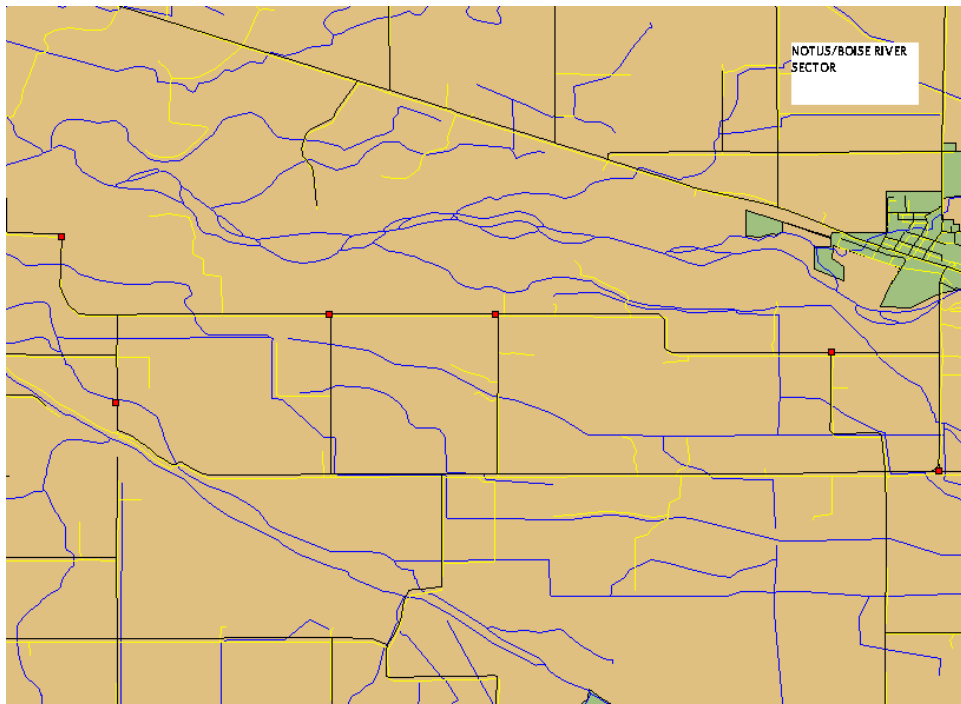
Snake River West: From Sunnyslope area to Marsing Bridge and North to Ustick Road and Homedale city limits.



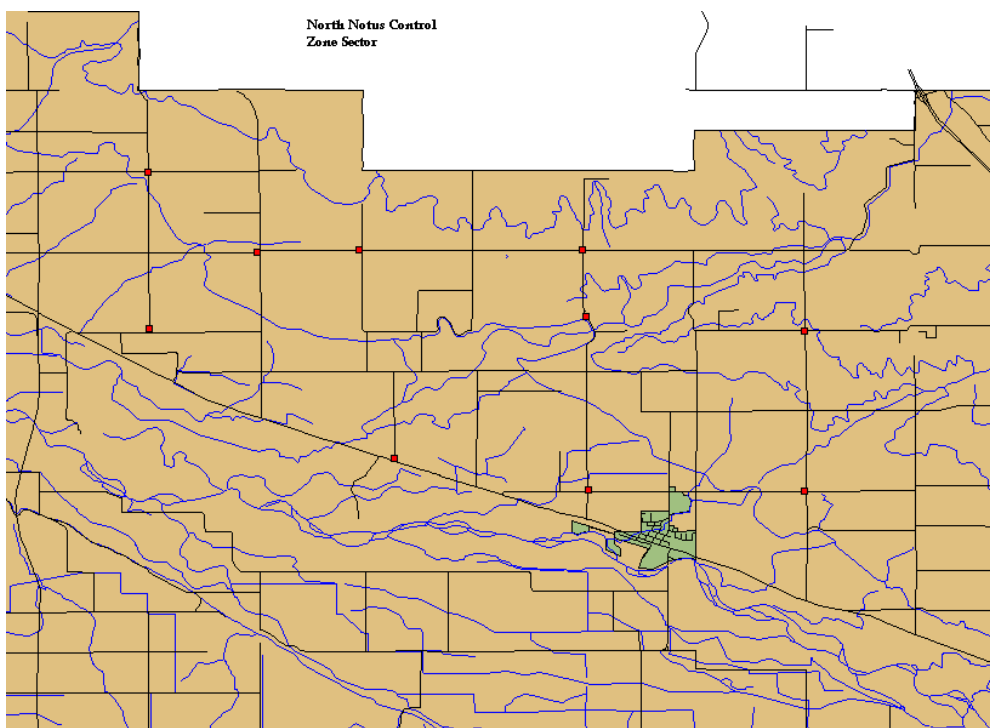
Wilder /Arena Valley Sector: The Wilder Sector includes Arena Valley area to the West, the City of Wilder to River Bend Golf Course and Homedale city limits.



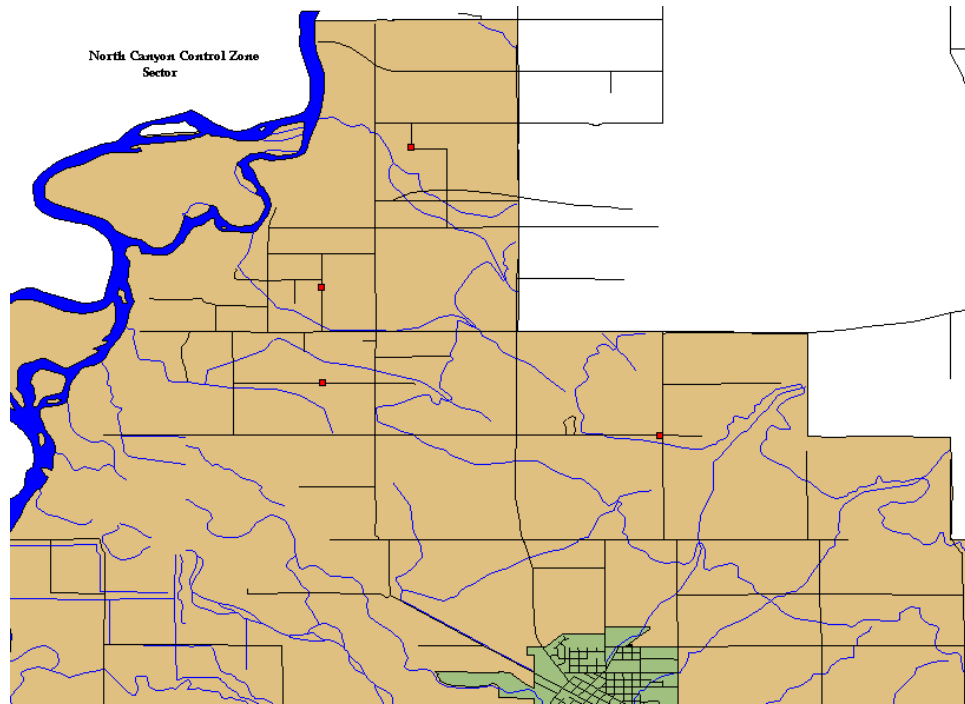
Greenleaf Sector: Ustick Road to the south and Howe Road/Allendale Road to the North, including the city of Greenleaf and along Simplot Blvd. to Simplot potato processing plant to the east.



