Emerald Ash Borer Preparedness Plan for Bakersfield, Vermont

Bakersfield Conservation Commission

May, 2014

Table of Contents

		PAGE
Executive summary		3
I.	Introduction	4
II.	Emerald Ash Borer	5
III.	Tree Inventory	11
IV.	Stakeholders and Resource list	14
V.	Tree Management Considerations	14
VI.	Community Education & Outreach Strategy	16
VII.	Disposal and Utilization	18

Appendix: Field Data Sheets

Executive Summary

The Emerald Ash Borer is an invasive insect that has killed millions of trees through the United State and Canada. As of 2014, the insect has been found in isolated pockets surrounding Vermont in Massachusetts, New York, New Hampshire, and Quebec. As of today, no detection has been made in Vermont, but it is probably inevitable that it will eventually be found in our communities. The insect causes almost 100% mortality of all native ash species within approximately 10 years. It also often goes undetected for several years until mortality starts to be widespread and therefore more noticeable.

Trees of all three Vermont species, White ash (*Fraxinus americana*), Green ash (*Fraxinus pensylvanica),* and Black ash (*Fraxinus nigra*) are all commonly found growing along the public road rights-of-way, and often planted in public spaces. By far, the most common ash in Bakersfield is the white ash.

Within a few years of becoming established, the insect will be the cause of widespread mortality. The large number of dead and dying ash along the roadsides could cause a significant financial burden to the town of Bakersfield for removal of hazardous trees, and would cause a public safety hazard.

This Emerald Ash Borer Preparedness Plan, which has been developed by the Bakersfield Conservation Commission with the assistance of the Bakersfield Town Selectboard and Road Commissioner, The University of Vermont and the Department of Forests, Parks and Recreation, is designed to provide a plan to address the public safety concerns and minimize the impact to the town budget by inventorying the ash on the most traveled roads in Bakersfield, and providing a plan to educate townspeople about the potential for tree death on their roadside properties. The plan can be changed if research provides a means to effectively control the Emerald Ash Borer or if other actions are warranted.

The strategy for handling ash tree death along roadsides is very different from what is recommended for interior forest ash trees. The department of Forests, Parks and Recreation discourages preemptive salvage of ash in the forest, and will not approve any Use Value Appraisal plan that recommends such treatment. Where safety is not the prime concern the department feels the value of ash remaining in the forest is greater than the value of the wood product that may be lost. Lowering the percentage of ash or harvesting the largest diameter ash in a woodlot may be allowed if done in conjunction with other silvicultural activities, but allowing the ash to respond in the natural environment can only happen if ash remains a component of the landscape.

The very best way to prevent the Emerald Ash Borer from entering our community is to not move firewood. The larval stage of the insect is the damaging agent, and this stage remains under the bark of ash for most of the year. If firewood is moved from an infected area the larvae will emerge as an adult from the firewood in the spring, mate, lay eggs in living trees and start the destruction. DON”T MOVE FIREWOOD.

I. Introduction

Purpose of Plan

By implementing the provisions in this preparedness plan, the Town Of Bakersfield is attempting to mitigate the disruption to the Town Road Budget for removal of hazard roadside trees caused by a pending infestation of the Emerald Ash Borer (EAB). Taking a proactive approach to this infestation enables the Town to address public needs in an efficient and effective manner. It will also allow the Town to use best management practices, the most recent scientific findings, and the Town's roadside tree inventory data to minimize costs and distribute them over a manageable time period, as well as lessen the social and economic impact that such an infestation will have on the quality of life in our community.

In particular, the plan will outline the Town of Bakersfield objectives and the approaches that will be used to meet the current or anticipated impact of Emerald Ash Borer (EAB) on our roadside trees. It will serve as a blueprint that residents can follow with a high degree of confidence, rationality, and order. The plan will also provide for public education and communication opportunities.

The plan is based on the most recent scientific studies and recommendations from key partners and multiple state and federal agencies. As this is a living document, updates to this plan will be made as new information and recommendations are released.

Applicability

This plan applies throughout the Town of Bakersfield on roads established as priority areas by the town Road crew and Selectboard. Education efforts will be targeted toward private properties where a tree may pose a safety hazard to adjacent public rights-of-way, other public properties, and adjacent property owners. While an inventory has not been completed along the lesser travelled roads, landowners may wish to apply the same principles to their ash trees if their land abuts roadways.

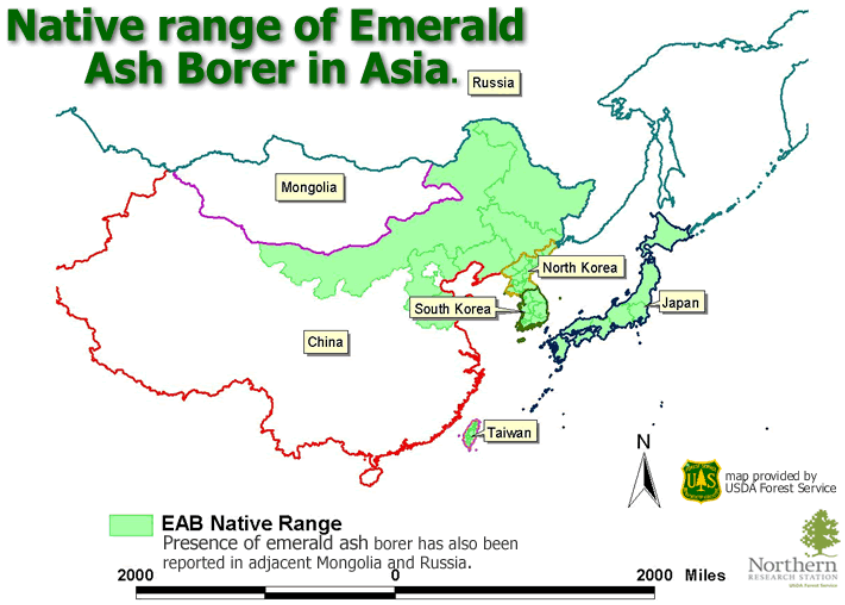
Administration

As currently written, The Bakersfield Conservation Commission through the direction of the Town Selectboard will be responsible for implementing this program and seeing that program provisions are carried out. If more active tree removal measures are called for in the future, or if the plan is changed substantially, the Selectboard and the Town Road Foreman may assume additional responsibilities.

