SECTION 11: TREE CARE AND PROTECTION

This section consists of the following reference material:

1) PLPOA Department of Property and Environment booklet "Tree care and protection in Pagosa Lakes".

2) Colorado State University (CSU) document # 5.528; Mountain Pine Beetle and Related Bark Beetles.

3) CSU #5.529; Pine Tip Moths.

4) CSU #5.567; Ponderosa Pine Budworm. (discontinued through the CSU website)

TREE CARE AND PROTECTION

IN PAGOSA LAKES

Trees in Pagosa Lakes are very valuable to a property owner. Not only do they add beauty to your lot, they provide shade, wildlife habitat, visual and noise buffering, air and water purification, storm water runoff retardation and increase the value of your lot.

Every year we are seeing more and more trees dying due to human influences. Trees can be mortally damaged during the construction of your home or structure, and you may not even know it. It is not uncommon for a tree to die two or three years after the damage has been done. Trees may be weakened due to human influences as well, which leaves them more susceptible to death from other causes such as disease, insect attack or even drowning. That's right, trees can be easily drowned. Many native tree species have adapted to life here in southwest Colorado, which means that they prefer a drier environment. Changes in the drainage patterns of your property due to construction can often times cause a prized tree to slowly drown. The addition of a bluegrass lawn, which requires a lot of irrigation, can cause problems as well. That's not to say you cannot have a blue grass lawn, but you may want to consider this in your layout plan, considering irrigation and drainage of your trees.

One of our most common trees, the Ponderosa Pine, is extremely sensitive to changes in its environment. We see as many as a dozen Ponderosa Pine deaths a year due to construction and water damage. A lot of these trees could have been saved with a little planning and thought.

This informational booklet will address some of the things you can do to protect you trees during construction or even if your home has been in place for years.

AVOIDING TREE DAMAGE DURING CONSTRUCTION

Unfortunately, the process involved with construction can be deadly to nearby trees. Unless the tree damage is severe, the tree may not die immediately, but could decline over several years. With this delay in symptom development, you may not associate the loss of your tree with construction damage.

One of the best things you can do is to hire a professional arborist during the planning stage, or you may also consult with the PLPOA biologist on staff, or any other qualified tree care specialist.

How trees are damaged during construction

Physical injury to the trunk and crown – Construction equipment can injure the above ground portion of your tree by breaking branches, tearing the bark and wounding the trunk. If damage is severe enough, these injuries can be fatal.

Cutting of roots -The digging and trenching that are necessary to construct a house and install underground utilities will likely sever a portion of the roots of many trees in the area. The roots of trees may extend far from the trunk of a tree. In fact, typically roots may be found growing out

distance of one to three times the height of the tree. Severing one major root can cause the loss of 5-20 percent of the root system. This can be a fatal injury to a tree. Another thing to consider is that severing a major root can increase the likelihood of a tree falling over during a windstorm. Roots play a critical role in anchoring a tree.

Soil Compaction -An ideal soil for root growth and development is about 50% pore space. These pores or spaces between the soil particles are filled with water and air. The heavy equipment used in construction compacts the soil and can dramatically reduce the pore spaces. This not only inhibits root growth and penetration, but also decreases oxygen in the soil that is essential to a tree.

Smothering roots by adding soil -Most people are surprised to learn that 90 percent of the fine roots that absorb water and minerals are in the upper 6-12 inches of soil. Roots require space, air and water. Roots will grow best where these requirements are met, which is usually near the soil surface. Piling or adding soil over the root system will smother the roots. It only takes a few inches of added soil to kill a sensitive, mature tree.

Things you can do to protect your trees during construction

Getting advice -Hire a professional arborist early in the planning stage or consult with the PLPOA staff biologist. Many of the trees on your property may be saved if the proper steps are taken. One of the first things to consider is determining which trees are to remain and which should be removed. Try to maintain diversity of ages and species. Your arborist or consultant can advise you about which trees are most sensitive to compaction and grade changes.

Planning -Your arborist and builder should work together in planning the construction. The builder may need to be educated regarding the value of the trees on your property and the importance of saving them. Few builders are aware of the way tree roots grow, and what is needed to protect them. If you choose not to hire an arborist, make sure your builder understands how important the trees are to you, and give him a copy of this booklet. Go over in detail how you want the construction process handled in relation to your trees.

Sometimes small changes in the placement or design of your house can make a difference in whether a prized tree will survive. An alternative plan may be friendlier to the root system. For example, bridging over the roots may substitute for a conventional walkway. Or, instead of trenching beside a tree for utility installation, tunneling under the root system is much less damaging. If it is necessary to trench next to a tree or trees, roots will be damaged. It would be advisable to have an arborist on site during the trenching. Freshly damaged roots can be pruned in such a way as to minimize the trauma to the tree.

Erecting barriers – One of the most effective ways to protect trees from damage is to set up construction fences or barriers around all of the trees that are to remain. The fences should be placed as far out from the trunks of the trees as possible. A general guideline is to allow one foot of space from the trunk for each inch of trunk diameter.

