

# Report to the Mayor and Common Council As Directed by the 2008 City of Madison Budget

## *Alternatives to Improve Stump Grubbing, Street Tree Pruning Cycles and Preparation for the Emerald Ash Borer (EAB)*

### Legistar Number 11695

- 1.0 **Purpose.** The 2008 City of Madison Budget provides in the Operating Budget of both the Parks Division and the Street and Sanitation Division that the following described report be prepared and submitted to the Common Council by July 1, 2008.

"A staff team assigned by the Mayor with members from the Forestry Section of the Division of Parks, Street Division, Human Resources, Common Council, Comptroller's Office, the relevant union representatives and the Mayor's Office will be responsible for exploring alternatives to improve stump grubbing, district pruning cycles and preparedness for the emerald ash borer. Alternatives to be analyzed include, goal setting for the stump grubbing program and sharing additional workload among agencies."

The following staff participated in the preparation of this report:

Marla Eddy, City Forester  
Ray Harmon, Mayoral Assistant  
Chris Kelley, Streets Operations Manager  
Larry Nelson, City Engineer  
Michael O'Brien, Engineering Division (Local 236 Representative)  
Alan Schumacher, Street Superintendent  
Alder Michael Schumacher, District 18  
Chuck Speth, Parks Division (Local 60 Representative)  
Karl VanLith, Human Resources Department  
James Weinstock, Parks Operations Manager  
Si Widstrand, Parks Planner

- 2.0 **Description of the Current Services.** The Forestry Section of the Division of Parks is charged with the planting, pruning and removal of the City's street trees and the trees within parks and golf courses.

The Street Division is charged with the removal of leaves from the right of way, including the leaves from the street trees and the removal of brush placed within the terrace by property owners. This portion of the report will describe the scope and resources applied to the stump grubbing and tree pruning services.

Forestry pruning operations are conducted throughout the year but for spring and fall tree planting operations and snow plowing assignments. The Streets Division stump grubbing operations are restricted to the end of spring street sweeping until the beginning of leaf pickup, or about May 1 to the second week in October. The Forestry and Streets Operational Calendar Comparison is attached as Chart 1.

- 2.1 **Stump Grubbing.**

In 2007, the Forestry Section removed 2,149 trees throughout the City. The Street Division removed 1,687 stumps with resulting in a calculated backlog of 462 stumps.

Chart 2, City of Madison Streets Division Stump Removal 2007, summarizes the resources expended in 2007. The total expenditure is estimated at \$525, 217.75 or a cost per stump of \$311.33.

A stump removal crew consists of the following personnel and equipment:

Table 1  
Stump Grubbing Crew

<u>Employee Classification</u>	<u>Equipment</u>	<u>Task</u>
Street Machine Operator III	Stump Grubber	Grind out the stump
Street Machine Operator III	Vaxcavator	Locate Utilities in proximity of the stump
Street Machine Operator III	Endloader	Clear chips and soil from the hole
Street Machine Operator 1	Dump Truck	Haul Chips and Soil from the hole
Street Machine Operator 1	Dump Truck w/Spreader	Fill hole with topsoil

The location of existing utilities is a critical feature of stump grubbing, particularly with the buried natural gas lines that are located within the tree terrace. In accordance with the Wisconsin Statutes, each utility has to mark its utilities within three days of notice and those marks expire within 10 days. Utility marking requires a high degree of coordination for the stump grubbing service.

## 2.2 Tree Pruning Cycles.

### 2.2.1 Scope and Volume of Work.

It is estimated that the City has 105,000 street trees.

The Forestry Section has divided the city's street tree population into 35 tree maintenance districts. Each district has a scheduled street tree pruning cycle. Map 1, shows the Maintenance Districts.

Tree pruning involves two separate labor crews, "Pruning Crews" and "Brush Crews". These crews consist of the following personnel and Equipment.

Table 2  
Pruning Crews and Brush Crews

<u>Employee Classification</u>	<u>Equipment</u>	<u>Task</u>
<b><u>Pruning Crew</u></b>		
Arborist 2	Tower Bucket, 40, 50, or 70 foot height; chain saw(s)	Leadworker Arborist
Arborist 1	Chain saw(s) and pruning equipment tool	Assist the Arborist 2; prune limbs from the ground; cut up and move pruned materials
<b><u>Brush Crews</u></b>		
Equipment Operator 3	Truck w/Hydraulic Clam	Load pruned materials into

		trucks.
Arborist 1 (2 or 3 Positions)	Dump Truck	Cut up and move pruned materials
Public Works Maintenance Worker 2 or 1	Dump Truck	Move pruned materials.

The Forestry Section has six (6) pruning crews and two (2) brush crews. The Forestry Section Organizational Chart is attached as Chart 3.

Currently, the City of Madison Forestry's pruning cycle is at least 15 years, which means that one-fifteenth of the street tree population (7,000 trees) is pruned each year with each tree receiving maintenance once every 15 years. The national standard for a street tree pruning cycle is 8 to 10 years. A 10-year cycle for the City of Madison would allow for 10,500 street trees to be pruned each year. The ability to keep a pruning cycle low is directly related to staff and equipment available. The City of Madison recognizes the following benchmark standards for tree pruning and maintenance:

1. American National Standards Institute (ANSI) A300 Pruning Standards, ANSI Z133.1 Safety Standards.
2. International Society of Arboriculture (ISA) Tree Pruning Guidelines.
3. ISA Best Management Practices Tree Pruning.

The City Council established a 10-year replacement program for sidewalk in 1996. Sidewalk repairs often conflict with street trees and the displacement of sidewalk sections by tree roots is the most significant cause of sidewalk damage.

During the pruning cycle, trees are evaluated for structural problems. All structural problems will either be corrected, or if beyond repair, the tree will be evaluated for possible removal, which avoids the risk of the street tree causing harm to people or property.

In 2006 and 2007 combined, City of Madison Forestry section on average pruned 4,600 street and park trees. But only 1,297 (or 28%) of the numbers of trees pruned were directly related to the pruning cycle, which only required about 1,400 hours (almost a 1:1 ratio). However, the number of requests for pruning averaged 3,300 over the 2 year period and requiring 4,590 work hours or 1.4 hours per tree. The travel time involved in pruning cycle is very minimal as the crews move tree to tree down a city block and work production is at a peak. Just the opposite is true for request pruning.

This information is summarized on Chart 4.

**2.2.2 Resources Applied.** The 2008 Operating Budget of the City of Madison provides \$3,071,394 for the Forestry Service. The total number of employees is included in Appendix B, which also includes the resources to support the service, i.e. Purchased services, supplies and fleet services. The actual positions and personnel are indicated on Chart 3.

Chart 5, "City of Madison Forestry Daily Worksheet Totals, 2005 – 2007", provides insight into the actual breakdown of the Forestry service. For example, tree pruning and tree removal take about the same resources.

**2.2.3 Issues, Concerns, and Trends.** There is a consensus of both the Forestry Section Staff and the Street Division staff that the City is not keeping up with the growth

of its trees. Forestry work within the City's greenways and drainageways has been contracted out. A recent development is that bike paths are generating requests for pruning, which by definition is a higher priority than District Pruning.

- 3.0 **Impact of Emerald Ash Borer.** The Emerald Ash Borer or EAB, which has largely destroyed ash tree cultivation in Michigan and Illinois, has arrived in Wisconsin. Infestations have been confirmed in the Ozaukee and Washington Counties. It is a real concern as the City has 30,000 ash street trees and an estimated 20,000 to 30,000 ash trees on private properties.

If and when EAB arrives in Madison, the response shall need to be of an emergency nature and beyond normal operational processes. For that reason, a plan to respond to EAB is attached as Exhibit A.

- 4.0 **Alternatives to Improve the Services.** The staff team reviewed the flow of work for both services and developed a flow chart for each service. Those flow charts are attached as Chart 1B and Chart 1C. The following alternatives were then considered to increase efficiencies in the stump grubbing service and tree pruning service.

4.1 Develop an Access Data Base for a work order system to track pruning, the removal of trees, grubbing of the stumps and replacement of the trees. This would allow sharing of data between Forestry and Streets to track the progression of work. This database has been constructed and is being tested.