II. Emerald Ash Borer (EAB)

History

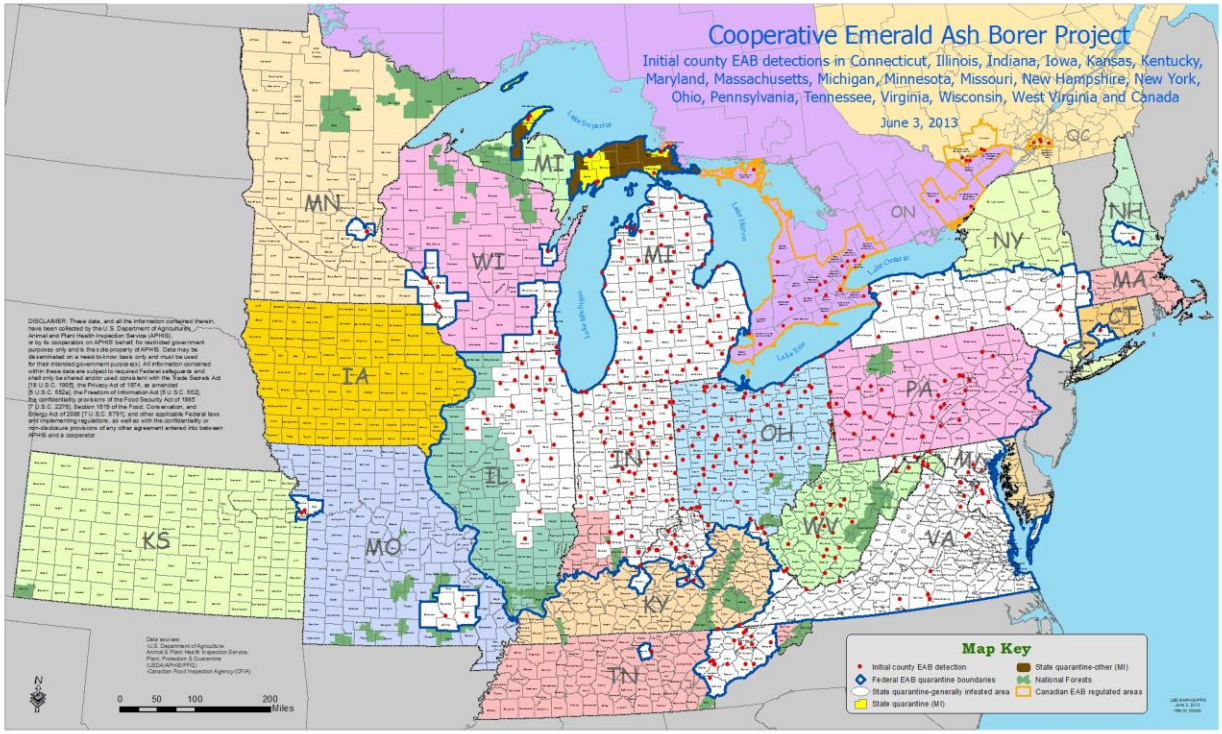
Emerald Ash Borer (*Agrilus planipennis*) is a non-native woodboring insect that feeds on North American ash trees. EAB is native to Asia, in particular northeast China, Korea, Japan, Taiwan, and a small area in adjacent Russia and Mongolia. EAB is thought to have been introduced to southeastern Michigan through solid wood packing material, such as crates and pallets, originating from Asia. The insect was found in 2002, but is believed to have arrived in the early 1990s. Experts suspect that the insect was present for 12 years before it was identified.
In its native range, EAB feeds on a variety of plant species and is only considered a minor pest. This is partly due to the fact that Asian ash trees have been able to develop co-evolutionary resistance to EAB attacks and populations are also kept in check by predators and pathogens. However, this is not the case in North America where ash trees have no natural resistance and EAB has few predators. In North America, woodpeckers and a native wasp have been shown to attack EAB eggs and larvae, but with little impact on populations. In addition, research is being conducted with three species of wasps from China that show some promise of control.



EAB Native Range
Source: USDA Forest Service

In North America, EAB attacks all ash trees in the genus *Fraxinus*, including green ash (*F. pennsylvanica*), white ash (*F. americana*), black ash (*F. nigra*), and other native species in the same genus. Mountain ash (*Sorbus* spp.), not a true ash, is unaffected. EAB is known to attack both healthy and declining ash trees and can infest branches as small as one inch in diameter. Left on its own, EAB can travel ½ mile to several miles per year during its flight period. However, due to human activities EAB has spread over much greater distances than it could have moved naturally. **The number one human activity that has lead to the spread of EAB is the movement of firewood.** In addition, the movement of nursery stock has also played a role in its movement. EAB has had a devastating effect on North American forests and has been compared to the effects of chestnut blight and Dutch elm disease. To date, EAB has killed

millions of ash trees and has been found in 22 states and the Canadian provinces of Ontario and Quebec. If not mitigated, it will continue to infest and kill all species in the genus *Fraxinus*.



Distribution map of Emerald ash borer as of October 2013

In addition, if left unchecked, EAB could result in the losses of millions of dollars to the lumber and nursery industries as well as urban communities. Preliminary findings by the USDA Forest Service estimate that EAB's potential impact to the national urban landscape is a potential loss of between 0.5 to 2 percent of the total leaf area (30-90 million trees) and a value loss of between $20-60 billion. In addition, if EAB is not contained or eradicated it could cause approximately $7 billion in additional costs to state and local governments and landowners to remove and replace dead and dying ash trees in urban and suburban areas over the next 25 years.(New Pest Response Guidelines, Emerald Ash Borer *Agrilus planipennis* (Fairmaire), USDA-APHIS 2008.)

Identification and Lifecycle (Source, http://www.emeraldashborer.wi.gov/index.jsp.)

Emerald ash borer adults are very small, metallic green beetles. They are only 3/8 -1/2 inch long and 1/16 inch wide (about the size of a cooked grain of rice). Adult emerald ash borers emerge from beneath the bark of ash trees in late May through mid-July, creating a D-shaped exit hole as they chew their way out of the tree. Adult beetles are most active during the day and prefer warm, sunny weather. They never wander far from where they exit a tree (less than one mile) in search of a mate.

