Background
Emerald Ash Borer (EAB), Agrilus planipennis, is a highly destructive invasive insect native to Asia that was first discovered in the United States in Michigan in 2002. Since detection in 2002, EAB has spread to 35 U.S. states and Canada killing many millions of ash trees. Entomologists consider EAB to be the most destructive forest insect ever to invade North America. Natural EAB movement each year is limited to about half a mile. Humans moving ash wood allow insects to move long distances and infest new areas. EAB has the potential to kill all unprotected ash trees. In 2013 the first infestation of EAB in Colorado was found in the city of Boulder. EAB has now been identified in Longmont, Superior, Gunbarrel, Lafayette, Broomfield, Lyons, and Westminster, Colorado. In June of 2020 EAB was identified in Arvada at Homestead Park.

EAB poses a very serious threat to all species of ash trees which are a very common tree found in Colorado landscapes and streetscapes. The number of ash trees in the greater Denver metropolitan area is estimated to be 1.45 million trees. Ash trees account for 15 percent or more of urban trees and due to their large size at maturity contribute 30 to 35 percent of the urban tree canopy.

Management Strategies

Inventory - Public
A critical element of any EAB management plan is to complete a full inventory of the number and location of ash trees to be managed. The Arvada forestry division has inventoried more than 14,000 trees on public property to date with about 1,200 being ash trees. These trees are growing in Parks, Streetscapes, City Facilities and Athletic Fields, as well as some Open Space Areas. The inventory does not include Arvada’s two golf courses. The data collected for each tree includes species, size, condition, and other pertinent information. In the summer of 2021, the Forestry Team reevaluated all the Ash trees on public property. They identified almost 700 ash trees to treat for protection against the Emerald Ash Borer.
Detection
Since 2013 when EAB was identified in Boulder, forestry staff have utilized a variety of methods to search for EAB in Arvada. These methods include visual survey, trap trees, plastic traps, chemical lures, branch peeling, and contractor reporting. Even for experienced arborists, EAB is hard to identify in the early stages of infestation. Visible symptoms of early infestations are scarce and often mimic the symptoms of other pests and environmental factors that affect ash tree health. Experience with EAB in other cities has shown a 3-4 year delay in trees infested to the time when removal is necessary.

Proactive Emerald Ash Borer Mitigation
Preemptive removal of Ash that are not infested with EAB can be an important element of tree care management. In our community there are ash trees that are in poor condition, poor locations, or not good candidates for chemical treatments. Structural defects, trunk wounds, native insect infestations, and overhead power lines are some reasons that chemical treatments may not be a good option.

Removing these trees and replacing them with non-ash species before the arrival of EAB improves the resilience of the urban forest. This allows resources to address higher quality ash trees. Due to native insects such as the Lilac/ash borer, and other pests, along with environmental factors, many of Arvada’s ash trees are in poor condition. Forestry staff are proactively removing these poor condition trees. Poor condition ash trees will not respond well to insecticide treatments and their elimination will reduce available food sources and habitat for EAB. To maintain the urban forest canopy these trees will need to be replaced with a diverse mix of tree species that can succeed in the urban environment.
Chemical treatments

All unprotected ash trees will eventually die when infested with EAB. Properly applied insecticide treatments will protect trees. Treatments can be preventative before EAB infestations or in the early stages of infestation. Trees need to be in good condition for treatments to be effective. Trees showing more than 30 percent crown decline are not good candidates for treatment. There are three types of treatments: soil application, trunk spray, and trunk injection. In each type of application the insecticide is translocated throughout the vascular system of the tree killing EAB larvae as they feed. There are pros and cons to each type of treatment and various insecticides used. Anyone doing insecticide applications for hire must be licensed by the Colorado Department of Agriculture.

The Forestry Team has been treating Ash trees on public property since the Summer of 2020. They have been using a combination of trunk injections and soil injections to treat trees. Trunk injections are more expensive and are used on trees of a diameter of 12 inches or larger. This type of treatment gives the tree up to 3 years of protection against wood boring insects including the Emerald Ash Borer. Soil injections are less expensive but only provide one year of protection. This form of treatment is used for trees that are not large enough for trunk injections but provide a valuable service to the park such as critical shade to a playground or make up the majority of the canopy in that park.
Private Property
A major concern for many municipalities is how to manage trees on private property. An urban forest assessment by the USDA Forest Service shows Arvada to have approximately 650,000 trees. It is estimated that 97,000 or approximately 15 percent are ash trees. The density of ash trees varies across Arvada with the percentage being higher in older areas of the city when Ash was a more popular tree to plant.

EAB doesn’t discriminate between trees on public and private land. Infested trees will produce many beetles over the course of their decline and death. Treating large high quality ash before infestation or removing infested trees in the early stages of decline are an important part of limiting the EAB population. Ash trees quickly become brittle and hazardous once dead and often are more expensive to remove once they have died. Pre-emptively removing Ash that are not candidates for treatment and replacing them can be a cost effective strategy for homeowners.

Summary
In future years EAB will have a significant impact on Arvada’s urban forest. City forestry staff will be able to manage ash trees on public property by protecting high value ash trees and removing those that are in poor condition. Trees removed will be replaced with a diverse mix of tree species which will increase the overall resilience of our tree canopy to drought, storms, temperature extremes, insects, and diseases.

By far the majority of ash trees in Arvada are located on private property. It will require the efforts of citizens to protect these trees while removing those that are not good candidates for treatment. By taking a proactive approach homeowners can save themselves money while helping to keep their Urban Forest healthy.