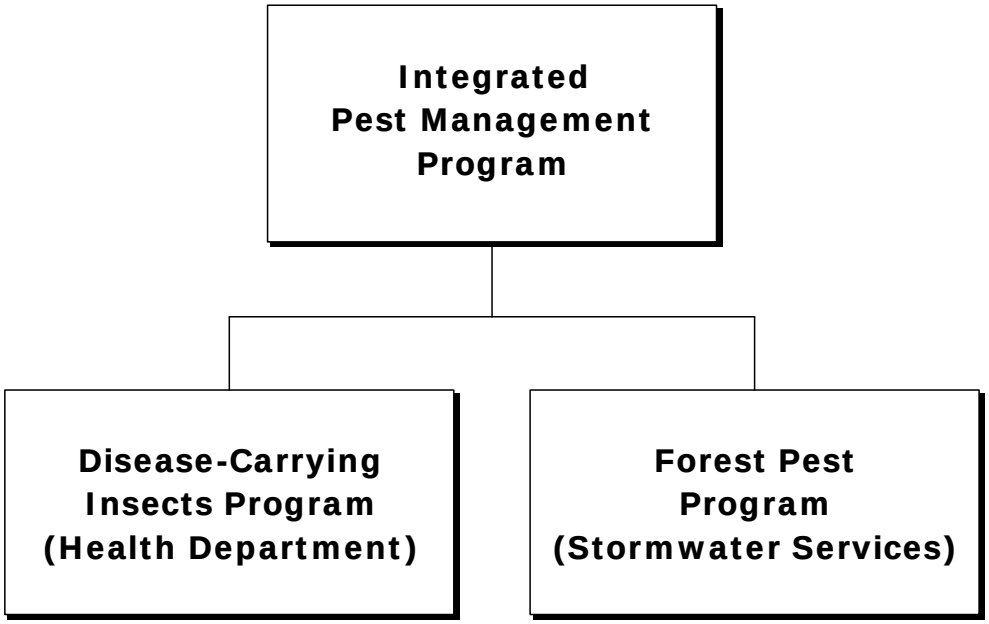
Fund 40080
Integrated Pest Management Program



Mission

To suppress forest pest infestation and insect transmitted human disease throughout the County through surveillance, pest and insect control, as well as public information and education, so that zero percent of the County tree cover is defoliated and human morbidity and mortality are minimized while protecting the environment.

Focus

Fund 40080 (formerly Fund 116), Integrated Pest Management Program, includes two separate programs – the Forest Pest Program managed by Stormwater Services and the Disease-Carrying Insects Program managed by the Health Department. The Forest Pest Program focuses on preventing the spread of State approved forest insects and diseases in the County. The Disease-Carrying Insects Program focuses on maintaining a low incidence of the West Nile virus, Lyme disease, and other tick-borne diseases—as the prevention of epidemics and spread of disease is one of the core functions of the Health Department.

A countywide tax levy financially supports Fund 40080 activities and this levy is subject to change annually due to funding requirements based on the level of infestation. Since FY 2001, the Board of Supervisors-approved tax rate has been $0.001 per $100 assessed value and has provided support for both the Forest Pest and the Disease-Carrying Insects Programs. In FY 2014, the same tax rate, along with the existing fund balance, will continue to support both programs.

Forest Pest Program (FPP)

The Forest Pest Program is a cooperative program with the United States Department of Agriculture (USDA) Forest Service and the Virginia Department of Agriculture and Consumer Services (VDACS). VDACS maintains a list of insects that are eligible for control by this program. Currently, five insects and two diseases are listed: the gypsy moth, cankerworm, emerald ash borer, hemlock woolly adelgid, Asian longhorned beetle, sudden oak death and thousand canker disease.