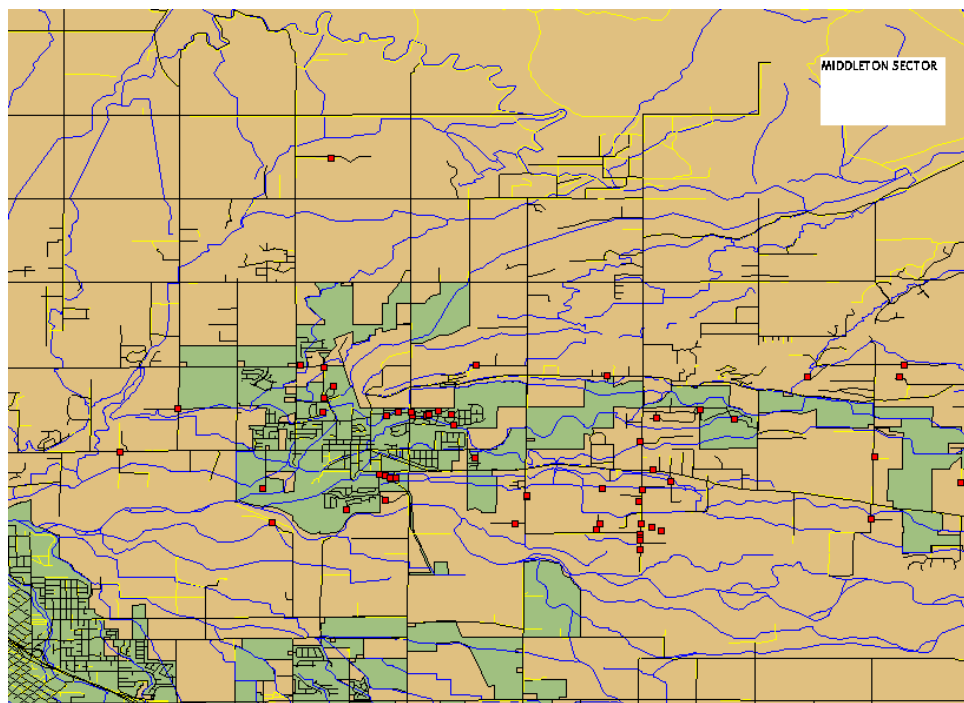
Notus/Boise River Road Sector: From Howe Road to the North to Boise River Road and to the East to Dixie River Road; To the West along Boise River to Highway 95.



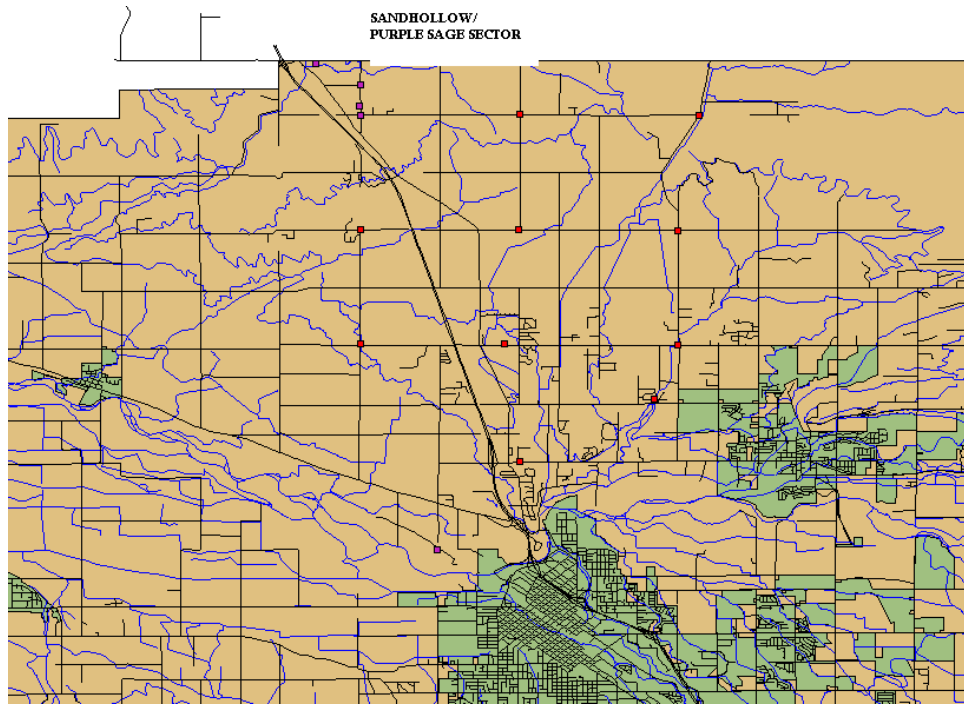
Notus North Sector: North of the Boise River and along Hwy. 20-26 and including the city of Notus and north to Market Road and Payette County