4.2 Discuss with Local 60 the potential of having supervisors and Forestry Specialists determine the replacement tree site and species. Currently, only a Forestry Specialist can make that determination, which requires two separate trips to each of the over 2,100 trees removed per year.

4.3 Contract by a competitive public works bid the stumps that are delaying the tree replacement.

4.4 Increase the table of organization and equipment of the Forestry Section to reduce the scheduled pruning cycle from the present 15 years to 10 years.

Increase the table of organization to provide some increase in resources to prune street trees.

4.5 Increase the table of organization and equipment of the Street Division to remove stumps within a specified time period.

**Table 3**  
**Summary of Operating Budget Impact for**  
**10-Year Pruning Cycle and An Additional Stump Grubbing Crew**

	Parks Forestry	Streets Weed Control	Total
<b>2008 Adopted Budget</b>	3,071,394	555,902	3,627,296
Proposed Additions:			
3 Arborist 1's	185,623		185,623
Reclassify PWMW to Arborist	1,528		1,528
3 Arborist 2's	193,857		193,857
Forestry Specialist	68,524		68,524
Work/Safety Supplies	10,000		10,000
Training	1,350		1,350
Fleet Service/Equipment	84,050		84,050
SMO1 for Stump Cleaning		62,512	62,512
SMO1 for Stump Filling		62,512	62,512
SMO 3 for Vaxcavator		71,050	71,050
SMO 3 for Vaxcavator		71,050	71,050
Stump Grubber		6,200	6,200
Vaxcavator		6,850	6,850
Fleet Service/Equipment		50,749	50,749
<b>Subtotal Proposed Additions</b>	<b>544,932</b>	<b>330,923</b>	<b>875,855</b>
<b>2008 Pro Forma Budget</b>	<b>3,616,326</b>	<b>886,825</b>	<b>4,503,151</b>

**5.0 Recommended Goals for the Services.** It is recommended that the City establish the following benchmarks and goals for the stump grubbing service and the tree pruning service:

5.1 Stumps will be removed within 180-days of tree removal. With prompt notification of tree removals and the priority of replacement, this goal could be achieved with current staff and the contracting out the work as necessary.

On July 11, 2008, the Board of Public Works opened bids for the grubbing of 144 stumps by a private contractor. Only one bid was received but the price was competitive (\$163.60 for a 20-inch diameter stump.) Additional funding will be expended to administer the contract. The bid results are provided as Appendix C.

Future bids may attract additional bidders, particularly if the advertisement is earlier in the year.

Such a goal could not be met during unique events, such as the record snowfall of the winter of 2007 – 2008 or if the City sustained a major windstorm or tornado, as has happened in past years.

The Streets Division could remove stumps in a more rapid fashion without the assistance of private contractors if were provided additional resources were provided. The addition of a stump grubbing crew with the necessary equipment was considered at a cost of \$331,000. These costs are summarized in Table 3 and Appendix A. This crew would also be supplement the Division's snow and ice service but would not be committed to leaf pickup in order to extend the stump grubbing operation through the fall and into the winter season. Given the current budget constraints, this alternative cannot be achieved at this time.

- 5.2 Forestry would prefer to increase its resources to move to a 10-Year pruning cycle. That would require an additional expenditure of about \$546,000 including personnel, equipment and supplies. These costs are summarized in Table 3 and Appendix B. Given the current budget constraints, this alternative cannot be achieved at this time.

The Forestry Section assigns two Pruning Crews (one on the east side and one on the west side of the city) to District Pruning. This will diminish response time for pruning requested by the public in the near future. However, the City Forester makes a good case that long-term efficiencies will accrue if pruning was accomplished on a planned area basis. It is also recommended that District Pruning, if possible, be scheduled to coincide with or take place in the year preceding the sidewalk repair program.

In the event that some resources become available, it is recommended that an Arborist 2 and an appropriate tower truck unit be purchased to add one pruning crew to the Forestry Section. Pruning appears to be the "pinch point" in the operations, at this time. The remaining member of the crew would be an existing Arborist 1 position. Additional brush created by the new crew could be collected by existing Forestry Crews and/or with the assistance of the Street Division.

- 5.2 The Forestry Section and the Streets Division will implement the Access Data Base for a work order system to track pruning, the removal of trees, grubbing of the stumps and replacement of the trees. This database could be included on the City's Web Page in order to provide property owners with information on the status of a particular stump that they are concerned about.
- 5.4 City bargaining staff will meet and confer with Local 60 about having supervisors and Forestry Specialists determine the replacement tree site and species.

- 5.5 Representatives of the Forestry Section and the Street Division, assisted by the Human Resources Department should meet on a monthly basis to discuss efficiencies and cooperative ventures to manage the City's tree inventory.
- 5.6 Further advances of Emerald Ash Borer should be monitored and the Mayor and the Council should be provided with recommendations regarding the necessary resources required to address the impact on the City's ash trees for the 2010 Budget after consideration of the Emerald Ash Borer Report (Exhibit A).

## *Exhibit A*

### **Emerald Ash Borer Management Plan**

An Emerald Ash Borer Management Plan for the City of Madison, Wisconsin pending a revised State of Wisconsin Emerald Ash Borer Response plan.

#### **Emerald Ash Borer**

The Emerald Ash Borer (EAB) is an exotic pest from Asia that is responsible for the death over 12 million ash trees in Michigan, Ohio, Indiana, Pennsylvania, West Virginia and Maryland and Illinois. And on August 4, 2008 EAB was found in Wisconsin near the Village of Newburg in Ozaukee County. (See Map 1) The State of Wisconsin Department of Agriculture, Trade and Consumer Protection Agency (DATCP) has been conducting EAB surveys as well as placing EAB traps in one-mile increments searching for this insect across the state. The City of Madison has participated in the trapping and surveying by removing over 50 city owned ash trees.

EAB feeds and develops in the cambial region (a.k.a. tree plumbing) of all native ash trees (*Fraxinus* spp.) during the summer and fall, and then overwinter in the outer bark. We know that EAB adults can fly at least a ½ mile radius from the tree where they emerge. Humans, however, started many infestations by moving infested ash tree nursery stock, logs and firewood into uninfested areas. Shipments of ash nursery trees and ash logs with bark are now regulated, but the transport of infested firewood remains a problem.

#### *The Threat to Madison's Urban Forest*

The City of Madison publicly owned urban forest is comprised of over 100,000 street trees and over 6,000 acres of park and golf course trees. Of these, approximately 30% of the street trees (30,000) are ash. A complete street tree inventory will be finished in 2009. And unknown at this time is how many ash trees are located on private property.

EAB management is coordinated at the federal level by the U.S. Department of Agriculture (USDA). Due to diminishing federal funds, Wisconsin's EAB management program has eliminated its eradication efforts, changing its strategy to slowing the spread and mitigating the effects of EAB infestation through monitoring and regulation. For Madison this has very important consequences:

- It is possible that EAB will be discovered in the Madison area within the next five years.
- The budget impact and loss of tree canopy make this the biggest threat to Madison forests since Dutch elm disease decimated our American Elm population.



## **Mission Statement**

It is the mission of this program to maintain and enhance the urban forests maximum long-term benefits to the community. The goal is to minimize the impact of the Emerald Ash Borer and potential loss of ash trees to the health of our urban forest using the best scientific advice and lowest effective cost to the community.

## **Purpose**

By implementing the provisions in this management plan, the City is attempting to mitigate the disruption to its human population and its urban forest caused by the pending infestation of the Emerald Ash Borer (EAB). Taking a proactive approach to this invasion will enable the City to address public and private needs in an efficient and effective manner. The City will endeavor to distribute the costs associated with possible and massive tree death over a manageable time period, as well as lessen the social and economic impact that such an extensive loss will have on the quality of life in our community. The plan will provide for extensive public education and communication.

This Plan applies throughout the City on all public properties where ash trees are currently growing, as well as on private properties where such trees may negatively impact public rights-of-ways or other public properties. The response plan is a dynamic document and, as such, changes over time in response to new information about EAB biology and management.

## **Administration**

The City of Madison Forestry Section under Department of Public Works and in collaboration with other city agencies will be responsible for implementing this Plan and seeing that its provisions are carried out.