Emerald Ash Borer
Source: Wisconsin Emerald Ash Borer Information Source

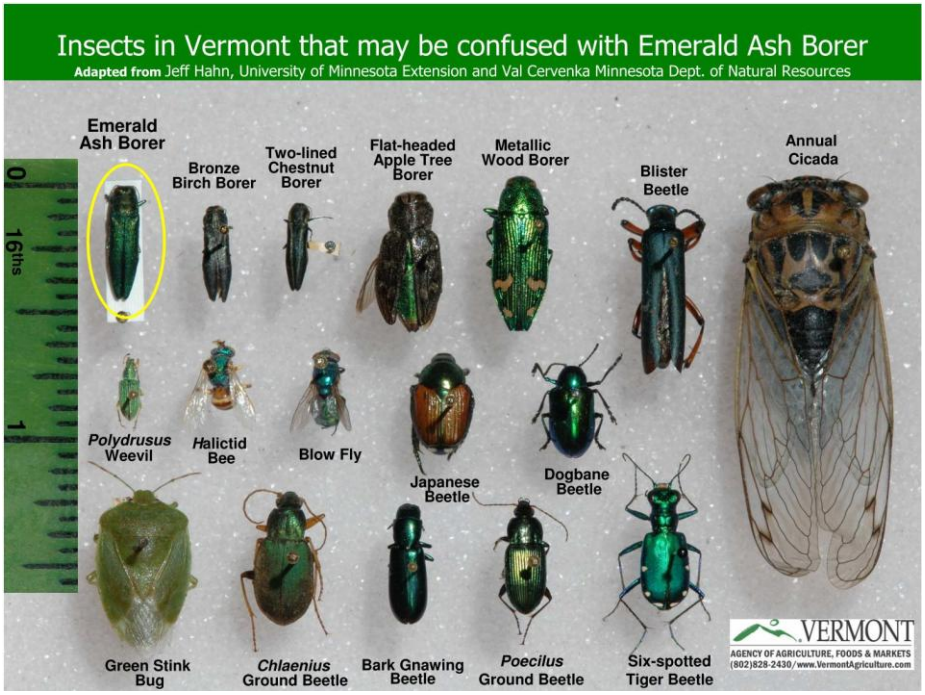
Once they find a mate, the female will lay 60 – 90 eggs, one at a time, in the crevices of ash tree bark. The adult beetles will feed lightly on ash tree leaves, but do not cause much harm by doing so. The adult beetles live a total of three to six weeks. Emerald ash borer eggs are very small (1 mm), difficult to find and are rarely seen. Female adult beetles deposit them in the bark crevices and as larvae hatch from the egg, they immediately chew their way into the tree. Emerald ash borer larvae are white and slightly flattened, with a pair of brown pincer-like appendages on the last abdominal segment. Their size varies as they feed under the bark on the ash tree's tissues and grow. Full grown larvae average 1½ inches in length. They wind back and forth as they feed, creating characteristic S-shaped patterns called galleries under the bark (starting in the phloem and extending into the xylem layers). Larvae will feed under the bark for one year and often two years in healthier trees, and can survive in green wood, such as firewood, even if the tree is no longer standing.

Emerald Ash Borer Larvae
Source: Michigan State University

In autumn, after feeding under the bark, larvae will create a chamber for themselves in the tree's sapwood. They stay in this chamber over winter and pupate in the spring, turning into adult beetles. The adults emerge from the pupal chamber and then emerge from the tree through D-shaped exit holes, completing the life cycle. The pupae, like the larvae, cannot be seen unless the bark is pulled away from the tree.

Emerald Ash Borer Galleries
Source: University of Wisconsin, Department of Entomology

There are numerous metallic green insects common to the northeast that could easily be confused with EAB. In addition, there are several native pests other than EAB that attack ash trees.



Ash Tree Identification and Symptoms

Since EAB attacks only ash trees, monitoring for its presence means knowing how to identify ash. Ash trees are most easily identified by their compound leaves (leaves are composed of 5-11 leaflets) and opposite branching pattern where branches, buds, and leaves grow directly across from each other, not staggered. The only other oppositely branched tree in our area with compound leaves is box elder (*Acer negundo*), which almost always has three leaflets. The bark on mature ash trees is tight with a distinct pattern of diamond-shaped ridges. On young trees, bark is relatively smooth.

Opposite branching and buds.
Source: WDNR EAB Field Guide


Green ash compound leaf
Source: WDNR EAB Field Guide


Example of diamond pattern bark typical of green and white ash.
Source: WDNR, Brian Schwingle

It is important to remember that since EAB is a wood-boring insect and spends most of its life under the bark of the tree, it is difficult to detect in ash trees. It is also difficult to detect because the decline of infected ash trees is usually gradual. Looking for visible signs and symptoms is one method for detecting EAB. Symptoms of an infestation might include dead branches near the top of a tree or wild, leafy shoots growing out from its lower trunk. However, D-shaped exit holes and bark splits exposing S-shaped tunnels are significant signs of EAB. One sign that a tree has become infested by EAB is bark with a mottled appearance and/or jagged holes, both caused by woodpeckers looking for prepupal larvae. Another sign are the D-shaped exit holes present on the branches and the trunk left by emerging adults. For D-shaped holes to be present a tree has to be infested for at least one year. Since EAB prefers warm sunny areas of the tree the infestation usually begins in the tops of ash trees making it difficult to find D-shaped holes in the early stages of infestation.


Woodpecker damage to EAB infested trees.
Source: USDA-Forest Service


EAB adult emerging through D-shaped Exit hole. Source: WDNR EAB Field Guide

In addition, if a tree has EAB the bark may split vertically above larval feeding galleries. When the bark is removed from infested trees, the distinct, frass-filled larval tunnels that etch the outer sapwood and phloem are readily visible on the trunk and branches. An elliptical area of discolored sapwood, usually a result of secondary infection by fungal pathogens, sometimes surrounds larval feeding galleries. The S-shaped tunnels excavated by feeding larvae interrupt the transport of nutrients and water within the tree during the summer, causing foliage to wilt and the tree's canopy becomes increasingly thin and sparse as branches die. Many trees appear to lose about 30% to 50% of the canopy after 2 years of infestation and trees often die after 3-4 years of infestation. Often at the margin of live and dead tissue, epicormic shoots may arise on the trunk of the tree. Dense root sprouting sometimes occurs after trees die.

Epicormic branching and dying branches possibly associated with infested ash tree.
Source: WDNR, EAB Field Guide

III. Tree Inventory

The first and most important step in managing a community's urban forest resource and preparing for EAB is to conduct a tree inventory. A tree inventory is the process of counting, characterizing, and recording information about the public and sometimes private trees that make up the urban forest or the stand of trees in woodlots. It is a useful tool that documents important information related to the total number of trees. The most common type of data collected in tree inventories are: location, land use, species, size, condition, site information, and maintenance needs. The goal of any community tree inventory is to provide information essential for management in a timely fashion, at a reasonable cost.

Street tree inventories document and help with management of trees along roads and within the public rights-of-way. Park inventories document the publicly owned trees away from streets and rights-of-way. These trees comprise a smaller part of the entire community tree population, but may be the most important part of the urban forest to many residents. They make up the more natural areas of communities and are usually a place of refuge or recreation for residents.

Documentation of street and park trees is useful for identifying the trees that a Town is responsible for maintaining. This information can then be used to identify areas of susceptibility (i.e. high ash component), low species diversity (species and/or age), and future planting opportunities. The information can also be used to document a risk assessment program where trees prone to failure are identified and can be preemptively dealt with. Additionally, in the case of an accident, being able to produce a risk assessment and work history log indicates the community's active role in maintaining safe trees. Finally, all these items from an inventory can be used to develop a community forest management plan that provides direction for urban forestry initiatives.