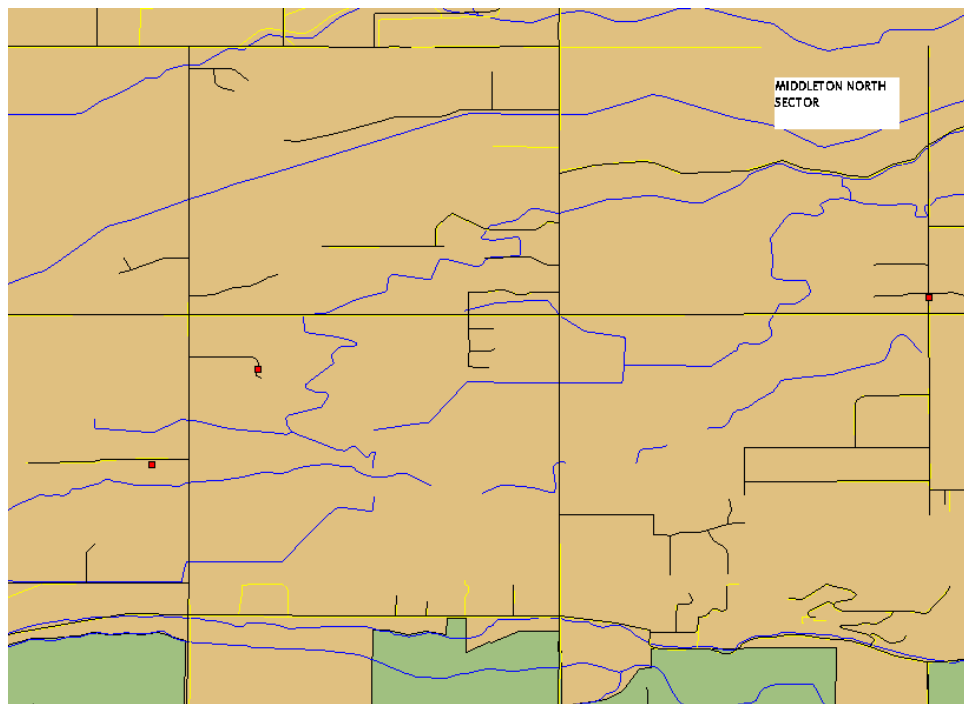
North Canyon Sector: North of Klahr Road to Payette County Line, to Oregon State Line Nyssa Bridge and Apple Valley and to the East of Anderson Corners to Payette County Line.



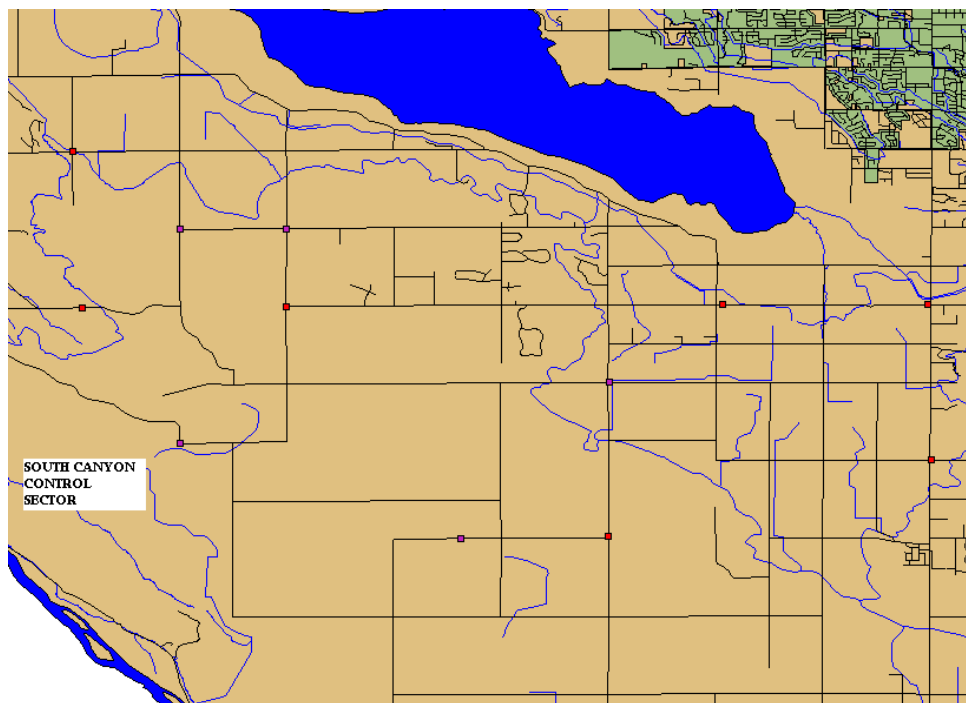
Middleton Sector: City of Middleton to Ada County line; to the North to Willis Road and to the South to Boise River and to the West to I-84.



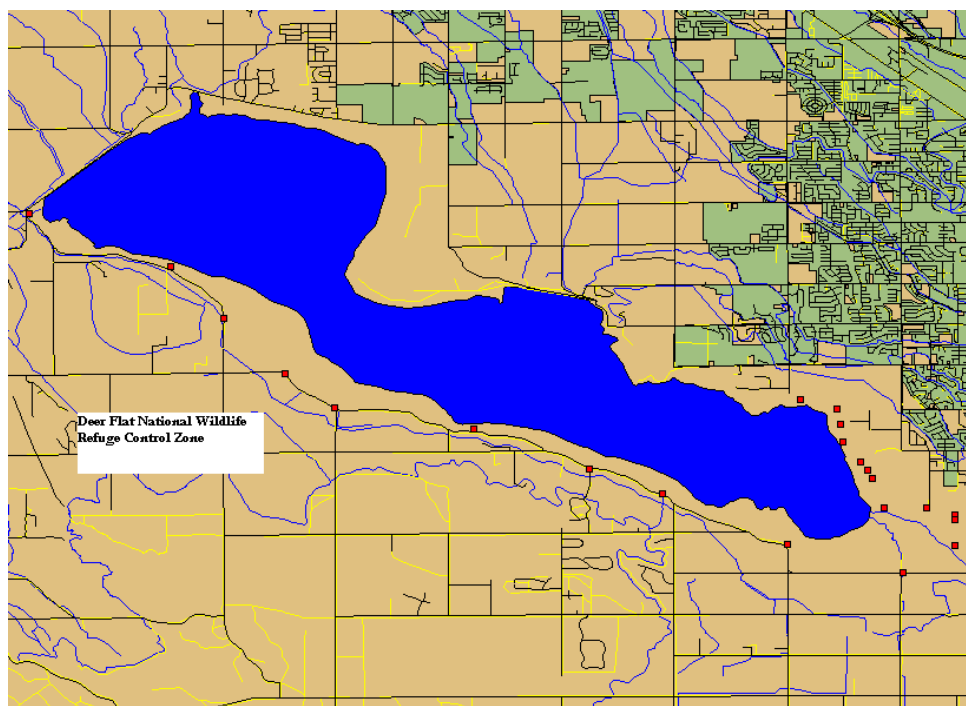
Sand Hollow/Purple Sage Sector: Oasis Road to the North and Payette County line/Gem County line, Purple Sage Golf Course and to the West to Stafford Lane. Farmway Village to Highway 20-26.