## ***Plan of Action***

An outbreak of EAB has local, state, national and international impact. Because of the threat to other states and Canada, when and if EAB is found in Wisconsin, there will be a joint response, using local, state and federal authorities and resources according to the 2006 Wisconsin Emerald Ash Borer Response Plan. Because response to EAB includes multiple agencies, authorities and responsibilities, the incident would be managed using the Incident Command System, with Unified Command established at the onset of the response. Unified Command is a team effort, allowing all agencies involved to establish a common set of incident objectives and strategies to which all can subscribe.

Unified Command is initiated as soon as two or more agencies having jurisdictional or functional responsibilities come together on an incident. The Unified Command is especially important on an incident where there may be conflicting priorities. The Unified

Command Team, which includes each agency's Incident Commander (IC), meets before delimitation activities begin. In this meeting, the ICs will discuss and make mutual decisions on strategies, objectives to accomplish the strategy, organizational structure, staff assignments, planning, logistics and financial procedures.

### **Ash Removal**

The City of Madison will continue to conduct a street tree inventory to be completed by the end of 2009. Once the street tree inventory is completed the forestry section will have more information to assess the impact of an EAB infestation in the community. Tree removal will be prioritized with hazardous trees being removed first followed by those that are no longer assets to the community (stressed, dead, dying, or diseased). Utility contractors will be encouraged to remove EAB infested ash within their easements as part of their normal line clearance activities.

### **Protective Pesticide Treatment**

According to Dr. Chris Williamson, Associate Professor, Department of Entomology at U. W. – Madison, the success of using pesticides to control EAB is **not** guaranteed. Pesticides are not 100 percent effective at preventing EAB survival, and therefore, cannot be considered as a viable eradication treatment at this time. In some trials, insecticide treatments were effective, but in other trials the same treatments failed miserably. Some studies conducted over consecutive years revealed that EAB infestations continued to increase despite ongoing treatment applications. Therefore, the most cost-effective option may be to remove and replace the ash tree.

Based on a city wide inventory of public ash trees and current municipal finances, the city will determine which, if any, ash trees will be chemically treated. Because research in this field is currently evolving, the city will monitor all treatments for their effectiveness and future use.

Pesticide treatments may be applied to a publicly owned tree(s) at the residents' discretion and expense, with prior municipal approval. Treated trees will be removed if the City of Madison determines the treatments have failed and EAB infests the tree.

### **Wood Utilization and Disposal**

The City of Madison will no longer allow public access to wood at all city sites to eliminate invasive insect species, fungi and pathogens. The City of Madison will grind all wood debris from city and private sources into 1-inch by 1-inch or smaller. The wood chips will be available at various city sites for free.

The City of Madison will make concerted efforts to find alternative ways to utilize wood waste. This may include partnering with over government agencies or non-profit organizations.

## **Canopy Replacement and Care**

As the budget permits, all removed public ash trees will be replaced with non-host species that will enhance the planting site, are appropriate for the planting site, and add to the diversity and general health of the urban forest. Trees will be planted in accordance to Department of Public Works specifications. Plantings will be budget based and prioritized by canopy cover goals as identified by the City Forester.

## **Postponed Work**

While financial, staffing, and equipment resources are focused on in the EAB Management Plan, some normal forestry section services will either be delayed or put on hold indefinitely. If EAB were found within the city limits, forestry's service will focus only on removing city owned trees that are: infested with EAB, dead, diseased (oak wilt or Dutch Elm), storm damaged and found to be risk to the public. Pruning requests of city trees will be limited to clearing traffic signals or signs.

## **Commercial Tree Contractors**

A licensing system, ensuring that commercial tree companies performing arboricultural work within the City needs to be implemented. All commercial companies involved in tree pruning, removal, stump removal and wood disposal will require a license, proof of insurance and bonding for the protection of residents. A list of licensed firms will be maintained and updated on the City's EAB website and made available for mailing through the City Forester's office.

## **Communication**

### Internal Communication Procedure:

1. Educate and inform all municipal leaders and officials through presentations and written reports to Common Council, Parks Commission, Board of Estimates, and other committees not identified at this time. Develop EAB frequently asked questions (FAQ) document.
2. If EAB is has been found within the City of Madison, information should be provided on exact location of infestation and plans on how it will be addressed. A meeting will be held with the Public Works team, the Mayor, City Forester, Parks Operation Manager, Forestry Operations Supervisor, and the Parks Outreach Coordinator.
3. If EAB has not been found, information should be provided on how the community is addressing EAB through the development of the preparedness plan.
4. Identify person(s) who can answer EAB related questions and provide their contact information.

External Communication Procedure: These procedures would be utilized for disseminating information to the community's residents. The community's external communication protocol should work in tandem with the internal protocol.

1. Inform the community through local media outlets, direct or indirect mailings (i.e. tax/utility bills), newsletters, fliers, public meeting, neighborhood associations, and local garden clubs.
2. Public Service announcements should be created and be distributed to local media to educate the public about EAB.
3. If EAB is has been found, information should be provided on exact location of infestation and plans on how it will be addressed.
4. If EAB has not been found, information should be provided on how the community is addressing EAB through the development of the preparedness plan.

## Definitions

DATCP – the State of Wisconsin Department of Agriculture, Trade, Consumer and Protection agency. This agency is responsible for the State of Wisconsin’s emerald ash borer response plan. They have the authority to issue a quarantine to restrict the movement of EAB and infested host material.

EAB – the Emerald Ash Borer insect.

EAB readiness team – The group of people, both government employees and private volunteers, responsible for all aspects of preparing for Emerald Ash Borer within City of Madison.

EAB readiness plan – a document delineating local EAB readiness activities and processes; includes scope & purpose, authority, responsibility, policies & procedures, actions/tasks, available resources, forms & contracts, technical references & support information (such as surveying and reporting protocols), and similar content.

Marshalling yard – a fenced-in location within a quarantine area where infested or quarantine-area trees, brush and logs are collected and held for further handling.

Quarantine area – a defined geographic area from which host goods may not be transported; quarantines will be established by federal or state agencies to restrict ash wood movement out of infested areas to avoid emerald ash borer infestation of new areas; quarantines can be applied to an individual property, county, or entire state.

## Recommendations

The following are recommendations of the Emerald Ash Borer Response committee:

- Create a generic nuisance tree ordinance to address any disease or insect that may harm Madison's urban forest.
- Create a licensing program for commercial tree care companies in order to perform tree work within the city limits. The annual license should include adequate amounts of liability and property damage insurance.
- Complete the street tree inventory in 2009 with the current tree consultant and apply for a Department of Natural Resources urban forestry grant of \$25,000 to assist in paying for the inventory. Cost of street tree inventory \$160,000 should be part of Parks 2009 Capital budget request. A resolution for applying and accepting a 2009 DNR urban forestry grant must be drafted and approved.
- Provide for public education in the forestry section's 2009 and 2010 operational budget for the production of public service announcements, advertisement, and outreach regarding EAB and the city's response plan.
- Provide for street and park tree replacements within the Parks Division Capital budget for the next two to five years.
- Increase forestry section's equipment by adding to the fleet for EAB response in the Parks Division Capital budget starting in 2010 thru 2016 on an as needed basis:  
Forestry Capitol Budget items

(2) Additional 40-45 foot towers	\$100,000 ea.x2=	\$200,000.00
(1) Additional clam	\$160,000.00 x1=	\$160,000.00
(2) additional 4x4 small pick up truck	\$ 17,000.00 x2=	\$ 34,000.00
<b><u>TOTAL</u></b>		<b>\$394,000.00</b>

- Increase forestry section's staff in the Parks Division operational budget starting in 2010 thru 2016 on an as needed basis:

### Forestry Operational Budget items

(3) Arborist I's	\$54,484.71 each x 3	\$163,454.13
Reclassify Parks Maintenance Worker position to Arborist I Parks Maintenance Worker \$52,975.10 to Arborist I \$54,484.71. additional:		\$ 1,509.61
(3) Arborist II positions	\$57,680.57 each x 3	\$173,041.71
(2) Forestry Specialists positions		\$ 124,369.02
Additional Work/Safety Supplies		\$ 10,000.00
Additional training budget		\$ 1,350.00