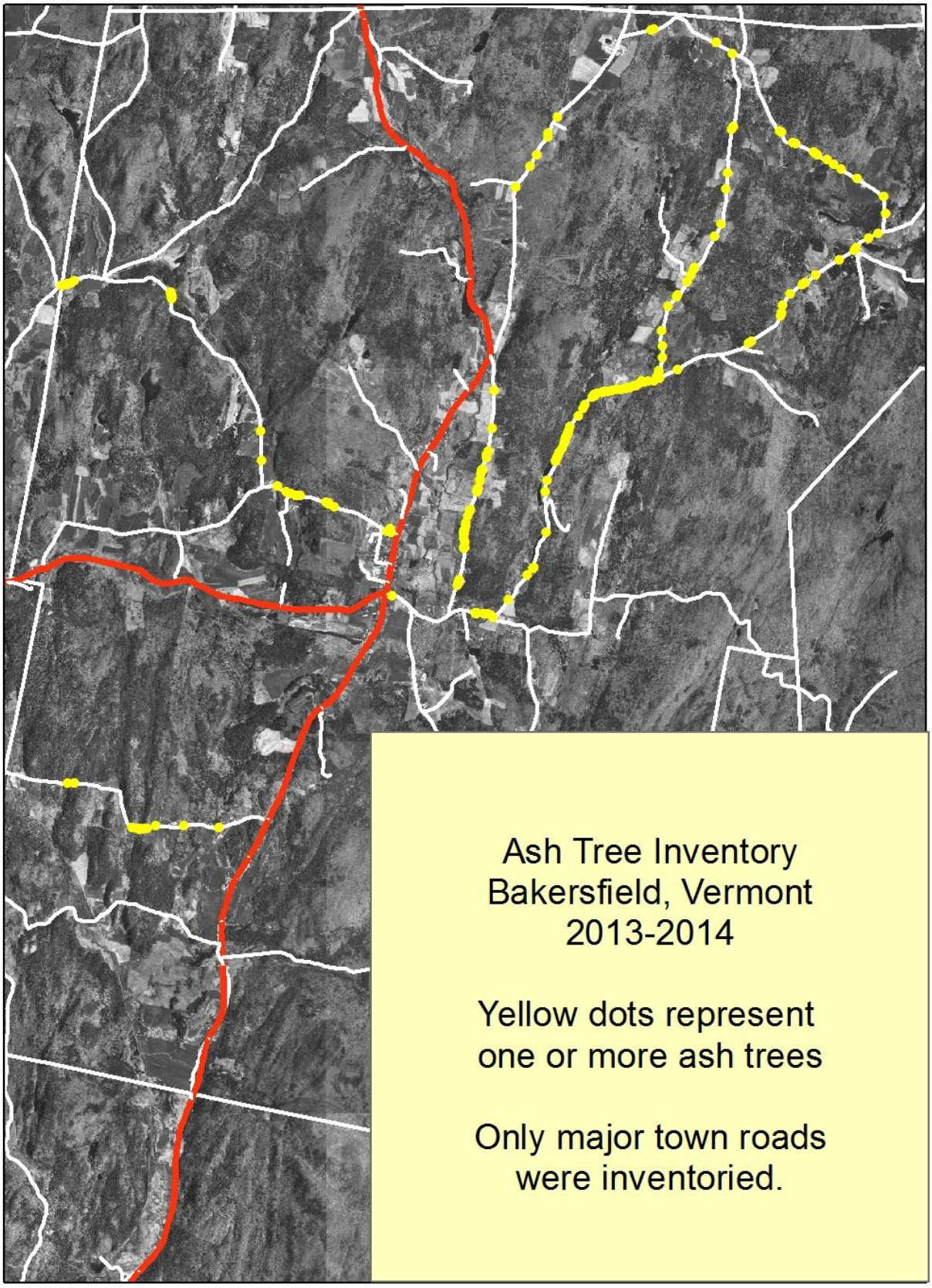
The town of Bakersfield conducted a roadside tree inventory in the fall of 2013 and the spring of 2014. The inventory covered approximately 21 miles of roads identified by the Town Road Commissioner and the Selectboard as the most highly travelled roads and thoroughfares, and therefore the roads most likely to pose hazards to drivers should ash trees die. Several conservation commission members traveled the roads marking the location of the ash trees with a Garmin GPS. The data taken included the location of the trees, number of trees at each waypoint, the size of each tree in diameter size classes, and the direction of travel and the side of the road on which the tree or trees were located. The GPS co-ordinates were downloaded and mapped in ArcGIS on a town road map with an orthophoto layer for reference. Trees were inventoried within the town ROW (25 feet from center line) at a diameter of 6 inches and greater.

A town map was developed that shows the roads inventoried and where ash trees were found. Data sheets were scanned and are attached to this document for future reference, to be used if needed. Since the data are in ArcGIS, additional site-specific maps can be made at the request of the Town Selectboard or for individual landowners.

Inventory results

Road	Length	#trees	# trees over 18” diam.	Average tree diam.
Boston Post Road	2.5 miles	18	0	11.0
East Bakersfield Road to Joyal Road		168	7	11.0
Egypt Road		51	0	10.6
Joyal Road		24	0	10.5
King Road		89	5	11.6
Whitney Road		18	3	13.0
Witchcat Road		44	1	11.2
Total		**412**	**16**	**11.2**

Most of the trees in the rights-of-way are in the 6-12 inch diameter class. Larger trees are found on each road, but trees larger than 18 inches in diameter (very large trees) are limited to four roads. The greatest number of trees was found on East Bakersfield Road. The largest trees were found on East Bakersfield Road, King Road, Whitney Road and Witchcat Road.


Ash Tree Inventory
Bakersfield, Vermont
2013-2014
Yellow dots represent
one or more ash trees
Only major town roads
were inventoried.

IV. Key Stakeholders and Resource List

Representing Role/Responsibility	Name	Contact
Selectboard Chair	Brian Westcom	Phone:827-4495 Email: brian.westcom@us.army.mil
County Forester	Nancy Patch	Phone: 524-6501 Email: nancy.patch@state.vt.us
Tree Warden	Larry Krygier	Phone: 827-6123 Email:ljk999@myfairpoint.net
Solid Waste District Delegate	Jim Lintereur	Phone:933-2463 Email:
Conservation Commission Members	Dorothy Allard, Alice Foote, Sue Tillotson, Larry Krygier, Pat Evans, Carolyn Bronz, Eric Jessiman	Phone: 827-4495 Email: go to ourbakersfield.org/contact
Planning Commission Chair	Pat Lintereur	Phone:933-2463 Email:patlint@myfairpoint.net
Road Commissioner	William Newett	Phone:827-6133 Email: none
Certified pesticide applicators in category 3A. Go to http://www.vtinvasives.org/pesticide-treatment for an updated list		
Certified arborists/tree removal contractors. Go to: http://www.isa-arbor.com/		
Master Gardeners. Contact Lisa Chouinard at master.gardener@uvm.edu or (802) 656-9562		
SOUL Tree Stewards. Contact Kate Forrer at Katherine.Forrer@uvm.edu or (802) 223-2389		

Roadside Pest Planning Team

Name	Responsibility	Contact
Bakersfield Conservation Commission	Inventory, planning, education, outreach	Phone: 827-4495 Email: go to ourbakersfield.org/contact
William Newett, Road Commissioner	Roadside hazard trees	Phone: 827-6133 Email: none

V. Tree Management Considerations

Monitoring and Detection

One of the first lines of defense against EAB is to monitor for the pest. It has been estimated in many instances where EAB was found, that EAB was usually present in the community for a number of years before it was detected. If a new EAB infestation can be detected while it is still limited in scale, it may be more controllable. In addition, identifying infestations early will give

towns more time to implement management strategies before ash trees in the community are in a late stage of decline and become hazardous, ultimately saving them money. To date, the State of Vermont has been conducting survey and detection efforts across the state, hoping to detect EAB early. Probably the most well known effort is the use of the purple traps, which were used for the first time in 2007. The traps are made of a purple corrugated plastic board that is coated with a non-toxic glue. Research shows that EAB is visually attracted to purple and to increase the attractiveness of the trap to the beetles, it is baited with a lure (Manuka oil). The traps are 24" in length, triangular in shape, and open in the center. Traps are placed in the tree canopy prior to the start of adult EAB emergence and are left hanging through the end of seasonal beetle flight. Residents are encouraged to report any tree suspected of having EAB. Cases can be reported by notifying Vermont Forests, Parks and Recreation.