Instruct the construction crew to keep fenced area clear of all building materials, vehicles and waste. No digging or other soil disturbance should be allowed in the fenced area.

You may want to consider a little bit of extra protection around a tree that is in close proximity to your home site, where there will inevitably be contact or disturbance. Wiring up four or five old boards or planks, vertically on the tree trunk, can help protect a tree from damage.

Limited access – If possible, it is best to only allow one access route on and off the property. All contractors must be instructed where they are permitted to drive and park their vehicles. Often this same access drive will later serve as the route for utilities, water lines and the driveway. Limit areas for cement wash-out zones and construction work zones. These areas should be away from protected trees. Also make sure the painters are not cleaning out brushes and equipment near trees, or in areas that drain toward trees or water. They should clean brushes and equipment in a closeable container and remove it from your property. Turpentine, xylenes and other paint components are deadly to trees.

Specifications – Get it in writing. All the intended measures to protect your trees should be written into the construction specifications. The written specifications should detail what and what cannot be done to and around the trees. Additionally, each sub-contractor should be made aware of these written specifications.

Maintain good communications -It is important to work together as a team. You may share clear objectives with your builder, but one sub-contractor can destroy all your efforts. Visit the site as often as possible to ensure compliance with your wishes. Your efforts will pay off.

Final Stages - It is not unusual to go to great lengths to preserve trees during construction, only to have them injured during landscaping. Installing irrigation systems and rototilling planting beds are two ways a trees root system may be damaged. Additionally, especially for Ponderosa Pines, planting high water use grasses, such as bluegrass, underneath a pine tree can cause damage to the root system of the tree simply from the amounts of water and irrigation that occur as a result. If you plan on planting bluegrass underneath your tree, take extra measures to ensure that drainage away from the tree is possible. Consider planting a native grass mix under Ponderosa pines, which require less water.

Damage to a tree may occur if a pre-existing drainage is blocked during construction. You may want to consider constructing a shallow swale, a French drain or an additional small culvert to allow for proper drainage if this occurs. The outlet for a basement or foundation sump pump should be directed away from Ponderosa Pines. Be familiar with the tree species involved. Some tree species can handle the water, others cannot. For example, firs and spruces are more water tolerant than pine trees.

Take extra precautions when trenching for the installation of an irrigation system. Try to avoid trenching in the dripline of your trees. If you must trench in the dripline, trench as shallow as possible. If the tree roots are damaged during trenching, have your consultant available to prune roots, and keep in mind that that tree would be a good candidate for aeration and supplements.

TREATMENT OF TREES DAMAGED BY CONSTRUCTION

Inspection and Assessment -Monitor the condition of your trees before, during and after construction. Pay attention to any changes in the appearance of your tree. It is best to have your trees inspected by an arborist or other tree care professional. Waiting to act at the onset of symptoms is often too late to save the tree.

A post-construction inspection may reveal damage to a tree or trees that may become a safety hazard. Sometimes the hazard can be reduced or eliminated by removing an unsafe limb or pruning to reduce weight.

Pruning – Branches that are split, torn or broken should be removed. Also, remove any dead, diseased or rubbing limbs from the crowns of the trees. It is best to limit pruning in the first few years after construction to hazard reduction and the removal of deadwood.

Pruning live branches for aesthetic purposes should be done by a professional and should be done during the dormant season (October through March). Pruning live branches during the growing season (April through September) can cause a fatal loss of nutrients. Pruning dead branches can be done any time of year.

Repairing damaged bark and trunk wounds – If the bark is damaged along the trunk or major limbs, remove the loose bark. Jagged edges can be cut away with a sharp knife (don't cut yourself). Take care not to cut into the trees' living tissue.

Wound dressings were once thought to accelerate wound closure and to protect against insects and diseases. However, research has shown that this generally is not the case. Most experts recommend that a wound dressing not be used. If a dressing is used for cosmetic purposes, use just a thin coating of a commercial tree-wound dressing material.

Consult with a specialist if your tree is severely damaged. He or she may recommend a supplement or aeration program that will give your tree the best chance for surviving.

If you choose to address the problem on your own, the vertical aeration technique discussed below would be your best bet.

Improving aeration of the root zone – Compaction of the soil and increase in grade both have the effect of depleting the oxygen supply to the tree roots. If soil aeration can be improved, root growth and water uptake can be enhanced. The most common method of aeration of the root zone involves drilling holes into the ground. Holes are usually 2-4 inches in diameter and are made about three feet apart, throughout the root zone of the tree. The depth should be at least 12 inches but may need to be deeper if the grade has been raised. Sometimes the holes can be filled with peat moss, wood chips or other materials that maintain aeration and support root growth. This is called **vertical mulching.**

An electric or cordless drill with a large bit is the best way to accomplish this. Drilling 25 to 50 holes for a large tree is not overdoing it.