**TOTAL**      \$473,724.47

- Starting in the 2010 budget cycle increase Streets Division staff by 16 employees and purchase additional equipment on an as needed basis:

(2) Additional Stump Grubbing Crews: (Double the number of operators):

- (2) SMO III for Vaxcavator
- (2) SMO III for Stump Grubber
- (2) SMO III for Endloader to clean material out of hole
- (2) SMO I for Dump Truck to haul stump material
- (2) SMO I for Dump Truck with Spreader for Top Soil replacement

(2) Additional Chipper Crews:

- (2) SMO II for Chipper
- (2) SMO I for Chipper

Additional Brush Processor:

- (1) Operator Maintenance Worker to operate Petersen/Pacific
- (1) Operating Maintenance Worker to operate semi tractor/trailer for chip removal

**COSTS:**

6 SMO III's:	$\$49,140 + \$18,574 (37.8\% \text{ benefit rate}) = \$67,714 \times 6 =$	\$406,284
2 Operating Maintenance Workers:		
	$\$49,582 + \$18,742 (37.8\% \text{ benefit rate}) = \$68,324 \times 2 =$	\$136,648
2 SMO II's:	$\$59,290 + \$16,363 (37.8\% \text{ benefit rate}) = \$59,653 \times 2 =$	\$119,306
6 SMO I's:	$\$41,912 + \$15,842 (37.8\% \text{ benefit rate}) = \$57,754 \times 6 =$	\$346,524

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**TOTAL**      \$1,008,762

# Cooperative Emerald Ash Borer Project

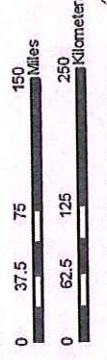
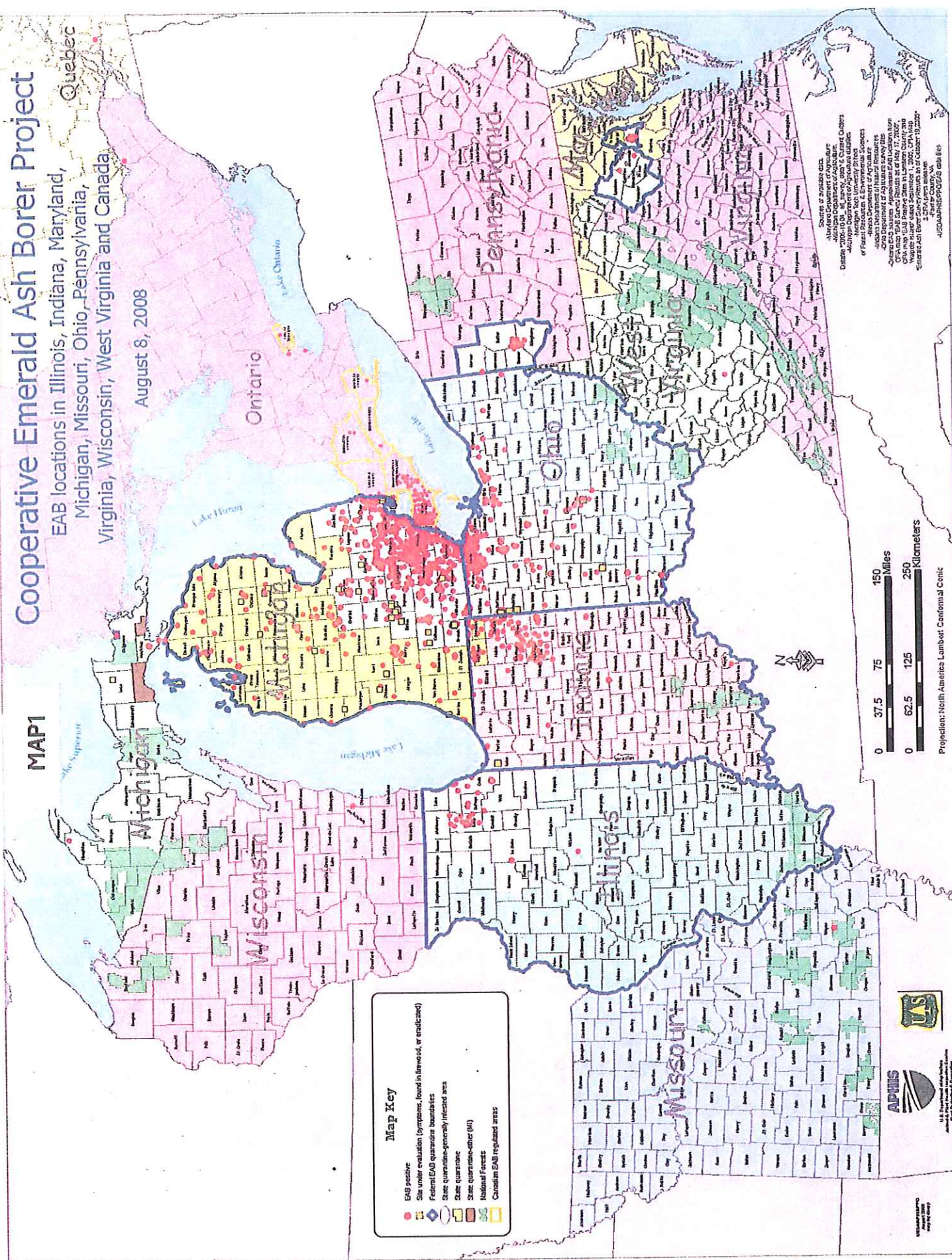
EAB locations in Illinois, Indiana, Maryland, Michigan, Missouri, Ohio, Pennsylvania, Virginia, Wisconsin, West Virginia and Canada

August 8, 2008

MAP1

**Map Key**

- EAB positive site under evaluation (symptoms, found in firewood, or eradicated)
- Federal EAB quarantine boundaries
- State quarantine—generally related areas
- State quarantine—other (M)
- National Forests
- Canadian EAB regulated areas



Projection: North America Lambert Conformal Conic

Source of available data:  
 Michigan Department of Agriculture  
 Missouri Department of Conservation  
 Ontario 2006-10 M. "Survey" data & Current Outlets  
 Pennsylvania Department of Agriculture  
 Virginia Department of Forestry  
 West Virginia Department of Forestry  
 Wisconsin Department of Natural Resources  
 Canadian Department of Agriculture  
 Canada  
 U.S. Department of Agriculture Survey Data  
 U.S. Forest Service Survey Data as of May 17, 2007  
 U.S. Forest Service Survey Data as of May 17, 2007  
 U.S. Forest Service Survey Data as of October 10, 2007  
 U.S. Forest Service Survey Data as of October 10, 2007  
 U.S. Forest Service Survey Data as of October 10, 2007