Management

To date, communities in North America have not successfully eradicated EAB once detected. Symptoms of EAB are slow to appear, making initial infestations hard to detect. Once EAB is found it is usually estimated that it has been present for 3-5 years. As the population builds, EAB eventually infests and kills all varieties of ash trees in the area. Once ash trees are infested with EAB, they typically decline and die over a period of 2-3 years. The burden of dealing with hundreds to thousands of dead and dying trees in a short period of time can place an enormous strain on a Town's budget, personnel, and resources. Management options vary and there is no one all-inclusive method.

Management options are typically divided into two categories: preventative (preemptive) or reactive management efforts. Preventative efforts entail education and preemptive removals. By preemptively treating or removing ash trees before the arrival of EAB in the community, the strains placed on a community can be minimized and provide flexibility in tree budgets. In addition, preemptive removal can potentially diminish the movement of EAB across the landscape by making it difficult for dispersing beetles to find host trees. Reactive management delays actions taken until EAB has arrived. It usually entails removing a tree once it is dead or infested with EAB. With both management options, removal costs are significant. The advantages and disadvantages of conducting preemptive vs. reactive tree removals include the following:

Preemptive Removals: Removing ash trees not infested with EAB

Pros:	Cons:
• Opportunity to spread removal costs over a longer time frame. • Reduces problem of dealing with many dead and/or hazardous ash trees at one time. • Opportunity to start the replanting/recovery process right away. • Greater flexibility in organizing removal and routine work schedules. • Ability to utilize ash wood for products or use it as a local source of firewood.	• Immediate impacts to tree canopy and aesthetics. • Removing healthy ash may create negative feeling in the community. • Does not take into account that research may find an effective control of EAB.

Reactive Removals: Removing ash trees which are either infested with EAB or dead

Pros:	Cons:
• Delayed impacts to tree canopy and aesthetics. • No negative public perception or removing healthy trees. • Delayed budgetary impacts until EAB hits. • Further EAB research may offer effective control, minimizing need for removals.	• If no action is taken to control EAB infestations, studies have shown that the rate of spread will be much faster. • Budget impacts can be severe once EAB is in community. • Replanting funds may not be available due to extreme removal costs.

The following elements of Bakersfield's EAB Preparedness Plan are suggested and are subject to periodic revision as new information about EAB is available and as EAB moves across the state. The plan is also subject to change should state and federal policies dictate or as budgets are altered.

In order to prevent or slow the spread of EAB, the Bakersfield Conservation Commission will take preemptive action by helping to educate residents of Bakersfield about EAB, and will help landowners make wise choices in preemptive removal along rights-of-way by providing ash tree identification and locator maps.

Removal Plan

Under state statutes the town tree warden may designate trees for removal if posing a hazard. Ash trees have the potential to be infected by Emerald ash Borer but currently are not infected, and therefore are not currently hazard trees.

The roadside ash inventory revealed that the number, density and size of ash trees along roadsides in Bakersfield is highly variable. Bakersfield is a rural town with strong connections to its forests and farms. Most Bakersfield property owners with forested land adjacent to roadsides own chainsaws and know how to use them, know how to identify ash trees, and are at least aware of the threat that EAB poses. However, they may not be aware of how many ash trees they have that are adjacent to roadsides.

The Bakersfield Conservation Commission has developed a plan to help educate its residents about EAB and preemptive actions that can be taken to help prevent its spread. White ash is a popular source of firewood, since it provides substantial heating power and is straight-grained and relatively easy to split. Trees along roadsides are also easy to harvest and transport to homes for burning when compared to those deeper within the forest. Since many Bakersfield residents heat with wood and already harvest firewood from their own property, making landowners more aware of the threat of EAB may help them to shift their wood harvesting efforts to concentrate on roadside ash. More information on our education and outreach strategy is included in the next section.

VI. Community Education and Outreach Strategy

The Bakersfield Conservation Commission will be in charge of public outreach. The outreach plan includes:

1) Work with UVM to create a poster to be displayed at Town Meeting day, at other town events, and to be posted at the Town Clerk's office.
2) Provide the Town Clerk and Town Library with information materials on EAB and the "DON'T MOVE FIREWOOD" campaign.
3) Discuss EAB status on a regular (as-needed) basis in its monthly commission meetings, and in quarterly meetings with the Selectboard.
4) Write press releases periodically for the local papers addressing EAB, and the outreach work.
5) Provide a copy of this plan to selectboard, road commissioner, and planning commission. Place one copy at the library, and at the Town Clerk's office.
6) Provide informational brochures about EAB and its status in Bakersfield at public events.
7) Work with landowners to provide information about their ash trees along roadways.
8) Post updates on EAB information and ash trees on the conservation commission web site and Facebook page.
9) Lead walks in the Bakersfield Town Park that focus on ash trees.
10) Work with local utility companies to provide data on the tree inventory where ash trees occur along power line rights-of-way.

On Town Meeting Day in 2014, a poster was presented in the lobby of the Town Hall before Town Meeting. The poster, created by UVM, had a spot for the addition of a map containing the data from the ash tree inventory. After the meeting the poster was moved to our town's Historical Society building where a potluck lunch was held. Discussions about EAB were held with several local residents.

EAB status has been discussed several times at selectboard meetings and regularly at conservation commission meetings. The conservation commission reports on its activities on a quarterly basis to the Selectboard, giving us the opportunity to pass on any new information. The Road commissioner almost always attends the selectboard meetings.

The Town of Bakersfield holds two major public events every year: a 4th of July celebration and a Homeland Days celebration in September. These events will give commissioners the opportunity to spread the word about EAB. Several dinners are also held during the year. The dinners are a good chance to engage residents. Finally, the Bakersfield Town Park, which is managed by the Conservation Commission, holds public events from time to time. All of these events provide a way to talk with landowners and other residents about EAB.

The Bakersfield Town Park is within walking distance of the town library and the elementary school. Since part of the park is wooded and has trails, it provides an outdoor classroom that can be used to teach children and adults about ash trees. Also, a large kiosk has been erected in the town park where EAB information can be posted.

The Bakersfield Conservation Commission has two active forms of social media: its web site (www.ourbakersfield.org) and a Facebook page. Both of these will be used to spread the word about ash trees and EAB.