Fund 40080
Integrated Pest Management Program

The gypsy moth program and the cankerworm program investigate tree damage due to both pests by conducting annual monitoring surveys. The surveys check egg masses and larval densities, are conducted every 2,000 feet throughout the County and are USDA Forest Service approved. Forested areas with high gypsy moth and cankerworm populations are identified for possible treatment the following spring. The proposed treatment plan and resource requirements for these pests are submitted annually to the Board of Supervisors for approval in February. The County may also be eligible for partial reimbursement for aerial treatment costs from the federal government (assuming funding is available). Treatment is conducted in late April through early May before the gypsy moth and cankerworm can damage trees. Throughout the year, staff conducts public hearings, displays information at fairs and exhibits, and distributes brochures, educating Fairfax County communities about pest suppression methods and measures that they may take to alleviate potential forest pest population infestations.

It is noted that the size of pest populations for gypsy moths and cankerworms is cyclical. Populations will be high for a period of years, and then drop for a period, only to rise again. For example, in the early to mid-1990s, annual treatment requirements for the gypsy moth fluctuated from 3,000 to 45,000 acres. In recent years, gypsy moth populations have moderated. Since FY 2001, treatment acreage has fluctuated between zero acres and 5,500 acres annually, with the average being 2,100 acres. Based on field surveys conducted in the fall of 2012, staff estimates that no acres will require treatment in FY 2014. Cankerworm populations have increased in recent years. Staff anticipates a moderate aerial treatment program in FY 2014. The FY 2014 budget provides capacity to treat 500 acres for gypsy moths and 500 acres for cankerworms, should egg mass surveys conducted between August and January of that fiscal year indicate the need.

The emergence of the emerald ash borer in Fairfax County was identified by VDACS in late 2003. In an effort to ensure that the insects did not spread any further, guidance was given by the USDA Animal Plant Health Inspection Service (APHIS) regarding eradication. Eradication efforts took place in spring 2004 before the adult borers emerged. Those efforts were coordinated among Fairfax County Forest Pest Program staff, APHIS, and VDACS and federal funding for eradication efforts was provided to the State. Forest Pest Program staffs continue to assist in eradication efforts through monitoring and surveying the treated area; however, County financial support for these efforts is not expected to be significant due to the relatively low emerald ash borer populations found in recent years. In July 2008, staff identified three infestations in the Newington, Herndon and Bailey's Crossroads areas and one in the Fair Oaks area in July 2009. As a result of these infestations, USDA and VDACS have established a quarantine in northern Virginia which prohibits ash wood material from leaving the area. Fairfax County staff has also implemented an outreach program to inform public and private entities of the relevant state and federal regulations.

On average, County staff annually treats 2,100 acres to combat the gypsy moth infestations.

In March 2011, the Forest Pest Program added monitoring and outreach activities for two additional tree diseases (Thousand Cankers Disease of Black Walnut and

Sudden Oak Death) and one additional insect (Asian Long horned Beetle) to its suppression plan. While staff must petition VDACS to add additional pests to the list of insects and diseases that can be controlled by service districts in Virginia, past experience with new insects and diseases has proven that diligent monitoring, detection, and prevention are much more cost effective and accepted by the public than control.

Black Walnut (*Juglans nigra*) is a tree native to Fairfax County. In the summers of 2010 and 2011, black walnut trees were observed to be declining near Knoxville, Tennessee and Richmond, Virginia. Foresters confirmed that a disease called thousand cankers disease and the walnut twig beetle (*Pityophthorus juglandis*) that spreads it had been artificially introduced to the eastern United States from the west. During the summer of 2012, staff captured the walnut twig beetle at various sites in Fairfax County. VDACS isolated the thousand cankers disease fungus from these trees and has placed Fairfax County under quarantine status, similar to the conditions in place for the emerald ash borer. Staff recommends that resources in the form of an outreach program be developed in order to continue monitoring for this disease. Key targets of the outreach effort will include homeowners and private tree care companies.