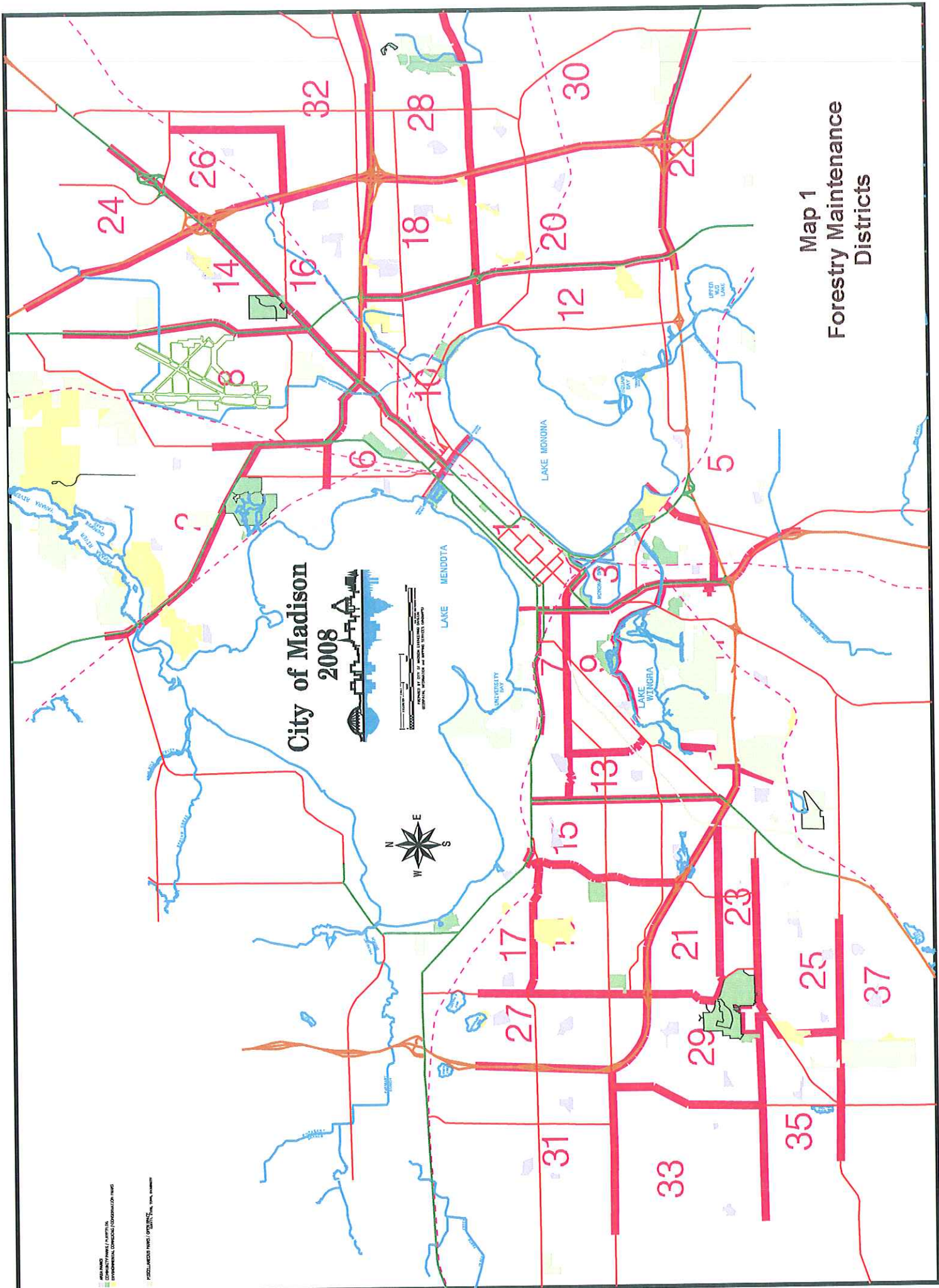
U.S. Department of Agriculture  
 Animal and Plant Health Inspection Service  
 Emerald Ash Borer Task Force

# City of Madison 2008



MADE POSSIBLE BY THE  
WISCONSIN DEPARTMENT OF  
TRANSPORTATION AND  
CONSTRUCTION

## Map 1 Forestry Maintenance Districts

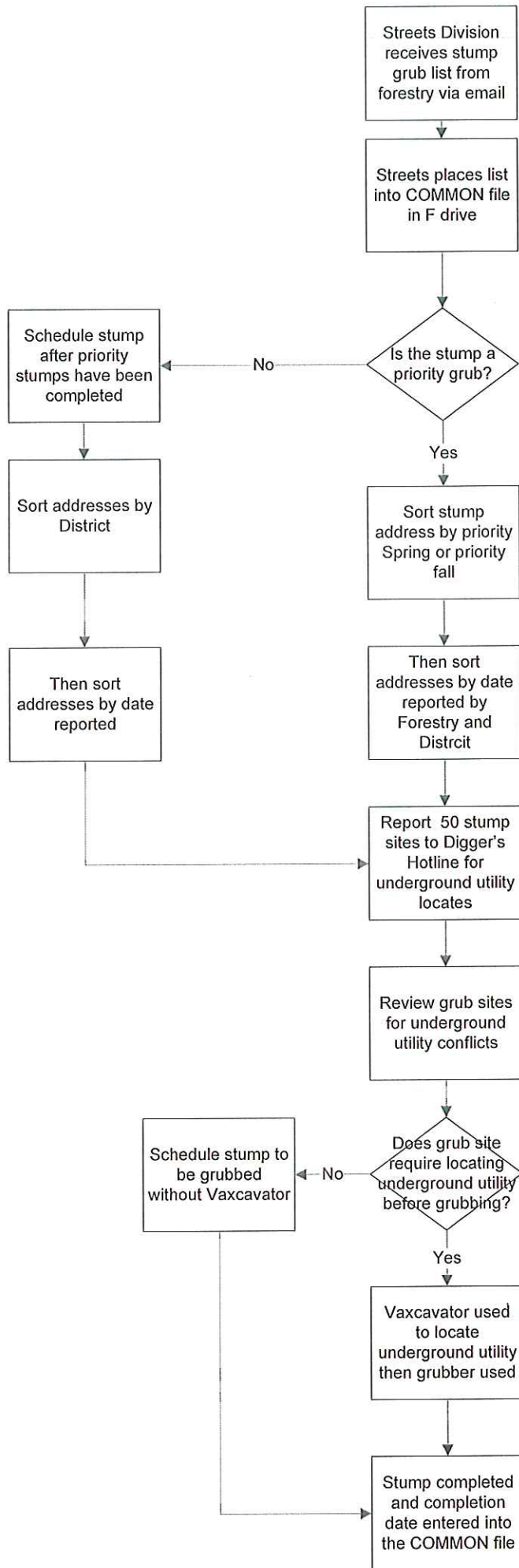




## Forestry and Streets Operational Calendar Comparison

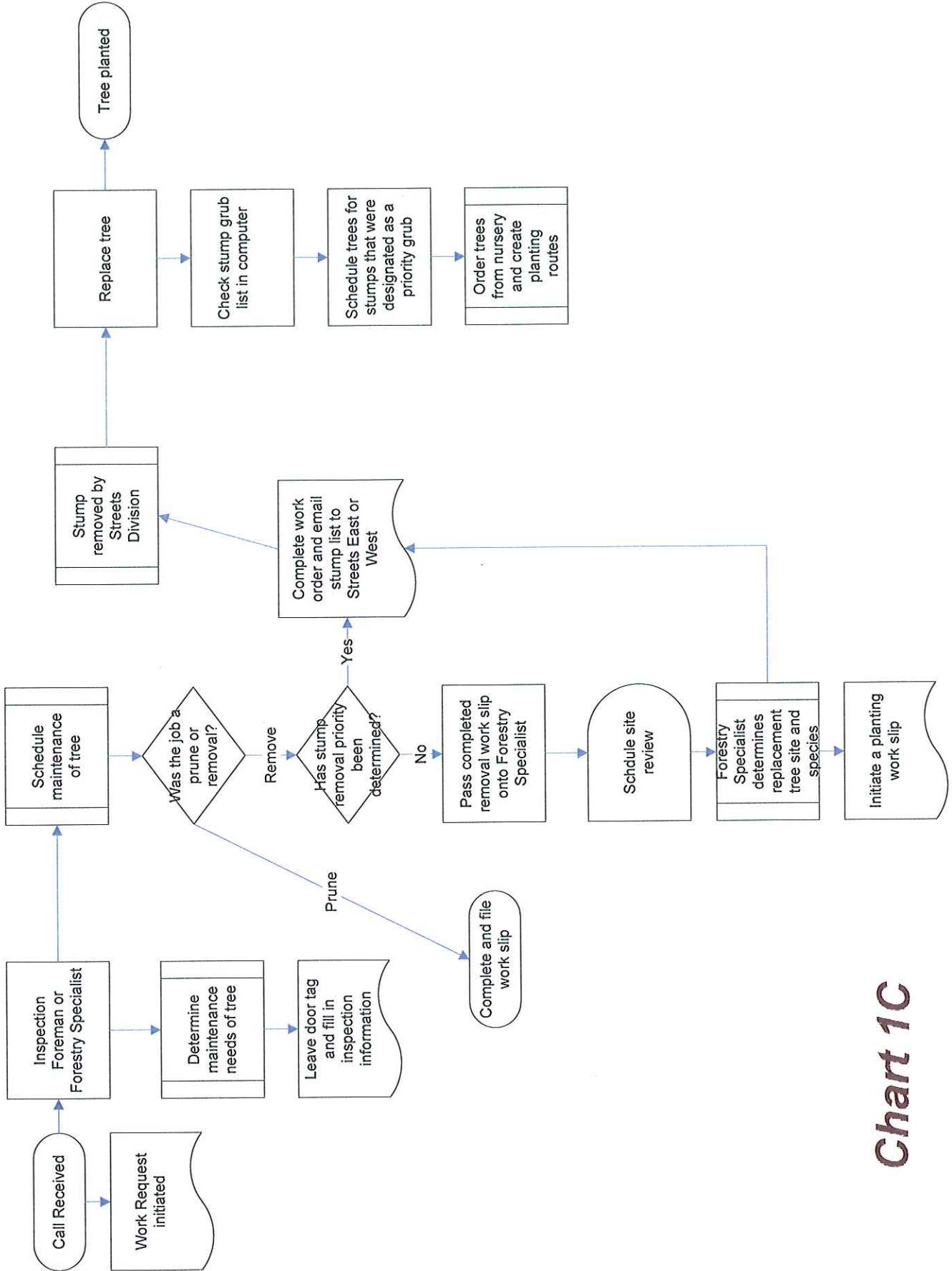
	J	F	M	A	M	JN	JY	A	S	O	N	D
<b>Forestry</b>												
City Planting				■	■					■	■	
Contract Planting				■	■	■	■					
Forestry Removals	■	■	■	■	■	■	■	■	■	■	■	■
<b>Streets</b>												
Stump Removal					■	■	■	■	■	■	■	
Leaf Pickup										■	■	■
Street Sweeping				■	■							