The Commission has already begun contacting landowners who own forested land along roadways. We hope to continue to work with landowners, perhaps targeting those with the largest trees or with the greatest density of trees first. Since most commissioners have lived in Bakersfield for many years, personal contacts already exist with many landowners, making communication easier. Also, Nancy Patch, our county forester, knows most of the Bakersfield residents who own forest land.

VII. Disposal and Utilization

EAB Regulations for Quarantined Areas

In order to prevent further spread of EAB through artificial (human assisted) means, the following materials are regulated in quarantined areas:
• Ash trees, limbs, branches, and roots
• Ash logs, slabs, or untreated ash lumber with bark attached
• Cut firewood of all non-coniferous species
• Ash chips and ash bark fragments larger than one inch in two dimensions
• Mixed wood residue that may contain ash
• Any wood items which could harbor living EAB eggs, larvae, or adults and thus transmit an infestation.

For practical purposes, the minimum level of a quarantine will be at the county level. However, additional surrounding counties may be quarantined because of the possibility of natural EAB spread, and in order to allow for the processing of regulated articles. USDA APHIS will primarily regulate interstate movement of regulated materials.

While movement of regulated material anywhere within a quarantine area is legal, caution should be placed on the movement of material across large expanses of the quarantine to limit any further spread of EAB. Quarantines will primarily affect nurseries, firewood dealers and users, and mills. Compliance agreements are the most common tool used to allow industries to conduct business and move affected material while protecting areas of the state not yet affected by EAB. Compliance agreements allow for the movement of regulated material from quarantined areas to non-quarantined areas from October 1 to March 31 and require all material to be processed according to legal specifications by April 30. Under this treatment schedule, all life stages would be destroyed prior to adult emergence. The dates are determined based on the life cycle of EAB. EAB is in its larval stage under the bark of the trees from approximately October 1 to May 1, thus when transporting material during this time spread is minimized. However, due to EAB typically emerging from the trees in its adult “flight” stage between May 1 and September 30, no untreated material can be moved outside quarantine areas during this summer period. Listed below is a summary of EAB regulations by industry

Ash nursery stock is prohibited from being distributed outside of the EAB quarantine area. Ash logs cannot be moved out of the quarantine area during the adult flight period (roughly April 1 through September 30) unless fumigated or debarked. From October 1 through March 31, untreated ash logs may be allowed to be moved to an approved mill outside of the quarantine area for processing by April 30. Bark and wood waste must be processed by April 30. These processes must be approved by state or federal agriculture agencies.

All hardwood firewood is prohibited from distribution outside the EAB quarantine area unless

it has been heat treated, fumigated or debarked (plus removal of ½ inch of wood). These processes must be approved by state or federal agriculture agencies. Firewood not for commercial sale (homeowner use) may be moved within the quarantine area but users should avoid moving firewood any distance from the area the wood originated from to reduce further spread of EAB.

Ash lumber will need to be processed in an approved manner, such as complete removal of bark (plus ½ inch of wood), kiln drying by approved standards, or fumigation prior to distribution out of the quarantine area. All processes will need approval by state or federal agencies. Contact officials for further information.

Ash lumber (generated from ash from the quarantine area) used to make pallets will need to be processed in a manner approved by state or federal agencies. Contact officials for further information.

Wood waste from pruning, storm damage, or removals should not be moved from the point of action in order to reduce the spread of EAB. Locations for wood waste drop-off may be established in the near future. Contact officials for more information.

One aspect of reducing the spread of forest pests is properly disposing of or using wood, brush and stump grindings generated by the removal of infested trees. Collaborating with adjacent towns on wood disposal areas, chipping equipment, tree care crews, and utilization of ash materials – e.g., chip marketing, will save staff time and resources. The Bakersfield Conservation Commission has been working with our county forester, Nancy Patch, and adjacent towns of Enosburgh and Richford on developing this EAB preparedness plan. This relationship has set the stage for future collaboration, in case adjacent towns need disposal space, or Bakersfield needs disposal space in adjacent towns.

The purpose of a debris disposal yard is to help prevent wood which could potentially house forest pests, such as the emerald ash borer (EAB) or hemlock woolly adelgid (HWA), from being transported out of a quarantined area. They can be used as staging sites for wood processing, such as chipping, grinding, and debarking, and related marketing activities. The yards also serve as temporary or emergency storage sites when trees are removed. They allow municipalities, tree service companies, utilities and individuals to drop off cut material for processing and disposal in a manner to prevent artificial spread of EAB and HWA. Disposal sites or wood recycling centers may also accept various species, not just ash and hemlock, and can make wood disposal more efficient and economical.

The Bakersfield Conservation Commission will discuss disposal yards within town with the selectboard and Road Commissioner at its quarterly meetings, and has identified several potential options for disposal yards. Perhaps the best location is on a property recently acquired by the town for a gravel pit on Egypt Road. Open and accessible land within the area where gravel has been removed may be an ideal disposal yard.

Appendix: Field Data Forms

110@9"=990 46@15=690 5@21=105 1@27=27 1@33=33 2hr x 3 people on 10/30 (1)

Bakersfield Roadside Ash Rapid Assessment

Road Name: East Bakersfield Rd. Date: 10/30/2013

Road Start Point: (e.g., Route 108) Rt. 108 Surveyor: Allard, Tillotson, Locke

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
44	46	49	72	47	22	R		II				
44	46	49	72	47	21.5	R	I	II				
44	46	49	72	47	21	R	I					
44	46	48.5	72	47	18.0	L	II					
44	46	48.5	72	47	16	L	I					
44	46	48	72	47	14.5	L	I					
44	46	47	72	47	13	R		I				
44	46	53	72	47	05	L	I	I				
44	47	02	72	46	56.5	L	I	I				
44	47	4.5	72	46	54	R	I					
44	47	4.8	72	46	53.1	R	I	I				
44	47	17	72	46	47.3	R	I					
44	47	31	72	46	48	L		I				
44	47	35	72	46	47.3	L	IIII	I				
44	47	41.7	72	46	42.8	L	II					
44	47	41.9	72	46	42.9	L	II	I				

19 8 (27)

Bakersfield Roadside Ash Rapid Assessment

Road Name: East Bakersfield Rd. Date: 10/30/2013 page 2

Road Start Point: (e.g., Route 108) R+108 Surveyor: Allard, Tillotson, Foster

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
~~44~~ 45	47	~~42.1~~	72	46	42.5	L	I					
~~44~~ 45	47	43.4	72	46	42.0	L		II				
~~44~~ 45	47	44	72	46	41.0	L	I					
~~44~~ 45	47	45	72	46	41	L	I					
~~44~~ 45	47	45	72	46	41	L	I					
~~44~~ 45	47	46	72	46	40	L	I		I			
~~44~~ 45	47	48	72	46	39	L		I				
~~44~~ 45	47	48.6	72	46	38.6	L		I				
~~44~~ 45	47	49	72	46	38.4	L		I				
~~44~~ 45	47	50	72	46	38	L	I	II				
~~44~~ 45	47	50	72	46	38	L	I					
~~44~~ 45	47	50.7	72	46	37.7	L	III	II				
~~44~~ 45	47	51.3	72	46	37	R	III					
~~44~~ 45	47	51.6	72	46	37	L		I				
~~44~~ 45	47	51.8	72	46	37.2	L	I					
~~44~~ 45	47	52.6	72	46	36.7	L	II					
							16	10	1			