Sudden Oak Death is caused by a fungus (*Phytophtora ramorum*) that has caused wide-scale tree mortality in the western United States since 1995. Fortunately, this disease has been found only in isolated locations in the eastern United States and officials feel that these infestations have been contained. Diligent monitoring is critical in slowing the spread of this disease and recent testing methods that are simple and cost-effective have been developed. Consequently, staff will implement these monitoring methods and develop a management plan that will address appropriate actions should Sudden Oak Death be found in Fairfax County. Part of this management plan will include an outreach component that will educate private and public groups on this disease and its control.

The Integrated Pest Management Program supports the following County Vision Elements:

- ***Maintaining Safe and Caring Communities***
- ***Creating a Culture of Engagement***
- ***Connecting People and Places***
- ***Practicing Environmental Stewardship***
- ***Building Livable Spaces***
- ***Exercising Corporate Stewardship***

The Asian Long-horned Beetle (*Anoplophora glabripennis*) is an invasive, wood-boring beetle that, like the emerald ash borer, has the potential to have drastic economic and social impacts should it be introduced in Fairfax County. The larvae will infest and kill trees by boring into the heartwood of a tree and disrupting its nutrient flow. Imported into the United States via wood packing material used in shipping, infestations of this insect in or near Chicago, New York, and Boston have been discovered since the mid 1990's. These pests will infest many hardwood tree species but seems to prefer maple species, which are one of the predominant trees in Fairfax County's urban forest ecosystem. According to the United States Forest Service, most of the infestation found in the United States have been identified by tree care professionals and informed homeowners. Consequently, staff recommends development of a management plan to address such monitoring and outreach for this invasive species.

Quarantine Status

Agricultural quarantines are implemented for invasive pests in order to eradicate or slow their spread. The quarantines currently in effect in Fairfax County are intended to slow the spread of the target insects and not intended to eradicate them. In the United States, eradication is only attempted when an invasive is discovered early and its populations are small enough to be contained. There are no set end dates to the quarantines in Fairfax County.

Typically, a quarantine is established by a State and by the United States Department of Agriculture on a county by county basis. Once a sufficiently large enough area is infested, the State will determine that all of the State is generally infested and the issue is taken over by USDA. Forest pest quarantines are not an unusual or a historically recent method of controlling the spread of pests. The gypsy moth was first quarantined by state and federal governments in 1912 and continues to be quarantined today. Research has proven that by slowing the spread of an invasive insect, uninfested localities can avoid the extraordinary costs of attempting to control it.

Emerald Ash Borer (EAB) was first quarantined in northern Virginia in 2008. Since that time numerous sites around the State have been confirmed as infested with EAB. In the summer of 2012, the Virginia Department of Agriculture and Consumer Services determined that the entire state is generally infested and is now part of the USDA quarantine. Presumably, this quarantine will stay in effect indefinitely.

Thousand cankers disease (TCD) is relatively new in regard to forest health issues. This disease is spread by a tiny bark beetle and is very difficult to detect. Staff found the bark beetle in Fairfax County in the summer of 2012, and VDACS reacted by implementing a quarantine of all walnut products. Currently, several counties in Virginia are under quarantine for TCD. If and when the disease/bark beetle is found in sufficient numbers it is expected that VDACS will quarantine the entire State. There is no existing Federal regulation in regard to TCD. It is unclear at this time, what will happen if the entire State or other States detect this disease.

Outreach

The Forest Pest Program has used outreach as a management tool since the early 1980's. With the addition of TCD, EAB, and the potential for the appearance of sudden oak death (SOD) and Asian Long-horned Beetle (ALB) staff has modified the program's outreach activities. During the last fiscal year, staff have:

- Modified the County internet site to include the new pests. This information is intended primarily for homeowners and provides pest identification tools and contact information for staff.
- Held an invasive species seminar for tree care professionals in May 2012. Registration for 80 individuals was offered and quickly reserved. Many invasive pests are detected by tree care professionals. The intent of this program was not only educational, but was intended to create a partnership with the industry in order to assist the County in detection.
- Offered educational programs to school children. During the 2011-2012 school year, staff conducted school outreach activities that reached 2,941 pupils. Different curriculum were developed to address age groups as appropriate and these programs satisfied Science Standards of Learning (SOL) requirements for 3.5c, 3.5 (d), 3.8, 3.10, 4.4, 4.5, 4.8 (a,b,d), LS.4 (a), LS 6, LS.9(b), LS.11 (b), BIO 3 (d), BIO 9 (d,e).