**Chart 1A**



**Chart 1B**  
**Flow Chart of Work**  
**Street Division**  
**Stump Grubbing**

# Flow Chart Forestry Operations



**Chart 1C**

**Chart 2**  
**City of Madison Streets Division**  
**Stump Removal - 2007**

<b>Number of Stumps Removed in 2007</b>	1,687
<b>Number of Labor Hours in 2007</b>	10,892
<b>Labor Hours/Stump</b>	6
<b>Direct Costs:</b>	
Salaries and Wages	\$ 218,192.67
Benefits	\$ 87,915.12
Purchased Services & Supplies	\$ 1,674.45
	\$ 307,782.24
<b>Indirect Costs- Allocated from Admin:</b>	
Salaries/Wages & Benefits (Supervisory staff, Admin Staff)	\$ 40,280.98
Supplies (Building supplies, Uniforms, Office supplies, copier, etc.)	\$ 14,478.74
Fleet Service Charges	\$ 147,677.48
Building Maintenance Fund	\$ 3,357.41
Insurance Fund	\$ 3,182.16
Worker's Comp	\$ 8,458.74
	\$ 217,435.51
<b>TOTAL 2007 COSTS - STUMP REMOVAL</b>	<b>\$ 525,217.75</b>
<b>TOTAL 2007 COSTS PER STUMP</b>	<b>\$ 311.33</b>

# Forestry Section Organizational Chart

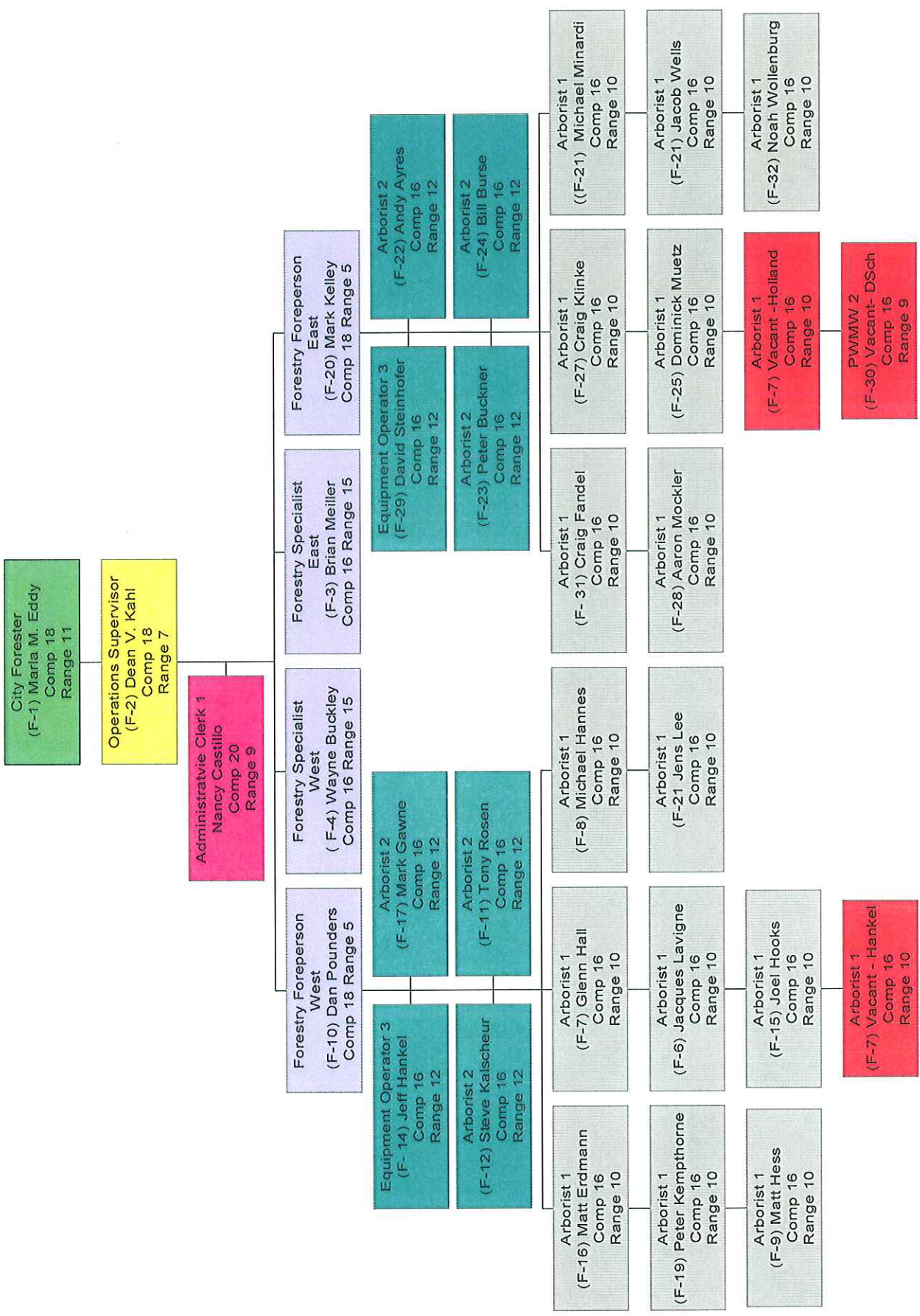


Chart 3

**Chart 4**  
**Scheduled Tree Pruning vs. City Wide Request Pruning**

	2006			2007			Average Hours/Tree
	Number of Trees	Labor Hours	Hours/Tree	Number of Trees	Labor Hours	Hours/Tree	
Scheduled Tree Pruning Within Forestry Districts	1,676	1,823	1.1	918	1,097	1.2	1.1
Request Tree Pruning, City Wide	2,761	3,909	1.4	3,896	5,272	1.4	1.4
Tree Removal, City Wide	2,187	6,069	2.8	2,149	6,267	2.9	2.8
Total Trees Pruned	4,437	5,732	1.3	4,814	6,369	1.3	1.3
Total Trees Pruned or Removed	6,624	11,801	1.8	6,963	12,636	1.8	1.8

Total Trees Pruned if All were in Forestry Districts	5,211	5,732	1.1	5,790	6,369	1.1	
Percentage Increase	117%			120%			119%