(27)

Bakersfield Roadside Ash Rapid Assessment

Road Name: E. Bak. Rd Date: 10/30/2013 page 3

Road Start Point: (e.g., Route 108) Rt 108 Surveyor: Allard, Tillotson, Foote

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
44 45	47	54	72	46	36	L			1			
44 45	47	57.3	72	46	32	R	1					
44 45	same as		72	above		L	1	1				
44 45	same as		72	above		R		1				
44 45	48	0	72	46	29.6	R	1					
44 45	48	0	72	46	26.6	L	IIII					
44 45	48	0.2	72	46	28.8	L	IIII 1					
45	48	.04	72	46	25	R	III					
45	48	04.5	72	46	24.4	R	II					
45	48	05	72	46	24.2	L					1	
44 45	48	05.3	72	46	23	L		1				
45	as	above	72			R	1					
45	48	05.6	72	46	20.7	L				1		
45	48	05.7	72	46	20.	R	1	1				
45		as above	72			L	11					
45		as above	72			L		1				
							23	5	1	1	1	

(31)

pg 1

Bakersfield Roadside Ash Rapid Assessment

Road Name: E. Bakersfield Rd. Date: 10/30/2013

Road Start Point: (e.g., Route 108) Rt 108 Surveyor: Allard, Tillotson, Fouts

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
44 45	48	06	72	46	19.3	R		I				
45	48	06	72	46	18.8	L	III	I				
45	ao	above	72			R	II	II				
45	48	06	72	46	17.6	R	II					
45	48	06.5 ~~ao above~~	72	46	15.5	L	II					
45	48	06.6	72	46	13.6	R		I				
45	48	06.7	72	46	11.4	R		II				
45	48	07.0	72	46	10	R	I					
45	48	07.1	72	46	08.9	R	I					
45	48	07.2	72	46	08.3	R	I					
45	48	07.4	72	46	07.3	R	I					
45	48	08.	72	46	05	R		II				
45	48	08.2	72	46	04.1	R	~~IIII~~ I					
45	48	08.5	72	46	03.4	R		I	II			
45	48	08.7	72	46	02.4	R		IIII	I			
45	48	09.1	72	46	01.9	L	III					to edge + pole at crest of hill

22 16 3

(41)

3 hr x 2 people @ 11/4/13 (6)

Bakersfield Roadside Ash Rapid Assessment

Road Name: (upper) Town Rd #3 Date: 11/4/13

Road Start Point: (e.g., Route 108) Rt 108 Surveyor: Alkaly, Forte

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
45	48	09.6	72	46	01	L	IIII					
45	48	9.5	72	45	59.7	L	II					
45	48	9.5	72	45	59.7	R	I					
45	48	9.8	72	45	58	L	II					
45	48	09.8	72	45	55.3	R	IIII					
45	48	10.8	72	45	52.3	R	I	II				
45	48	13.6	72	45	43.6	L		I				
45	48	23	72	45	08.8	L	II	II				
45	48	23.5	72	45	07.7	L	I					
45	48	32.6	72	44	52.2	L	II					
45	ao	above	72			R	II					
45	48	33.6	72	44	52.1	L	I					
45	48	36.3	72	44	52.2	L		I				
45	48	40.2	72	44	48.7	L		I				
45	48	43.5	72	44	42.9	L	III					
45	48	44.0	72	44	41.2	L	I					

water Rd →

23 7

(30)

(b)

Bakersfield Roadside Ash Rapid Assessment

Road Name: Town Rd. #3 Date: 11/4/13

Road Start Point: (e.g., Route 108) Rt 108 Surveyor: Allard, Foote

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
45	48	46.8	72	44	36.3	L	1	1				
45	48	52.2	72	44	24.7	L	1	1				
45	48	55.5	72	44	17.4	L	11	11				
45	48	56.3	72	44	16.4	L	11					
45	48	59.7	72	44	10.2	L	1					
45	49	01.2	72	44	05.9	L		1				
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									

loop Rd

7 5

(12)

(1)

Bakersfield Roadside Ash Rapid Assessment

Road Name: Doyal Rd Date: 11/4/13

Road Start Point: (e.g., Route 108) E Bakersfield Rd Surveyor: Al, Ke + Dorit

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
E. Bakersfield Rd. 45	49	08.2	72	44	02.3	L	I	I				
45	49	14.0	72	44	03.0	L	I					
45	49	20.4	72	44	16.0	L	I					
45	49	23.6	72	44	23.7	L	I					
45	49	25.2	72	44	27.3	L		II				
45	49	26.9	72	44	31.0	L	II					
45	49	28.6	72	44	35.3	R	II					
45	49	29.1	72	44	36.6	L	I					
45	49	28.5	72	44	37.3	R	IIII					
45	as above		72			L	I					
45	49	32.4	72	44	46.1	R		I				
45	49	32.7	72	44	47.3	R	I	I				
45	49	36.3	72	44	53.2	L	I					
witchcat Rd 45	49	36.8	72	44	54.0	R	II	I				
45			72									
45			72									

18 6
162 90

(24)

Bakersfield Roadside Ash Rapid Assessment

Road Name: Witham Date: 11/11/13

Road Start Point: (e.g., Route 108) E. Bakersfield Surveyor: Allard

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
44 ~~45~~	48	11.1	72	45	53.9	L	I					
45	48	11.8	72	45	53.4	L	II	I				
45	48	12.7	72	45	52.9	L	II	I				
45	48	13.4	72	45	52.6	L			I			
45	48	17.8	72	45	50.8	L	II					
45	48	22.0	72	45	51.1	L		II				
45	same		72			R	III					
45	49	27.1	72	45	51.5	L		I				
45	48	35.7	72	45	48.4	L	II					
45	48	39.1	72	45	44.3	L		I				
45	48	39.8	72	45	43.5	L	III					
45	48	44.3	72	45	39.0	R	II					
45	48	46.8	72	45	37.2	R	III					
45	48	48.6	72	45	35.8	L	II	I				
45	48	49.2	72	45	35.3	L	I					
45	49	0.3	72	45	25.7	R		I				

24 8 1

(33)

Bakersfield Roadside Ash Rapid Assessment

(2)

Road Name: Witchcut Date: 11/11/13

Road Start Point: (e.g., Route 108) E Bakersfield RA Surveyor: Allard

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
45	49	04.5	72	45	22.5	R	1					
45	49	16.7	72	45	20.0	R		11				
45	49	22.1	72	45	19.5	R	1					
45	49	37.4	72	45	17.4	L		1				
45	49	38.4	72	45	16.6	L	11					
45	50	03.7	72	45	17.3	L	1					
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									