- Attended County functions such as Celebrate Fairfax, Fall for Fairfax, Arbor Day, and the 4H Fair. Emphasis at these events was directed towards the new emerging forest pest issues of the County.
- Created the Capital Region Invasive Pest Symposia (CRIPS). This group is composed of public and private professionals in the forest health field. The mission of this group is to exchange ideas and ensure that all are aware of emerging pest issues. This group meets periodically and discusses issues in a roundtable manner and attendance is usually between 35 and 75 individuals. Speakers are usually invited to address a particular topic.

Management Plans
It should be noted that staff recommended developing and implementing management plans for ALB and SOD in prior fiscal years. The nature of invasive insects and diseases is such that it is difficult to make long term predictions on monitoring techniques and response plans. USDA has drafted a management plan for ALB; it outlines a role for localities consistent with what staff had envisioned. For example, County staff can play a critical role in public meetings, notification and mapping. VDACS and the Forest Pest Program are also planning to draft management plans for ALB and SOD. The management plans will act in concert with plans in place by USDA. It is anticipated that these plans will be drafted during the winter of 2012-2013.

Monitoring techniques for ALB and SOD are developing and rapidly changing. Staff is staying informed and will implement changes as appropriate.

Disease-Carrying Insects Program

West Nile Virus and other mosquito diseases
The West Nile virus (WNV) is transmitted from birds to humans through the bite of infected mosquitoes and continues to be a public health concern. The first sign of the virus in Fairfax County was in Calendar Year (CY) 2000 when a dead bird was found infected. The first human cases were detected in CY 2002 and, to date, 34 human cases have been detected. More recently, eight human cases were detected in CY 2012. During this timeframe, three fatalities have occurred—one each in CY 2002, 2004, and 2012.

Inter-jurisdictional cooperation is a key component of the program, allowing for coordination of surveillance and management activities on public lands and with surrounding jurisdictions.

Mosquito and WNV surveillance activities are performed weekly by County staff from May through October. Mosquito surveillance activities also allow the Disease-Carrying Insects Program (DCIP) to monitor for invasive mosquito species. In FY 2012, the Health Department lab began testing mosquitoes for WNV using molecular diagnostics (Reverse-Transcriptase Polymerase Chain Reaction or RT-PCR). Contracted services have been retained for the more labor-intensive preemptive mosquito control activities that require a significant fleet of vehicles and specialized equipment and pesticide storage and supply. The County continues to proactively treat the storm drains in an effort to reduce the population of *Culex* mosquitoes that transmit WNV. Storm drains are treated in three six-week cycles from May through October with one of three larvicides that will be rotated from year to year to avoid or lessen mosquito resistance. Weather conditions are the principal factors that determine the number of storm drains that will be treated any given year. Inspection and larviciding activities are carried out in targeted areas of the County identified as significant mosquito breeding areas. These programs and services will continue in FY 2014.

Lyme diseases and other tick-borne diseases
The bacterium that causes Lyme disease is transmitted from small mammals to humans through the bite of an infected deer tick, also known as the black legged tick (*Ixodes scapularis*), and continues to be a growing public health concern. In Fairfax County, there were 256 human cases of Lyme disease reported in CY 2010, 149 cases in CY 2011, and 101 cases in CY 2012. Other tick-borne diseases reported in Fairfax County are: Spotted Fever Group Rickettsias (11 cases in CY 2010, 20 cases in CY 2011, and 26 in CY 2012); Ehrlichiosis/Anaplasmosis (seven cases in CY 2010, 17 cases in CY 2011, and six cases in CY 2012); and Q fever (one case in CY 2010, no cases in CY 2011, and no cases in CY 2012).