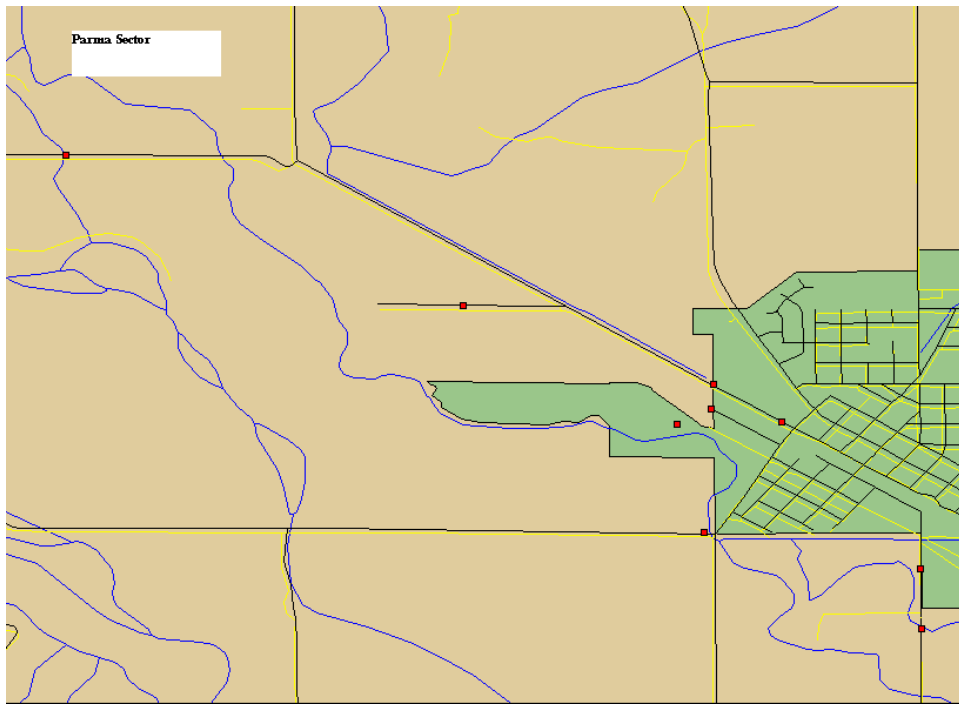
North Middleton Sector: North of Foothill Road to Gem County Line and East of Cemetery Road to Ada County Line.



South Canyon Sector: South of Deerflat Road, West of Powerline Road, South to Bowmont Lane.



Deer Flat National Wildlife Sector: The Boundaries of Deer Flat Wildlife Refuge and Lake Lowell.



Parma Sector: The City of Parma, waste water treatment facility, Parma City Park and U of I Ag. Extension Experiment Station. Includes south to Hwy. 16 and Roswell Marsh to Oregon state line and borders to the north at Klahr Road.

CCMAD is divided into nineteen (19) control sectors for operational purposes and management efficiency. Priority control sectors are centered on population densities and where the interaction between mosquitoes and people is the greatest. Sectors are continually evaluated and mosquito larval production sites are updated on a semi-annual basis. Mosquito surveillance is conducted in all control zones and frequency of trapping is dictated by numbers of mosquitoes trapped, species of mosquitoes, diseases activity, and number of complaints by constituents.

Mosquito Surveillance and Disease Surveillance and Testing:

Mosquito surveillance and disease monitoring commenced the week of May 26 and ended on September 3. CCMAD deployed on average twenty (20) CDC-CO₂ baited light traps per night, four nights a week May 26 though September 3. CCMAD conducted West Nile virus testing on pooled (groups of 50 mosquito) test groups each week for disease vectors and random other species pools that are secondary disease vectors. Mosquito surveillance data was posted each week on the CCMAD webpage. There was no disease activity noted in Canyon County in 2010. This marks the first time in five years that this occurred.

