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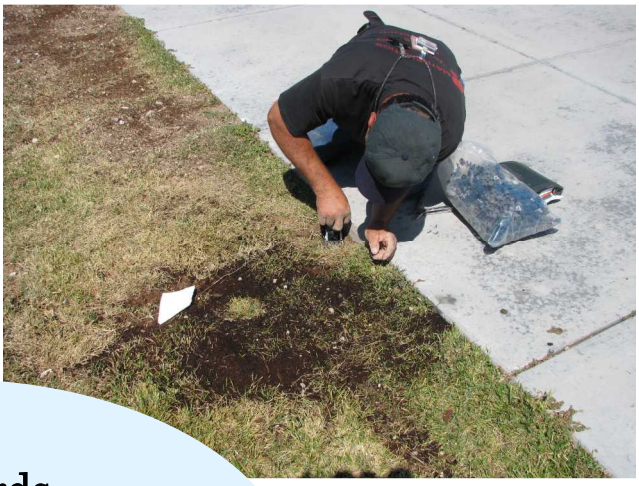
Sandia National Laboratories

Facilities Management and Operations Center

Gardener Preventive Maintenance Manual

January 2010

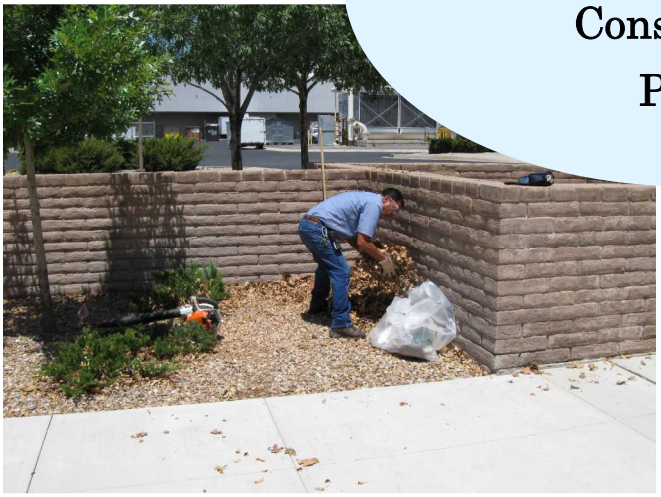


Standards

Efficiency

Consistency

Pride



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1.0 Aerating and Thatching

Aerating

- Aerating is performed to relieve soil compaction and improve water and air infiltration into the soil.
- Perform aerating in early spring, early fall, and whenever re-seeding a turf area.
- Turf area to be aerated should be watered about 12 hours before aeration will take place. Soil should be wetted to a depth of 4"-6" by applying 15 minutes of irrigation if using fixed spray heads and 30 minutes if using rotor heads.
- Flag all sprinkler heads and walk the area to be aerated looking for any rocks or other debris that would damage the aerator machine.
- Perform aeration once on areas that have not had heavy pedestrian traffic. More heavily trafficked areas should be aerated twice running the aerator at 45° to 90º angles to the first aeration path.
- If fertilizing is done in conjunction with aeration apply it after aerating is completed at the recommended rate and water it into the soil for 10 minutes if using fixed spray heads and 20 minutes if using rotor heads.
- String trim if needed around any sprinkler heads or other objects in the lawn.

De-thatching

- Perform de-thatching procedure in early spring before turf has turned green.
- Make sure lawn is dry.
- Flag sprinkler heads and walk the area to be thatched looking for any rocks or other debris that would damage the de-thatching machine.
- Measure depth of thatch.
- Set de-thatching tine depth based on thickness of thatch observed.
- Begin de-thatching operation by running machine over lawn area along a parallel path pattern.
- Rake resulting thatch into piles for placement directly into a trailer or dump bed, onto burlap sheets, or, if necessary, into plastic garbage bags.
- Water lawn for approximately 10 minutes if using fixed spray heads and 30 minutes if using rotor heads after all thatch has been removed from lawn area.
- String trim if needed around any sprinkler heads or other objects in the lawn.
- Remove thatch to green waste dumpsters located at KAFB landfill.

Clean-Up

- After aerating or thatching operations are completed all sidewalks and other hardscaped areas shall be blown off with either a gas powered or electrical blower or, if necessary, swept off manually with a broom.

Irrigation Check

- After clean-up is completed check the turf irrigation system for proper operation by activating each station and visually checking to make sure all heads are turning and that no heads are broken.

Equipment Maintenance

- Check fuel and oil levels before starting equipment. Inspect machinery for any obvious mechanical problems.
- Aerator and thatcher should be washed after operations are completed.
- Obtain and use proper PPE.

Safety Tip

- Always turn off power equipment before making any adjustments.

Equipment Needed

- Pull-behind aerator
- Walk-behind aerator
- Walk-behind thatcher
- String trimmer
- Blower
- Broom
- Rake
- Flags

2.0 Chemical Spraying

Integrated Pest Management (IPM)

- All exterior pest control shall be accomplished using IPM methods. The SNL IPM Manual is available for reference in Appendix 1 at the back of this Gardener Preventive Maintenance Manual.

Pre-emergent Herbicide Applications

- The majority of pre-emergent herbicide applications shall be made by contract labor.