The County tick surveillance program was initiated to determine the distribution and infection rate of the bacterium (*Borrelia burgdorferi*) that causes Lyme disease. Contract services have been obtained for the molecular identification (Polymerase Chain Reaction or PCR) of the various pathogens that may be transmitted by the four human-biting tick species in the County. The DCIP offers a tick identification service for County residents to inform them of the type of tick that has bitten them. In FY 2011, DCIP was able to detect the establishment of a non-native species of tick in the County (i.e., the Gulf Coast tick, *Amblyomma maculatum*) that is the vector of a bacterium (*Rickettsia parkeri*) causing a spotted fever disease. Following detection, focused efforts are being used to monitor and try to eliminate this population. These programs and services will continue in FY 2014.

In FY 2010, the groundwork was laid for a collaborative three year tick control pilot project between the Police Department and the Health Department's Disease Carrying Insect Program. Supplemental feeding stations, known as four-poster deer treatment stations, were deployed to two areas of the County. These devices apply an insecticide to the deer while they are feeding, thus killing the ticks that are on the deer. Two test and two control areas are being utilized for a total of twenty stations in the two test areas of the County. Tick surveillance in the two test and two control areas began in FY 2010 and will continue until the end of the three year project. The four-poster stations were deployed in the two test areas in the spring of CY 2012.

Outreach and Education
The outreach and education component of the DCIP is aimed at increasing residents' awareness of personal protection actions that can be taken against mosquitoes and ticks, and the reduction of mosquitoes, ticks, and mosquito breeding areas on private property. The program continues to produce and distribute outreach material in English, Chinese, Farsi, Korean, Spanish, Urdu and Vietnamese. In FY 2012, the program produced and printed the eighth edition 18-month "Fight the Bite" calendar with complementary captions, facts, figures, important dates, and helpful reminders of things for readers to do around the home to manage mosquitoes and ticks. In addition, the calendar provides helpful hints to protect residents from mosquito- and tick-borne diseases. General facts, local figures and brief descriptions of the County's efforts were included to educate the public about basic mosquito and tick biology and inform them specifically about mosquitoes, ticks, West Nile virus and Lyme disease in Fairfax County. A fourth children's book about mosquitoes and ticks entitled, Bite Buster in Fight the Bite, was printed in late FY 2012. All the educational material is available on the County's Web site. Outreach and education materials will be created, updated, and printed as needed in FY 2014.

Fund 40080
Integrated Pest Management Program

Budget and Staff Resources

Category	FY 2012 Actual	FY 2013 Adopted	FY 2013 Revised	FY 2014 Advertised	FY 2014 Adopted
FUNDING					
Expenditures:					
Personnel Services	$1,062,040	$1,256,272	$1,256,272	$1,271,763	$1,271,763
Operating Expenses	1,047,674	1,827,847	1,825,005	1,827,847	1,827,847
Capital Equipment	133,568	0	38,459	0	0
Total Expenditures	$2,243,282	$3,084,119	$3,119,736	$3,099,610	$3,099,610
AUTHORIZED POSITIONS/FULL-TIME EQUIVALENT (FTE)					
Regular	12 / 12	12 / 12	12 / 12	12 / 12	12 / 12

Summary by Program

Category	FY 2012 Actual	FY 2013 Adopted	FY 2013 Revised	FY 2014 Advertised	FY 2014 Adopted
Forest Pest Program					
EXPENDITURES					
Total Expenditures	$723,233	$1,091,533	$1,091,877	$1,098,568	$1,098,568
AUTHORIZED POSITIONS/FULL-TIME EQUIVALENT (FTE)					
Regular	7 / 7	7 / 7	7 / 7	7 / 7	7 / 7
Disease-Carrying Insects Program					
EXPENDITURES					
Total Expenditures	$1,520,049	$1,992,586	$2,027,859	$2,001,042	$2,001,042
AUTHORIZED POSITIONS/FULL-TIME EQUIVALENT (FTE)					
Regular	5 / 5	5 / 5	5 / 5	5 / 5	5 / 5