**Chart 5**  
**City of Madison Forestry**  
**Daily Worksheet Totals 2005-2007**

Activity	2005		2006		2007	
	No.	Percentage	No.	Percentage	No.	Percentage
# District Trees Pruned	-	0%	1,676	20%	918	8%
# Requests Pruned	7,083	84%	2,761	33%	3,896	32%
# Sm. Trees Pruned	-	0%	1,861	22%	5,230	43%
# Trees Removed	1,332	16%	2,187	26%	2,149	18%
<b>Total Trees Pruned/Removed</b>	<b>8,415</b>	<b>100%</b>	<b>8,485</b>	<b>100%</b>	<b>12,193</b>	<b>100%</b>
District Hours	-	0.0%	1,823	3.7%	1,097	2.0%
Request Hours	6,662	14.7%	3,909	7.8%	5,272	9.4%
Sm. Tree Hours	-	0.0%	979	2.0%	2,295	4.1%
Removal Hours	4,156	9.2%	6,069	12.2%	6,267	11.2%
Clean up	14.7%	0.0%	8,966	18.0%	8,370	14.9%
CDL & Tower Checks	1,582	3.5%	2,020	4.1%	1,751	3.1%
Maintenance	1,998	4.4%	2,199	4.4%	2,209	3.9%
Training/Classes/Meetings	1,180	2.6%	365	0.7%	645	1.1%
Snow Removal	1,067	2.4%	418	0.8%	2,105	3.7%
Posting	258	0.6%	145	0.3%	376	0.7%
Storm Work/Hangers	1,235	2.7%	2,521	5.1%	1,240	2.2%
Acting Foreperson	967	2.1%	382	0.8%	459	0.8%
Planting	4,516	10.0%	6,806	13.6%	5,640	10.0%
Light Duty	166	0.4%	-	0.0%	50	0.1%
Sign Clearance	62	0.1%	82	0.2%	74	0.1%
Tree Watering	705	1.6%	19	0.0%	1,032	1.8%
Vehicle Damage	152	0.3%	82	0.2%	38	0.1%
Survey/Inspection	73	0.2%	4	0.0%	448	0.8%
Other	208	0.5%	895	1.8%	1,364	2.4%
<b>TOTALS</b>	<b>24,987</b>	<b>55.1%</b>	<b>37,684</b>	<b>75.6%</b>	<b>40,732</b>	<b>72.5%</b>
Unfilled Vacancy	11,564	25.5%	4,312	8.6%	7,320	13.0%
Workmen's Comp.	699	1.5%	369	0.7%	395	0.7%
FMLA/AWOP	1,212	2.7%	290	0.6%	843	1.5%
Authorized Leave	6,918	15.2%	7,212	14.5%	6,906	12.3%
<b>TOTALS</b>	<b>20,393</b>	<b>44.9%</b>	<b>12,183</b>	<b>24.4%</b>	<b>15,464</b>	<b>27.5%</b>
<b>GRAND TOTALS</b>	<b>45,380</b>	<b>100.0%</b>	<b>49,867</b>	<b>100.0%</b>	<b>56,196</b>	<b>100.0%</b>

# Appendix A

## Streets Weed Control Program Adopted 2008 Operating Budget (Stump Grubbing)

Position Title	CG-RG	FTE's	Costs of Various Proposals					Trucks Fleet Service	Subtotal New Items	2008 Pro Forma Budget
			One SMO 1 for Stump Cleaning Crew	One SMO 1 for Stump Filling Crew	One SMO 3 for Vaxcavator	One SMO 3 for Vaxcavator	Stump Grubber			
Streets Superintendent	21-18	0.01	1,004						1,004	
Public Information Assistant	20-11	0.00	0						0	
Administrative Clerk 1	20-09	0.02	926						926	
Street Operations Manager	18-14	0.02	1,622						1,622	
Public Information/Recyc. Coord.	18-10	0.00	0						0	
Public Works General Supv.	18-10	0.06	4,487						4,487	
Streets Operations Analyst	18-10	0.01	695						695	
Process Plant Supervisor	18-08	0.00	0						0	
Streets General Supervisor	18-08	0.06	4,003						4,003	
Public Works General Foreman	18-07	0.24	14,429						14,429	
Administrative Secretary	17-11	0.03	1,462						1,462	
Operations Clerk	16-10	0.06	2,997						2,997	
Operating Assistant	15-09	0.00	0						0	
Maintenance Mechanic	15-08	0.06	3,207						3,207	
Operating Maintenance Worker	15-07	0.00	0						0	
Street Machine Operator 3	15-07	0.00	0	49,140	49,140			98,280	98,280	
Street & Sewer Maint. Wkr. 2	15-06	0.12	5,803						5,803	
Street Machine Operator 2	15-05	0.00	0						0	
Street Machine Operator 1	15-04	5.46	236,839	41,912	41,912			83,824	320,663	
Street & Sewer Maint. Wkr. 1	15-03	0.16	5,684						5,684	
Gen. Maint. Repair Coordinator	xx-xx	0.02	1,056						1,056	
Premium Pay			1,882						1,882	
Workers Comp Pay			0						0	
Vacation/Comp Accrual			0						0	
Budgeted Salary Savings		2.00%	0	286,096	41,912	49,140	49,140	0	182,104	
Net Permanent Salaries			0	(7,152)	(838)	(983)	(983)	0	(3,642)	
			278,944	41,074	41,074	48,157	48,157	0	178,462	
Hourly Employee Pay			0						0	
Overtime Pay			0						0	
Fringe Benefits			105,441	13,006	13,006	13,006	13,006	0	157,463	
Permanent - Health			8,433	8,433	9,887	9,887	9,887	0	36,639	
Permanent - All Other			0	0	0	0	0	0	0	
Hourly			0	0	0	0	0	0	0	
Overtime			0	0	0	0	0	0	0	
Total			105,441	21,438	21,438	22,893	22,893	0	88,662	
Purchased Services			1,509						1,509	
54101 Natural Gas			5,470						5,470	
54103 Electricity			0						0	



## Appendix A

Streets Weed Control Program Adopted 2008 Operating Budget (Stump Grubbing)	2008 Pro Forma Budget	Costs of Various Proposals					Subtotal New Items
		One SMO 1 for Stump Cleaning Crew	One SMO 1 for Stump Filling Crew	One SMO 3 for Vaxcavator	One SMO 3 for Vaxcavator	Trucks Fleet Service	
54105 Water	574						574
54201 Telephone Cellular	54						54
54202 Telephone Regular	189						189
54301 General B&G Repairs & Maint	729						729
54304 Pest Control	18						18
54311 Doors & Windows	54						54
54401 General Equip Repairs & Maint	524						524
54402 Maintenance Contracts	11						11
54540 Equipment Rental	271						271
54610 Recruitment	25						25
54620 Mileage	13						13
54630 Conference/Meetings	45						45
54640 Training/Travel	57						57
54660 Uniform/Laundry	401						401
54901 Other Services General	1,015						1,015
54910 Advertising	70						70
54974 Permits/Licenses	47						47
<b>Total</b>	<b>11,076</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11,076</b>
<b>Supplies</b>							
55110 General Office Supplies	136						136
55120 Subscription & Books	34						34
55130 Reproduction copier/Fast Copy	9						9
55140 Postage	235						235
55145 Office Equipment	114						114
55150 Computer Supplies	7						7
55155 Computer Hardware	29						29
55270 Safety Equipment	6						6
55310 General Building Supplies	982						982
55510 General Work Supplies	8,985						8,985
55511 Communications Supplies	44						44
55520 Printing supp,forms,tckts.app	11						11
55560 Janitorial Supplies	108						108
55570 Safety Supplies	34						34
55580 Photo Supplies & Processing	5						5
55590 Medical Supplies	18						18
55710 Uniforms	906						906
55730 Safety Shoes	234						234
55760 Tools	356						356
<b>Total</b>	<b>12,253</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12,253</b>
<b>Inter-Departmental Charges</b>							
56539 Bldg Mtce Charges	2,886						2,886
56550 Fleet Service - Inter-D(Pmits To)	126,919						126,919
Fleet Service - Depreciation							
		3,500	4,000	16,981			24,481