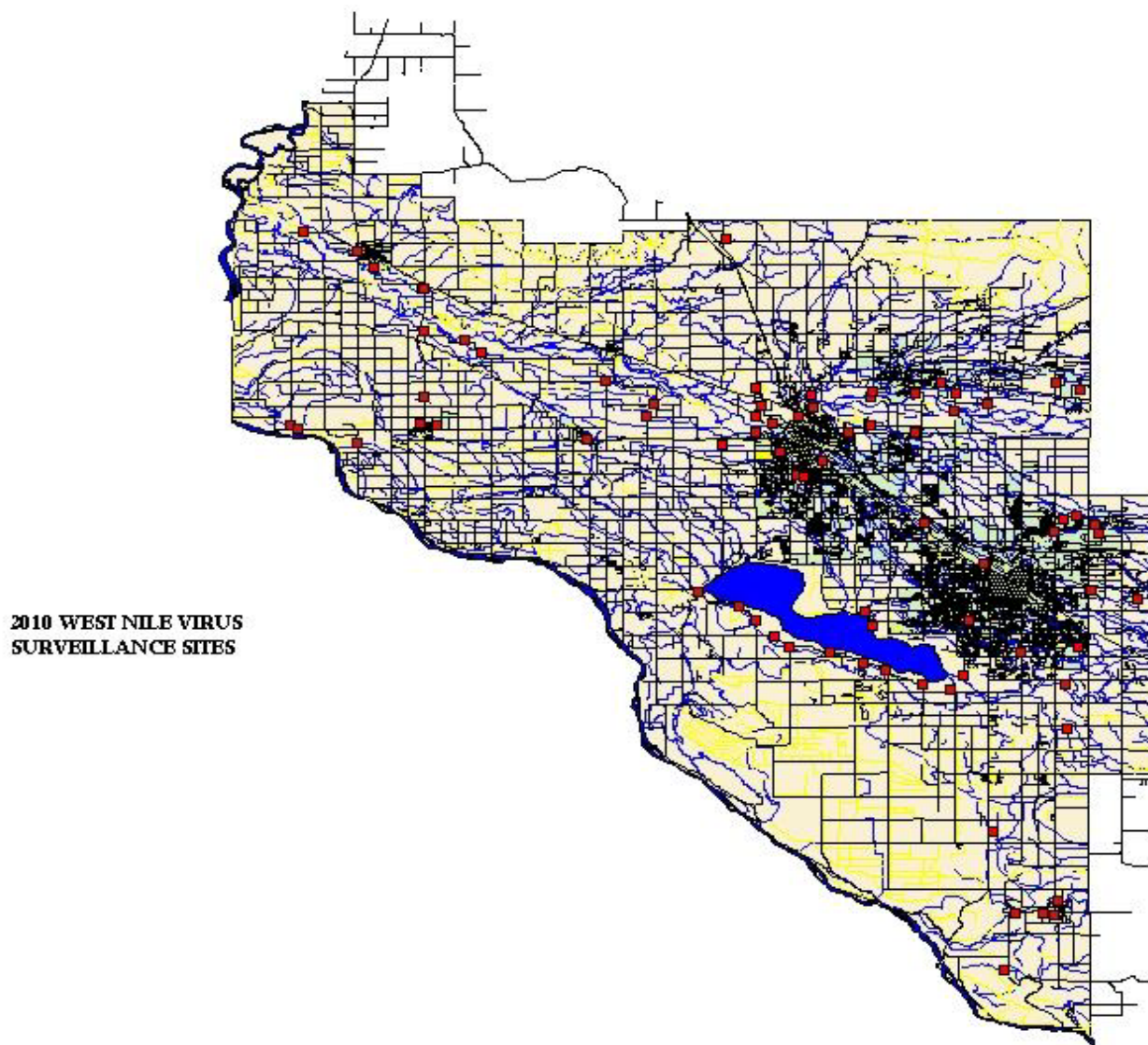


CDC-CO₂ Light baited Mosquito Trap



R.A.M.P. Testing platform and WNV prepared test strips

**MAP OF CANYON COUNTY MOSQUITO ABATEMENT DISTRICT
SERVEILLANCE SITES**



**2010 WEST NILE VIRUS
SURVEILLANCE SITES**

Red Dots indicate surveillance location sites

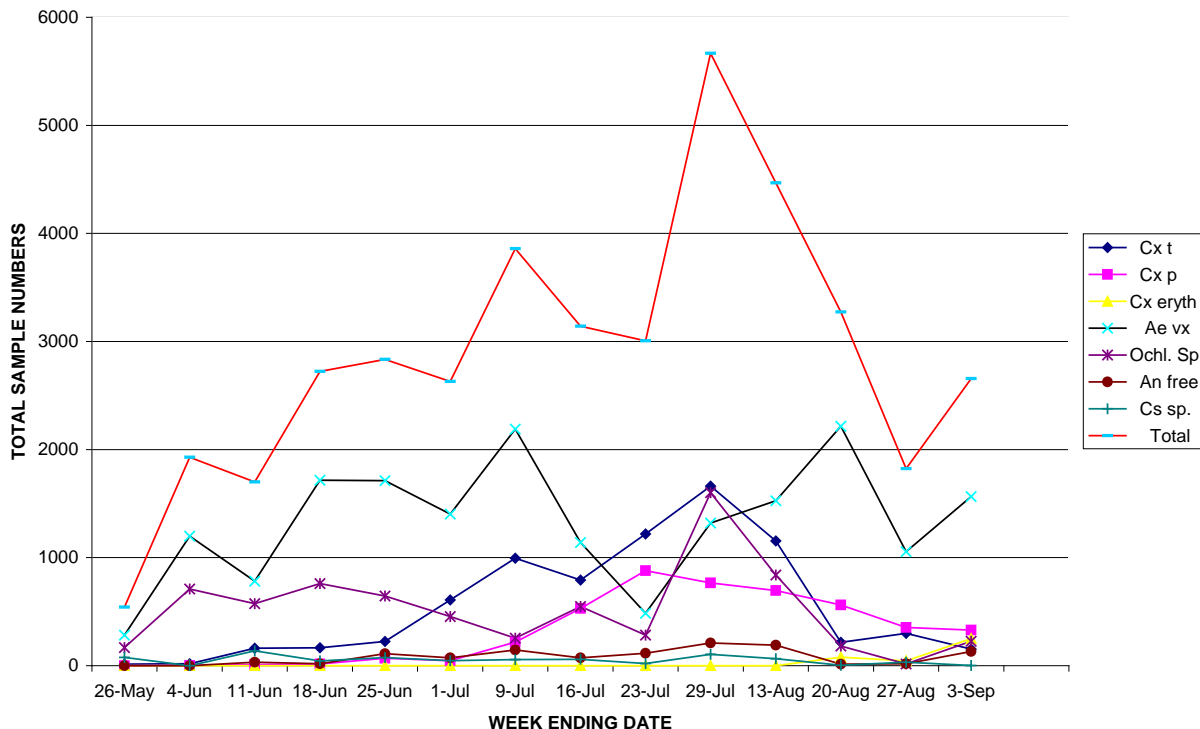
CCMAD WEEKLY SURVEILLANCE DATA

Week Ending Date	Cx t	Cx p	Cx eryth	Ae vx	Ochl sp	An free	Cs sp	Total
May 26	14	0	0	284	168	0	76	542
June 4	19	3	0	1198	709	0	0	1929
June 11	161	11	0	783	575	33	137	1700
June 18	166	17	0	1717	761	18	44	2723
June 25	224	68	0	1712	645	112	74	2835
July 1	608	47	0	1402	455	72	47	2631
July 9	995	218	0	2190	254	145	57	3859
July 16	793	529	0	1141	548	72	59	3142
July 23	1220	880	0	486	284	115	21	3006
July 29	1662	766	0	1321	1602	210	106	5667
Aug 13	1154	695	0	1526	839	190	64	4468
Aug 20	216	562	0	2215	181	15	5	3272
Aug 27	300	354	78	1056	17	19	33	1824
Sept 3	153	329	250	1565	226	132	2	2657
Totals	7685	4479	373	18596	7264	1133	725	40255