5 3

(8)

Bakersfield Roadside Ash Rapid Assessment

Road Name: Witchcat Road Date: 4/20/14

Road Start Point: (e.g., Route 108) Jct. Jrgal + Witchcat Surveyor: Allard

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
48	50	07.6	72	45	25.3	R	1					
48	50	12.0	72	45	55.6	R	1					
48	50	11.8	72	45	57.0	L				1		
48			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
							2			1		

✓ Data Coded (1)

Bakersfield Roadside Ash Rapid Assessment

Road Name: Whitney Rd. Date: 11/13/13

Road Start Point: (e.g., Route 108) R 108 Surveyor: Allard

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH) 1	2	3	4	5	6
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
P134 is a dupe 49 ~~45~~	45	33.9	72	49	27	R	1					
45	45	34.4	72	49	43.9	R	1					
45	45	34.4	72	49	57.6	R		1				
45	45	33.5	72	50	01.9	L		1				
45	45	33.4	72	50	03.1	R	11					
45	45	33.3	72	50	05.1	L			1	1		
45	45	33.1	72	50	05.8	L	++++					
45	45	33.3	72	50	06.8	R		1				
45	45	33.5	72	50	09.2	L			1			
45	45	49.1	72	50	37.6	R	1	1				
45	45	49.0	72	50	41.1	R		1				
45			72									
45			72									
45			72									
45			72									
45			72									

toss line

10 5 2 1

90 75 42 27

(18)

1pm Sat-

Bakersfield Roadside Ash Rapid Assessment

Road Name: Egypt Rd Date: 11/18/13

Road Start Point: (e.g., Route 108) Rt 108 Surveyor: Alford

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
45	47	16.6	72	48	03.4	L	~~IIII~~					
45	47	17.1	72	48	04.5	R		1				
45	47	17.1	72	48	05.2	L	1					
45	47	25.6	72	48	31.1	L	11					
45	47	26.6	72	48	33.7	L	11					
45	47	26.8	72	48	34.1	R	11					
45	47	27.1	72	48	35.2	R	11					
45	47	29.4	72	48	47.6	R	1	1				
45	47	29.4	72	48	49.7	R	11					
45	47	29.4	72	48	49.7	L	1	1				
45	47	29.5	72	48	50.2	R	1					
45	47	30.0	72	48	52.2	R	11	1				
45	47	30.8	72	48	54.7	R		1				
45	47	32.7	72	48	58.7	R	1					
45	47	41.7	72	49	07.0	L		1				
45	47	51.7	72	49	07.2	L	1					

WPt 11 is here

333
210

23 6

(9)

(2)

Bakersfield Roadside Ash Rapid Assessment

Road Name: Egypt Rd Date: 11/18/13

Road Start Point: (e.g., Route 108) RT 108 Surveyor: Allard

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
45	48	37.6	72	49	50.9	R		1				
45	48	38.2	72	49	50.9	R		1				
45	48	38.9	72	49	51.0	R		1				
45	48	39.3	72	49	51.4	L	1111					
45	48	40.2	72	49	51.7	R		1				
45	48	40.2	72	49	51.7	L	111					
45	48	43.8	72	50	38.7	L	1					
45	48	43.3	72	50	46.1	L	1					
45	48	42.8	72	50	41.5	L	11	1				
45	48	42.7	72	50	41.7	L	1	1				
45	48	42.6	72	50	42.3	L		1				
45	48	42.3	72	50	44.7	R	1	1				
45			72									
45			72									
45			72									
45			72									

14 8

(22)

Bakersfield Roadside Ash Rapid Assessment

Road Name: Boston Post Date: 12/2/13

Road Start Point: (e.g., Route 108) Rt 108 2.5 miles Surveyor: Allard + Tillisch

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
45	49	16.9	72	47	02.7	R	/					
45	49	24.4	72	46	55.9	R	/					
45	49	28.2	72	46	52.7	R	//					
45	49	34.6	72	46	47.4	R	////	////				
45	49	35.8	72	46	47.2	R		/				
45	49	41.5	72	46	42.6	R	/	/				
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									

12 6

108

(18)

p1

Bakersfield Roadside Ash Rapid Assessment

Road Name: King Road Date: 4/19/2014

Road Start Point: (e.g., Route 108) Rt 108 Surveyor: Allard

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
4 45	48	06.3	72	47	13.0	R	1	1				
4 45	47	53.2	72	47	14.2	L		1				
4 45	47	45.3	72	47	15.9	L		1				
4 45	47	43.8	72	47	16.8	R	III	1				
4 45	47	42.9	72	47	16.9	L			1	1		
4 45	47	38.9	72	47	18.7	R	II	II				
4 45	47	38.6	72	47	18.8	R	II	III				
4 45	47	38.4	72	47	18.9	R	III	1				
4 45	47	38.4	72	47	19.0	R	II	1				
4 45	47	37.2	72	47	19.4	R	~~IIII~~					
4 45	47	35.1	72	47	19.9	R		1				
4 45	47	34.5	72	47	20.1	L	II	1				
4 45	47	32.3	72	47	20.8	L	III					
4 45	47	32.0	72	47	20.9	L	II					
4 45	47	31.3	72	47	21.2	L	III					
4 45	47	31.0	72	47	21.4	L	IIII					
							32	13		1		

522
390
42

81

P2

Bakersfield Roadside Ash Rapid Assessment

Road Name: King Rd. Date: 4/19/14

Road Start Point: (e.g., Route 108) R+118 Surveyor: Alam

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
45	47	24.7	72	47	24.8	R	/					
45	47	24.3	72	47	25.1	R	/					
45	47	24.1	72	47	25.1	R	/					
45	47	22.3	72	47	26.1	R		/				
45	47	20.0	72	47	26.7	R		/				
45	47	19.2	72	47	27.0	R	////					
45	47	17.9	72	47	27.4	R			/			
45	47	17.3	72	47	27.6	R	/	//				
45	47	16.7	72	47	27.7	R	//	///		/		
45	47	16.5	72	47	27.7	R	////					
45	47	16.2	72	47	27.6	R	///	//				
45	47	14.9	72	47	27.6	R		/	/			
45	47	13.5	72	47	27.4	R	///					
45	47	11.6	72	47	27.5	R	/					
45	47	11.5	72	47	27.4	R		/				
45	47	11.2	72	47	27.5	R				/		
							23	11	2	2		

3

Bakersfield Roadside Ash Rapid Assessment

Road Name: King Rd. Date: 4/19/14

Road Start Point: (e.g., Route 108) Rt 108 Surveyor: Algal

Latitude (N)			Longitude (W)			Side of Road	Ash Tally (DBH)					
Deg.	Min	Sec	Deg	Min	Sec	(L/R)	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"
45	47	60.2	72	47	29.9	R	/					
45	46	59.5	72	47	30.5	R	/					
45	46	58.9	72	47	30.7	R		//				
45	46	58.4	72	47	31.0	R	/					
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									
45			72									

3 2