**Appendix A**

Streets Weed Control Program Adopted 2008 Operating Budget (Stump Grubbing)	Costs of Various Proposals				Trucks Fleet Service	Subtotal New Items	2008 Pro Forma Budget
	One SMO 1 for Stump Cleaning Crew	One SMO 1 for Stump Filling Crew	One SMO 3 for Vaxcavator	One SMO 3 for Vaxcavator			
Fleet Service - Interest					8,089	11,839	11,839
Fleet Service - Repairs and Fuel					25,680	27,480	27,480
56572 TE Communication Int-D(Pmt To)	1,297					0	1,297
56950 Insurance Fund-Inter-D(Pmt To)	5,728					0	5,728
56960 Wker's Comp - Inter-D(Pmts To)	11,358					0	11,358
<b>Total</b>	<b>148,188</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50,749</b>	<b>63,799</b>	<b>211,987</b>
Inter-Agency Billings Billings to Departments 59500 ID Pmt From Transit Utility	0					0	0
<b>Total</b>	<b>0</b>					<b>0</b>	<b>0</b>
Other Sources 72340 Appliance Collection Assess 78890 Other	0					0	0
<b>Total</b>	<b>0</b>					<b>0</b>	<b>0</b>
<b>Total Inter-Agency Billings</b>	<b>0</b>					<b>0</b>	<b>0</b>
<b>Total Weed Control</b>	<b>555,902</b>	<b>62,512</b>	<b>71,050</b>	<b>71,050</b>	<b>50,749</b>	<b>330,923</b>	<b>886,825</b>

# Appendix B

## Parks Forestry Adopted 2008 Operating Budget

Position Title	CG-RG	FTE's	Costs of Various Proposals							Subtotal New Items	2008 Pro Forma Budget
			3 Arborists 1's	Reclass PWWM to Arborist	3 Arborist 2's	Forestry Specialist	Work/Safety Supplies	Training Budget	Fleet Service		
<b>Permanent Salaries</b>											
Parks Superintendent	21-19	0.20									22,565
Program Assistant 2	20-12	1.00									48,977
Administrative Clerk 2	20-11	0.06									2,051
Administrative Clerk 1	20-09	0.75									34,732
Clerk-Typist 2	20-06	0.03									1,163
Parks Comm Serv Manager	18-14	0.06									5,327
Parks Maint. Manager	18-14	0.30									24,658
Parks Plan & Dev Manager	18-14	0.01									893
Landscape Architect 4	18-12	0.06									4,846
City Forester	18-11	1.00									72,895
Parks Admin. Svcs. Manager	18-10	0.16									10,465
Landscape Construction Supv.	18-08	0.27									13,961
Parks General Supervisor	18-08	0.81									54,505
Forestry Operations Supv.	18-07	1.00									57,680
Public Works Foreperson	18-05	0.30									17,752
Tree Trimmer Foreman	18-05	2.00									115,669
Parks Outreach Program Coord.	18-04	0.06									3,560
Program Assistant 3	17-13	0.28									13,987
Forestry Specialist	16-15	2.00									114,742
Parks Operations Leadworker	16-14	0.42									23,750
Arborist 2	16-12	6.00									304,983
Equipment Operator 3	16-12	2.24									113,613
Public Works Leadworker	16-12	0.70									36,514
Arborist 1	16-10	16.15	124,116	1,294							708,238
Public Works Maint. Work. 2	16-09	1.68									77,349
Public Works Maint. Work. 1	16-08	0.48									18,583
Premium Pay		0									39,972
From Golf Enterprise		0									33,444
Subtotal		0	124,116	1,294	131,087	47,002	0	0	0	0	2,280,373
Budgeted Salary Savings	2.00%	0	(2,482)	(26)	(2,622)	(940)	0	0	0	0	(55,492)
Net Permanent Salaries		1,927,452	121,634	1,268	128,465	46,062	0	0	0	0	2,224,881
<b>Hourly Employee Pay</b>		28,895								0	28,895
<b>Overtime Pay</b>		0								0	0
<b>Fringe Benefits</b>											
Permanent - Health		728,577	39,017	260	38,017	13,006	0	0	0	0	819,616
Permanent - All Other			24,972		26,375	9,457	0	0	0	0	61,064
Hourly		3,265									3,265
Overtime		0									0

## Appendix B

### Parks Forestry Adopted 2008 Operating Budget

	Costs of Various Proposals						Subtotal New Items	2008 Pro Forma Budget
	3 Arborists 1's	Reclass PWNM to Arborist	3 Arborist 2's	Forestry Specialist	Work/Safety Supplies	Training Budget		
Total	731,842	63,989	260	85,392	22,462	0	152,103	863,945
<b>Purchased Services</b>								
54103 Electricity	7,000						0	7,000
54201 Telephone Cellular	300						0	300
54202 Telephone Regular	2,000						0	2,000
54401 General Equip Repairs & Maint	200						0	200
54402 Maintenance Contracts	2,100						0	2,100
54404 Communication Equipment Repair	500						0	500
54429 Photocopier Mfce Contract	2,000						0	2,000
54540 Equipment Rental	700						0	700
54630 Conference/Meetings	200						0	200
54640 Training/Travel	1,200						0	1,200
54901 Other Services General	200						1,350	2,550
54910 Advertising	200						0	200
54967 Memberships	1,500						0	1,500
54974 Permits/Licenses	200						0	200
54980 Committee Expenses	100						0	100
Total	18,400	0	0	0	1,350	0	1,350	19,750
<b>Supplies</b>								
55110 General Office Supplies	1,600						0	1,600
55120 Subscription & Books	800						0	800
55130 Reproduction copier/Fast Copy	500						0	500
55140 Postage	500						0	500
55150 Computer Supplies	500						0	500
55155 Computer Hardware	3,000						0	3,000
55210 General Equipment Supplies	5,000						0	5,000
55400 Paint	200						0	200
55510 General Work Supplies	10,000						10,000	20,000
55520 Printing supp,forms,tckts.app	500						0	500
55570 Safety Supplies	1,200						0	1,200
55580 Photo Supplies & Processing	600						0	600
55620 Trees & Shrubs	50,000						0	50,000
55730 Safety Shoes	1,900						0	1,900
Total	76,300	0	0	0	10,000	0	10,000	86,300
<b>Inter-Departmental Charges</b>								
56550 Fleet Service - Inter-D(Pmts To)	298,294						0	298,294
Fleet Service - Depreciation							37,700	37,700
Fleet Service - Interest							18,850	18,850
Fleet Service - Repairs and Fuel							27,500	27,500
56571 TE Signs - Inter-D (Pmts To)	8,600						0	8,600
56630 Streets - Inter-D (Pmts To)	39,000						0	39,000
56950 Insurance Fund-Inter-D(Pmt To)	8,000						0	8,000

## Appendix B

	Costs of Various Proposals							Subtotal New Items	2008 Pro Forma Budget
	3 Arborists 1's	Reclass PWWW to Arborist	3 Arborist 2's	Forestry Specialist	Work/Safety Supplies	Training Budget	Fleet Service		
56960 Wker's Comp - Inter-D(Pmts To Total	0	0	0	0	0	0	84,050	84,050	35,111 473,055
Inter-Agency Billings Billings to Departments 59810 ID Pmt From Capital Funds Total	100,000							0	100,000 100,000
Other Sources 75300 Awards and Damages Total	500							0	500 500
<b>Total Inter-Agency Billings</b>	100,500							0	100,500
<b>Total Forestry</b>	3,071,394	185,623	1,528	193,857	68,524	10,000	1,350	84,050	544,932 3,616,326

Appendix C  
 PRIORITY STUMP REMOVAL, Contract No. 6232  
 BID OPENING: JULY 11, 2008

K&M TIE & LUMBER, INC.

ITEM	TYPE OF WORK	ESTIMATED QUANTITIES	UNITS	UNIT PRICE BID	CONTRACT DOLLARS
90000	STUMP REMOVAL, 4-INCH	5.00	EACH	\$32.72	\$163.60
90001	STUMP REMOVAL, 10-INCH	10.00	EACH	\$81.80	\$818.00
90002	STUMP REMOVAL, 20-INCH	75.00	EACH	\$163.60	\$12,270.00
90003	STUMP REMOVAL, 30-INCH	50.00	EACH	\$245.40	\$12,270.00
90004	STUMP REMOVAL, 40-INCH	2.00	EACH	\$327.20	\$654.40
90005	STUMP REMOVAL, 60-INCH	2.00	EACH	\$409.00	\$818.00
					=====
CONTRACT TOTALS					\$26,994.00