Species Legend

Cx t	Culex tarsalis (Western Equine Encephalitis Mosquito): primary WNV Vector
Cx p	Culex pipiens (Northern House Mosquito): Primary WNV Vector
Cx eryth	Culex erythrothorax (Tule Mosquito): WNV Vector
Ae vx	Aedes vexans (Inland Floodwater Mosquito)
Ochl sp	Ochlerotatus sp. (Irrigated Pasture Mosquito)
An free	Anopheles freeborni (Western Malaria Mosquito)
Cs sp.	Culiseta inornata (Western Marsh Mosquito)

CCMAD 2010 WNV Surveillance Data



West Nile Virus and Western Equine Encephalitis Vector Species

Cx t	Culex tarsalis	Western Equine Encephalitis Mosquito	Color Code (Blue)
Cx p	Culex pipiens	Northern House Mosquito	Color Code (Pink)
Cx eryth	Culex erythrothorax	Tule Mosquito	Color Code (Yellow)
Total Mosquito Count	All species trapped		Color Code (Red)

West Nile Virus Testing

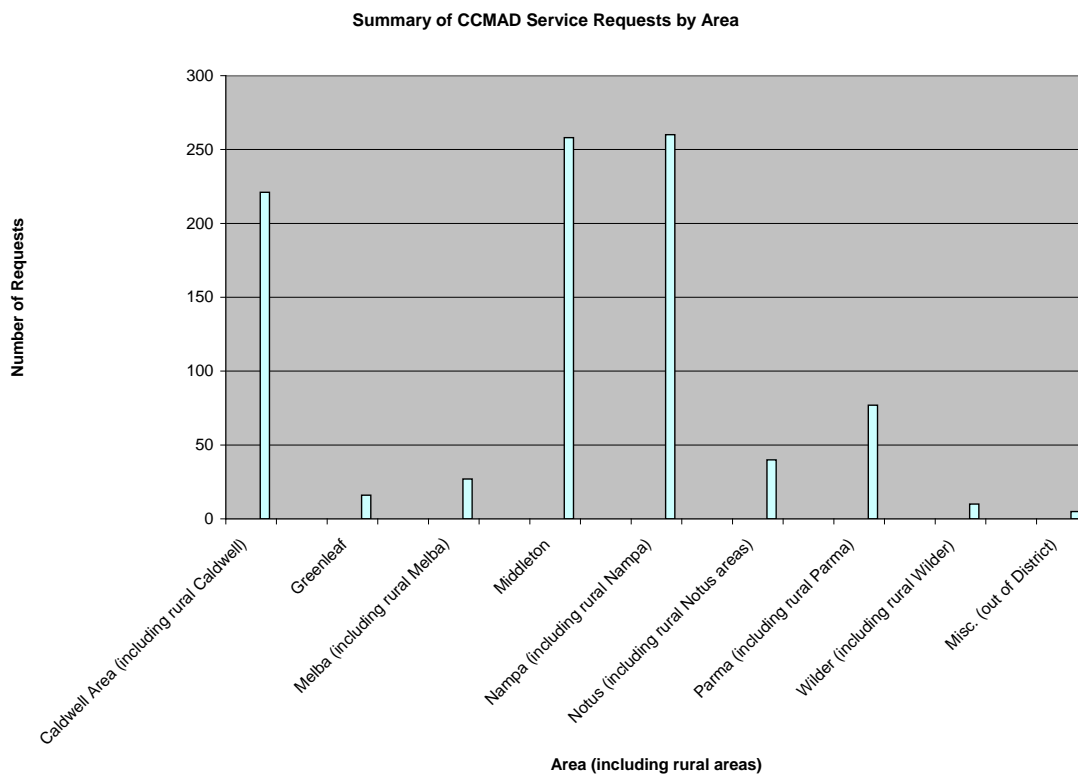
CCMAD again utilized the R.A.M.P. (Rapid Analysis Measurement Platform) to make instant management decisions on West Nile Virus adulticide treatments and response level changes. RAMP reader testing equipment was provided to CCMAD by the Idaho State Department of Health and Welfare. Canyon County received no grant monies to perform West Nile Virus surveillance or testing this past year. CCMAD purchased its own testing kits to perform and determine a disease presence.

Total number of R.A.M.P. tests performed: 419 (2009: 457)
 Total number of West Nile Virus positive tests: 0 (2009: 29)
 Total number of West Nile Virus positive test sites: 0 (2009: 14)

Cost per Ramp Test: \$20.00 total cost: \$8380
 Surveillance labor: \$20,000

SERVICE REQUESTS

Through the year, Canyon County Mosquito Abatement District logs the number of service requests that it receives from constituents. These service requests can range from reporting standing water to reporting mosquito problems. Requests are logged as to what area of the county they were received. For simplicity, CCMAD logged requests form general areas and not specific Control Sectors. Below is chart and graph of service requests by month and area received from.



Summary of Service Requests by Area 2010

Caldwell Area	221
Greenleaf Area	16
Melba Area	27
Middleton Area	258
Nampa Area	260
Notus Area	40
Parma Area	77
Wilder Area	10
Misc. (out of District)	5
Total Service Requests	914

PESTICIDE USE REPORT

The Pesticide use is divided up by CCMAD Control Sectors:

Deer Flat National Wildlife Refuge

Only Bti (*Bacillus thuringiensis israelensis*) product compounds are used on mosquito larval production habitat.

Inspections: 161 visits: 800 man hours (estimated labor cost: \$9720) 2 man team.