Another form of aeration, called **radial aeration** may be necessary if the tree has been subjected to extreme root compaction. Narrow trenches are dug in a radial pattern throughout the root zone, much like the spokes of a bicycle tire wheel. It is important to begin the trenches 4-8 feet from the trunk of the tree to avoid cutting any major root supports. The trenches should extend at least as far as the dripline of the tree. Six or seven trenches should be adequate. The trenches should be about one foot in depth. They may need to be deeper if the soil grade has been raised. This technique is only appropriate for isolated trees, where the roots of other trees will not be damaged.

The narrow trenches can be backfilled with the topsoil or compost. This can give the tree that added boost it needs to adapt to the compacted soil or new grade.

Vertical mulching and radial trenching are techniques that may improve conditions for root growth. If construction damaged trees are to survive the injuries and stresses, they have suffered, they must replace the roots they have lost with healthy active roots. Aeration can also be an effective treatment for trees that seem to be declining for unknown reasons.

FERTILIZATION

Be careful about fertilizing trees. Most experts recommend not adding high nitrogen fertilizers to trees after they have been damaged. One of the most effective things you can do, is to fertilize trees before construction begins with a carbohydrate loaded emulsion. A professional arborist or

applicator can inject the surrounding soils with a kelp/fish emulsion or other similar supplement. This will give your trees a good reserve going into the construction process, as well as ensure adequate aeration.

If you do decide to fertilize your trees, it is best to first have a soil sample taken in the vicinity of your trees. This is very easy to do. Simply take a plastic baggie and fill it up to the one-half quart line with soil. Take the sample down to the Archuleta County, Colorado State Extension Office, at the Fairgrounds, and for a small fee they will send it off to be analyzed. The laboratory analysis will explain what is needed to supplement your trees. This can also be helpful in determining a fertilizer for your lawn and other landscaping.

MONITORING FOR DECLINE AND HAZARDS

Despite your best efforts you may lose some trees from the construction damage. Symptoms of decline in deciduous trees may include smaller and fewer leaves, dieback in the crown of the tree, and premature fall color. Symptoms of decline in evergreens may include needle browning, excessive needle-drop and an overall un-healthy look to the needles. If a tree dies as a result of root damage, it may become an immediate hazard and should be removed. A permit is required for a tree removal in Pagosa Lakes. Contact the Administration Office before removing a tree.

Examine your trees for signs of possible hazards. Look for cracks in the trunk, split or broken branches, and dead limbs. Watch for indications of internal decay such as cavities, carpenter ants, softwood, and mushrooms like structures growing on your tree. If you detect any defects or suspect decay, consult an arborist for a professional assessment.

TREE INSECTS AND DISEASES

Many natural tree insects and diseases are present in any forest environment. These are nature's way of "weeding out" weak and injured trees. Unfortunately, human influences can sometimes cause an otherwise healthy and strong tree that once was able to repel disease and insect attack, to become susceptible to a fatal attack. Additional information is available at the Administration Office or through the Colorado State University Extension* that describes some of the more common tree insects and diseases, and also describes symptoms and treatments. Take a few minutes to read them and keep them handy for future reference.

If you have questions about your trees or would like more information, contact Larry Lynch at the Pagosa Lakes Property Owners Association, Department of Property and Environment (731-5635).

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http://extension.colostate.edu/topic-areas/insects/mountain-pine-beetle-5-528/
http://extension.colostate.edu/topic-areas/insects/pine-tip-moths-5-529/

Tree Removal Permit Application Sample

NAME _____ **PHONE** _____

PROPERTY ADDRESS: _____ **E-MAIL:** _____

BLOCK/LOT NUMBER _____ **SUBDIVISION** _____

CONTRACTOR'S NAME, PHONE, & EMAIL_____

_____

SCHEDULED START _____ **SCHEDULED COMPLETION** _____

NUMBER OF TREES: _____

TREE DIMENSIONS: _____

TREE SPECIES:

_____

_____

TREE LOCATION: FRONT YARD / BACK YARD/ RIGHTE SIDE OF HOME/ LEFT SIDE OF HOME FROM STREET

_____

_____

PLEASE RETURN THE WAP GRANT SURVEY INCLUDED IN YOUR INFORAMTION AFTER THE TREE HAS BEEN REMOVED

The owner attests that the information above is complete, correct, and all documents needed Project Permit Process that pertains to the project, the Declaration of Restrictions for this subdivision, Project Agreement, and the Rules and Regulations of the Association. Permit is valid for 6 months.

OWNER'S SIGNATURE _____ **DATE** _____

FOR PLPOA USE ONLY

DATE APPLICATION AND PLANS RECEIVED & COMPLETE: _____

NO FEE ACCOUNT# _____ **PERMIT #** _____

_____ _____

Pagosa Lakes Property Owners Association (DPE) Manager Approval **Date**

APPROVED / DISAPPROVED DATE: _____ **EXPIRATION DATE:** _____