FOREST PEST PROGRAM

1 Urban Forester III
4 Urban Foresters II
1 Administrative Assistant II
1 Information Technology Technician III

DISEASE-CARRYING INSECTS PROGRAM

1 Environmental Health Supervisor
1 Environmental Health Specialist III
2 Environmental Health Specialists II
1 Administrative Assistant III

TOTAL POSITIONS
12 Positions / 12.0 FTE

FY 2014 Funding Adjustments

The following funding adjustments from the FY 2013 Adopted Budget Plan are necessary to support the FY 2014 program. Included are all adjustments recommended by the County Executive that were approved by the Board of Supervisors, as well as any additional Board of Supervisors' actions, as approved in the adoption of the budget on April 30, 2013.

- **Employee Compensation** **$15,036**
  An increase of $15,036 in Personnel Services reflects the full year impact of the FY 2013 2.5 percent performance-based scale and salary increase, effective January 2013, for non-uniformed employees. It should be noted that no funding is included for additional employee compensation for this department in FY 2014.

- **Other Post-Employment Benefits** **$455**
  An increase of $455 is required to reflect increased costs associated with providing Other Post-Employment Benefits (OPEBs) to retirees, including the Retiree Health Benefits Subsidy. Before FY 2011, costs related to these benefits were paid solely by the General Fund; however, these annual costs are now spread across funds in order to more appropriately reflect benefit-related expenses for the employees within each fund. For more information on Other Post-Employment Benefits, please refer to Fund 73030, OPEB Trust Fund, in Volume 2 of the FY 2014 Adopted Budget Plan.

- **Transfer to the General Fund for Indirect Costs**
  It should be noted that $138,000 is included as a transfer to the General Fund beginning in the FY 2014 Adopted Budget Plan to partially offset central support services supported by the General Fund which benefit Fund 40080, Integrated Pest Management. These indirect costs include support services such as Human Resources, Purchasing, Budget and other administrative services.

Changes to FY 2013 Adopted Budget Plan

The following funding adjustments reflect all approved changes in the FY 2013 Revised Budget Plan since passage of the FY 2013 Adopted Budget Plan. Included are all adjustments made as part of the FY 2012 Carryover Review, FY 2013 Third Quarter Review, and all other approved changes through April 23, 2013.

- **Carryover Adjustments** **$35,617**
  As part of the *FY 2012 Carryover Review*, the Board of Supervisors approved encumbered funding of $35,617 for contractual obligations for the treatment of storm drains and the tick testing program within the Disease Carrying Insect Program.

Fund 40080
Integrated Pest Management Program

Key Performance Measures

Indicator	Prior Year Actuals FY 2010 Actual	FY 2011 Actual	FY 2012 Estimate/Actual	Current Estimate FY 2013	Future Estimate FY 2014
Integrated Pest Management Program					
Percent of County tree defoliation resulting from gypsy moth and cankerworm infestation	0%	0%	0% / 0%	1%	1%
Confirmed human cases of West Nile virus in Fairfax County, Fairfax City and Falls Church City as reported by the Virginia Department of Health	2	1	1 / 1	1	1

A complete list of performance measures can be viewed at www.fairfaxcounty.gov/dmb/fy2014/adopted/pm/40080.pdf

Performance Measurement Results

Forest Pest Program

There was no aerial treatment for the gypsy moth in the spring of FY 2012. Based on field surveys of the gypsy moth population in the fall of 2012, staff estimates no acres will require treatment in the spring of FY 2013. Based on surveys for the cankerworm, 115 acres of treatment were necessary in the spring of FY 2012, and it is estimated that 300 acres will be required in the spring of FY 2013. Defoliation surveys for both insects conducted in the summer of 2012 indicated that there was very little defoliation in Fairfax County during FY 2012, totaling less than one percent.