Ground applications:

- Total liquid Bti (Vectobac 12AS) applied: 1157 diluted gallons on 387.38 acres

2009 Comparison: 1122 diluted gallons on 392 acres
351 pounds granular Bti on 43 acres

Aerial larvicide applications:

- 14135 pounds of granular Bti (Teknar CG and Vectobac CG) on 1760 acres
- 420 pounds (VectoMax CG (trial study) on 60 acres

Total acres treated: 1820 acres

2009 Comparison: 2000 acres

Total acres treated on Deer Flat National Wildlife Refuge:

- 2207.38 acres

2009 Comparison:

2435 acres

Lake Lowell Sector (excluding DFNWR)

- Liquid Bti: 23 diluted gallons on 7.63 acres
- Agnique MMF .16 gallons on 1 acre
- Altosid XR Briquettes: 193 brq on .715 acres
- Granular Bti: 189 pounds on 37.8 acres

Total mosquito production site habitat treated: 47.15 acres

2009 Comparison:

922 acres treated

Mosquito Adulticide (U.L.V. "neighborhood fogging"): 190.0 gallons (undiluted, ready to use): on 16979.15 acres

2009 Comparison:

215 gallons on 20536 acres

Nampa Sectors (North Nampa and South Nampa)

Mosquito Larvae Control Compounds:

- Total liquid Bti (Bacillus thuringiensis israelensis): 342.87 diluted gallons on 142.81 acres.
- Total Granular Bti: 319.37 pounds on 58.64 acres
- I.G.R (insect grow regulators) catch basin/retention ponds:
IGR Breakdown:
Altosid XRG: .25 pounds on .002 acres
Altosid XR Briquettes: 331 brqs on .743 acres
- Agnique MMF (monomolecular films): .122gal on 6 acres
- VectoMax CG (Bti/Bs): 94 pounds on 13.43 acres

Total mosquito production site habitat acres treated: 221.63 acres

2009 comparison:

397.85 acres treated

Adult Mosquito (U.L.V. “neighborhood fogging”) Control Compounds:

Bio-Mist 4+4/ Kontrol 4-4 (permithrin base products):

- 102.06 gallons (undiluted, ready to use) on 8499.32 acres. (1.63 oz. acre)

2009 comparison: 212 gallons on 16596 acres.

Caldwell Sectors (Caldwell and Caldwell East)

Mosquito Larvae Control Compounds:

- Total liquid Bti: 1392.37 diluted gallons on 507.25 acres.
- Granular Bti: 936.37 pounds on 175.23 acres.
- I.G.R. (insect growth regulator) brand name: Altosid: catch basins/irrigation retention ponds: Total acres treated: 87.4 acres
IGR breakdown:
Altosid XRG: 162 lbs. on 25 acres
Altosid SBG: 286.93 lbs. on 61 acres
Altosid XR: 635 briquettes on 1.40 acres
- Agnique MMF (monomolecular films): .51 gal on 11.68 acres.
- VectoMax CG (Bti/Bs): 97 pounds on 13.86 acres

Total Mosquito production site habitat acres treated: 795.97 acres.

2009 Comparison:

834 acres treated.

Adult Mosquito (U.L.V. “neighborhood fogging”) Control Compounds:

Bio-Mist 4+4/Kontrol 4-4 brand names (permithrin base products):

- 137.48 gallons used on 11824.75 acres.

2009 Comparison:

231 gallons on 19543 acres

Middleton and Middleton North Sectors

Mosquito Larvae Control Compounds:

- Total Liquid Bti: 1194 diluted gallons on 417.88 acres.
- I.G.R. (Insect growth regulators) brand name: Altosid
 - Acres treated: 42.034 acres.
 - IGR breakdown:
 - Altosid XRG: 36.37 lbs. on 8.76 acres
 - Altosid SBG: 136.38 lbs. on 32.8 acres
 - Altosid XR briquettes: 211 briqs. on .474 acres
- Agnique MMF (monomolecular films): .1 gal. on .719 acres
- Bti granular: 4336.7 lbs. on 560.24 acres.
- VectoMax CG (Bti/Bs): 14 lbs. on 2 acres

Total Mosquito production habitat acres treated: 1017.41

2009 Comparison:

Total mosquito production habitat acres treated: 231.3 acres.

Adult Mosquito (U.L.V. “neighborhood fogging”) Control Compounds:

Bio-Mist 4+4/Kontrol 4-4 brand names (permithrin base products):

- 195.13 gallons on 17134.92 acres

2009 Comparison:

171.38 gallons on 14,177.89 acres

Parma Sector including North Canyon Sector

Mosquito Larval Control Compounds:

- Total liquid Bti: 1538.5 gallons on 525.47 acres.
- I.G.R. (Insect growth regulators) brand name: Altosid: Catch basin/irrigation ponds/tail ditches:
 - Acres treated: 66.06 acres
 - Altosid XR-G: 213 lbs. on 39.3 acres.
 - Altosid SBG: 133 lbs. on 26.4 acres.
 - Altosid XR briquettes: 165 briquettes on .36 acres.
- VectoMax CG (Bti/Bs): 45 pounds on 8.43 acres

Total mosquito production habitat acres treated: 710.46

2009 Comparison:

Total mosquito production habitat acres treated: 690 acres.

Adult Mosquito (U.L.V. “fogging”) Control Compounds:

Bio-Mist 4+4/Kontrol 4-4 brand names (permithrin base products):

- 112.87 gallons on 9619.12 acres.

2009 Comparison:

103.64 gallons on 9512 acres

Notus and North Notus Sectors**Mosquito Larval Control Compounds:**

- Total Liquid Bti: 1967.5 gallons on 849.5 acres.
- Total granular Bti: 4184.3 pounds on 552.27 acres.
- I.G.R. (Insect Growth Regulator) Acres treated: 24.64 acres.
 Altosid XR-G: 54 lbs. on 10.12 acres
 Altosid XR Briquettes: 55 briq. on .121 acres.
 Altosid SBG: 101 lbs. on 14.4 acres.
- Agnique MMF (monomolecular films): .461 gallons on 1.26 acres.
- VectoMax CG (Bti/BS): 48 lbs. on 6.83 acres.

Total mosquito habitat production acres treated: 1341.24 acres

2009 Comparison:

661.79 acres treated.

Adult Mosquito (U.L.V. "fogging") Control Compounds:

- 112.87 on 9619 acres

2009 comparison:

254 gallons on 19598.03 acres

Melba/Snake River South Sector**Mosquito Larval Control Compounds:**

- Total liquid Bti: 38 gallons on 3.92 acres.
- Total granular Bti: 8 lbs on 1.2 acres.
- Total I.G. R. Altosid XR briquettes: 63 briq. on .144 acres

Total mosquito habitat production area treated: 13.84 acres.

2009 Comparison:

Total mosquito habitat production area treated: 45.92

Adult Mosquito (U.L.V. "fogging") Control Compounds:

- 31.22 gallons on 2665.1 acres.