Disease-Carrying Insects Program (DCIP)

The goal of DCIP in FY 2013 is to continue to hold the number of human cases of West Nile virus (WNV) as reported by the Virginia Department of Health to no more than one case, the same goal as in the last fiscal year. In FY 2012, there was one human case of WNV in the County.

DCIP costs are based on the number of storm drain treatments and other larvicide treatments carried out by a contractor in a given year, as well as education, outreach and surveillance activities carried out in-house by DCIP. Treatment, although dependent on weather conditions, remain relatively constant throughout the years, maintaining a relatively stable program cost. The total DCIP cost per capita was $1.33 in FY 2012. This is lower than the budgeted estimate of $1.75 per capita due to fewer treatments being done as a result of unfavorable weather conditions. The estimated cost for FY 2013 is based on a higher cost per capita; however, actual spending will depend on environmental factors, insecticide treatments resulting from larval inspections and surveillance activities, as well as follow-up studies for the evaluation of the outreach program.

The tick surveillance program continues in FY 2013. This program will increase the understanding of the magnitude and breadth of tick-borne diseases in the County. The DCIP has a contract in place to test the ticks for pathogens they may transmit. The increased testing of ticks for pathogens and the four-poster deer treatment pilot project will also impact DCIP cost per capita in future years.

Fund 40080
Integrated Pest Management Program

FUND STATEMENT

Fund 40080, Integrated Pest Management Program

	FY 2012 Actual	FY 2013 Adopted Budget Plan	FY 2013 Revised Budget Plan	FY 2014 Advertised Budget Plan	FY 2014 Adopted Budget Plan
Beginning Balance	$3,118,555	$1,763,376	$2,862,842	$1,536,523	$1,536,523
Revenue:					
General Property Taxes	$1,917,078	$1,782,817	$1,782,817	$1,843,968	$1,843,968
Interest on Investments	10,491	10,600	10,600	7,691	7,691
State Reimbursement	60,000	0	0	0	0
Total Revenue	$1,987,569	$1,793,417	$1,793,417	$1,851,659	$1,851,659
Total Available	$5,106,124	$3,556,793	$4,656,259	$3,388,182	$3,388,182
Expenditures:					
Forest Pest Program	$723,233	$1,091,533	$1,091,877	$1,098,568	$1,098,568
Disease-Carrying Insects Program	1,520,049	1,992,586	2,027,859	2,001,042	2,001,042
Total Expenditures	$2,243,282	$3,084,119	$3,119,736	$3,099,610	$3,099,610
Transfers Out:[1]					
General Fund (10001) - Forest Pest Program	$0	$0	$0	$65,039	$65,039
General Fund (10001) - Disease-Carrying Insects Program	0	0	0	72,961	72,961
Total Transfers Out	$0	$0	$0	$138,000	$138,000
Total Disbursements	$2,243,282	$3,084,119	$3,119,736	$3,237,610	$3,237,610
Ending Balance[2]	$2,862,842	$472,674	$1,536,523	$150,572	$150,572
Tax Rate Per $100 of Assessed Value	$0.001	$0.001	$0.001	$0.001	$0.001

[1] Beginning with the FY 2014 Adopted Budget Plan, a transfer to the General Fund is included to partially offset central support services supported by the General Fund which benefit Fund 40080, Integrated Pest Management. These indirect costs include support services such as Human Resources, Purchasing, Budget and other administrative services.

[2] Due to the cyclical nature of pest populations, the treatment requirements supported by this fund may fluctuate from year to year. Therefore, Ending Balances may also fluctuate depending on the level of treatment necessary to suppress gypsy moth, cankerworm, emerald ash borer or West Nile Virus - carrying mosquito populations in a given year.