2009 Comparison:

72.96 gallons on 6519 acres

Greenleaf Control Sector**Mosquito Larval Control Compounds:**

- Total liquid Bti: 153.5 gallons on 238.75 acres.
- Total granular Bti: 72.12 lbs. on 14.1 acres.
- Agnique MMF (monomolecular film): .04 gallons on .09 acres.

Total mosquito habitat production area treated: 83 acres.

2009 Comparison: No larvicide applications made.

Adult Mosquito (U.L.V. "fogging") Control Compounds:

- 17.02 gallons on 1245.83 acres.

2009 Comparison:

10.57 gallons on 895.3 acres

Wilder/Arena Valley Sector

No larvicide applications made

Adult Mosquito (U.L.V. "fogging") Control Compounds:

- 6.52 gallons on 563.95 acres.

2009 Comparison:

36.23 gallons on 3,419.77 acres

Sandhollow/Purple Sage Sector

No larvicide applications made

Adult Mosquito (U.L.V. "fogging") Control Compounds:

8.31 gallons on 721.4 acres

No comparison data from 2009

Barrier Treatment Operations:

CCMAD conducted Barrier Treatment Operations through out the mosquito season. Barrier treatments are performed on individual constituents' properties for a number of reasons:

- Adjacent to sensitive areas or "no spray" areas where the possibility of pesticide drift may occur.
- Close proximity to active honey bee colonies.
- Adjacent to crop areas not registered for mosquito control products such as pasture grass, hops, mint and certain row crops.
- Properties that are bordering certified organic growers.

Summary of CCMAD Barrier Treatment Operations

Month	Acres treated	Gallons Used
May	16.375	910
June	26.419	2507.02
July	69.442	7013.126
Aug.	63.29	6210.960
Sept.	24.42	2355.05
Total	199.237	18996.16

Product Used for Barrier Treatments: Talstar or Bifen T/I with the active ingredient Bifenthrin.

Rate of Application for Bifenthrin for barrier mosquito control: 16 oz. of Bifenthrin/100 gallons of water applied with power spray equipment calibrated at 50 gallons/acre.

The rate of application varies with weather conditions and property mosquito harborage density.

Total amount of Bifen T/I (Bifenthrin) concentrate used: 23.7 gallons: Cost: \$1753.80

Larvicide Summary

Product	EPA Reg. No	Rate/Acre	Amount Used	Acres Treated	Product Cost
Agnique MMF	53263-28	.075 gal/acre	1.579 gal.	21.05 acres	\$53.97
Altosid SBG	2724-489	4.73 lbs./acre	657.31 lbs.	134.6 acres	\$1728.72
Altosid XR briq	2724-421	1 briq/10sq. ft. or 1 briq/catch basin	1653 briqs.	3.978 acres	\$4892.88
Altosid XR G	2724-451	5.59 lbs./acre	465.62 lbs.	83.18 acres	\$3678.39
Aquabac XT	67637-1	2.0 gal/acre (dilute)/.3 gal (concentrate)/acre	1359.25 gal (dilute) 28 gal. (concentrate)	677.82 acres	\$832.16
Vectobac 12 AS	73049-38	2.67 gal/acre(dilute)/.35gal (concentrate)/acre	6446.33 gal (dilute) 134 gal. (concentrate)	2411.38 acres	\$4221.00
Teknar CG	73049-403	7.31 lbs/acre	11002.73 lbs.	1504 acres	\$20905.19
Vectobac CG	73049-19	7.71 lbs/acre	12188.27 lbs.	1579.48 acres	\$20963.82
VectoMax CG	73049-429	6.87lbs/acre	738 lbs.	107.41 acres	\$5815.44

Total acres treated: 4,631.88

Cost of Products Used: \$63,091.57

Estimated cost in man hours: \$175,000

Aerial Larvicide Application Cost: \$32,000

Mosquito Adulicide Use Summary

Product	EPA Reg. No.	Rate/Acre	Amount Used	Acres treated	Product Cost
BioMist 4+4	8329-35	(ave.) 1.48 oz./acre	70 gallons	6054 acres	\$2216.90
Kontrol 4-4	73748-4	(ave.) 1.48 oz./acre	772 gallons	66608 acres	\$24086.00

Total Acres treated with Mosquito Adulicide (U.L.V. "fogging") Products: 72662 acres.

Cost of U.L.V. products: \$26,302

Estimated cost in man hours for mosquito adulicide applications; \$25,000

SUMMARY AND CONCLUSION

There was no positive West Nile Virus activity in the mosquito population noted in the county this past year. This is one of the many contributing factors that resulted in an overall reduction in pesticide use by CCMAD. Other factors that may have contributed to the overall reduction in pesticide use were:

- More public education: CCMAD web page and neighborhood awareness flyers.
- A further awareness of mosquitoes and their habits and biology and reports of standing water.
- Spring weather conditions that led to a reduced population of the Culex species of mosquitoes which are primary vectors of diseases such as West Nile Virus and Western Equine Encephalitis.
- Efficient and expanded larvae control efforts by CCMAD: CCMAD had there resources to conduct expanded aerial larvicide operations over Deer Flat National Wildlife Refuge and over areas of the Boise River between Middleton and Parma. Even though the actual larval control acreage was down, it was targeted and done more effectively and timelier by aircraft.

Mosquito larvicide acres reduced from 6218 acres in 2009 to 4632 acres in 2010, a 25% reduction in acreage treated. Mosquito Adulticide application acreage reduced from 107,343 acres in 2009 to 72663 in 2010. This is a 33% reduction in acreage treated.

More importantly, and which was a goal for CCMAD, was to over all reduce mosquito adulticide operations costs. In 2009 the ratio of mosquito adulticide operations costs to larvicide operations was 56% larvicide operations to 44% adulticide operations. This year, the ratio of overall mosquito larvicide operations costs to adulticide operations was 85% larvicide and 15% adulticide. With the absence of disease activity, adulticide operations were reduced significantly. This coupled with increased and targeted effective aerial larvicide treatments can further lead to a mores sustainable mosquito control program. This is the ultimate goal of the Canyon County Mosquito Abatement District.

Respectfully Submitted,

Ed Burnett,
Director of Operations
Canyon County Mosquito Abatement District