Post-emergent (Contact) Herbicide Applications

- According to the New Mexico State Department of Agriculture it is necessary to have a Noncommercial Applicator license in order to apply herbicides for SNL. This includes Round-up and other glyphosate products. In order to obtain this license you must complete a Noncommercial Pesticide Applicators Training Course and pass the written exam.
- Before mixing and applying any pesticide you must read the label and follow all directions.
- During the growing season (March through October) Round Up or other herbicides shall be applied on a regular basis in landscape areas. How regular will be determined during the Weekly Policing PM of all grounds. The purpose of this task is to kill any weeds growing in the area even after a contractor has applied pre-emergent herbicide. The amount of spraying should be minimal as the pre-emergent herbicide should remove approximately 90% of any weed growth. Each Gardener Team will have several Team members assigned to perform "spot" spraying of any weeds encountered during the Policing of the Grounds. Visual observations of the grounds will also be used to prioritize which and in what order chemical weed control is performed for that week and what products are used.
- Glyphosate (Round-up) will kill any plant part(s) that contains chlorophyll. Because of this it can be applied around the trunks of trees with no adverse affects. For this same reason Round-up cannot be used on weeds growing in turfgrass without killing the turfgrass and should, therefore, not be used for turf applications.
- Avoid applying any herbicide around non-target plants when the temperature is above 90° F as it may volatilize causing damage to the untargeted plants.
- Round-up should be applied to weeds growing in landscaped areas (except turf), fence lines, curb lines, or other areas where plant growth is undesirable.

Plant Growth Regulator (PGR) Applications

1. Sucker Stopper

- This PGR will slow or stop the growth of plant suckers on many species such as Forestiera, Apache Plume, Prunus sp, and more.
- Sucker Stopper may be applied during the dormant or growing season with the best results obtained during the growing season. Prune existing sprouts and apply sucker stopper to the stub left after pruning.
- PGR's are best applied with a backpack or hand-held pump-up sprayer.
- Apply as per the label using appropriate PPE. Do not apply during the heat of the day.

2. Gibberillic Acid Inhibitor (GIA)

- GIA's prevent cell elongation thereby reducing the number of times a plant must be pruned or mowed. Because the same amount of chlorophyll is now concentrated in a smaller cell GIA's produce plants that are a deeper green color.
- GIA's reduce the amount of water a given plant uses by limiting the size of the plant.
- GIA's are best applied with a backpack or hand-held pump-up sprayer or with a power sprayer on large groups of plants or turf areas.
- GIA's are typically used on shrubs or turf to reduce the number of annual prunings or cuttings.
- Apply as per the label using appropriate PPE. Do not apply during the heat of the day.

Safety Tip

- Use a separate sprayer for the application of herbicides and PGR's. Stencil the purpose of the sprayer on the outside with an indelible marker or paint (e.g. **ROUND-UP, SUCKER STOPPER, ETC)**.

Equipment Needed

- Power sprayer
- Back-pack sprayer
- Hand-held pump-up sprayer
- Pruning tools
- Dilute bleach solution
- PPE as listed on herbicide or PGR label

Equipment Maintenance

- Periodically (before each use) rinse the sprayer with water and clean the nozzles out by spraying water through it for several seconds until a solid clear stream is visible.
- Obtain and use proper PPE.

3.0 Cool Season Turf Mowing

Mowing Frequency

- During early spring (March and April) and fall (October and November) cool season lawns may be able to be mowed once every two weeks depending on temperatures – the cooler the temperature the less frequent the mowing needed.
- During summer months (May – September) cool season lawns should be mowed once per week at most unless rainfall interrupts the regular schedule by producing lush growth requiring more frequent mowing.
- Locations of cool season turf grass are; **800, 831, 858 SW, 895, and 898.**

Mowing Height

- Spring and fall cutting height should be 1 ½" to 2" in order to encourage lateral shoot development and a thicker turf.
- During summer the cutting height should be raised slightly to 2 ½" to 3" in height to promote a deeper root system.
- Any given mowing should not remove more than one half of the total blade growth.

Mowing Patterns

- Mowing directions should be changed with each mowing.
- Mowing patterns can be devised that will enhance the appearance of the lawn located in a high visibility area such as Building 800 for example.

Miscellaneous

- Mowing should be performed with a mulching mower.
- Any mowing or edging required around windows, vents, or other areas where sound can penetrate should be performed very early in the morning to avoid disturbances (sounds and fumes) caused by the equipment.

Edging/String Trimming

- Highly visible lawns should be edged, in conjunction with the mowing operation, with a mechanical lawn edger once per month and with a string trimmer the rest of the time or as often as required. Less visible lawns can be "edged" bi-weekly with a string trimmer.

Clean-Up

- After mowing and edging are completed all sidewalks and other hardscaped areas shall be blown off with either a gas powered or electrical blower or, if necessary, swept off manually with a broom.

Irrigation Check

- After clean-up is completed check the turf irrigation system for proper operation by activating each station and visually checking to make sure all heads are turning and that no heads are broken.

Equipment Maintenance

- Check fuel and oil levels before starting equipment.
- Obtain and use proper PPE.
- Mower blades should be sharpened once per month. The mower deck and undercarriage should be washed once per month.

Safety Tip

- Always turn the mower off before removing any debris from around the carriage or making any adjustments to the mower.

Equipment Needed

- Riding mower
- Walkbehind mower
- String trimmer
- Edger
- Blower
- Broom

4.0 Flower Bed Maintenance & Installation

Maintaining Existing Flower Beds

- Weeding
- "Deadheading"
- Fertilizing
    1. Organic
    2. Processed chemical fertilizer
- Mulching

New Flower Installation in Existing Beds

- Annuals – Because they will only survive one year annuals will be used infrequently when a "blast" of color is wanted for dignitary visits.
- Perennials – Are the choice to plant because they do not have to be re-planted annually. Flower color, plant size, and flowering season will be the predominant determining factors when selecting perennials for a given flower bed.
- Bulbs – May be used for early spring color in certain areas.

Before

After

Soil Amendments

1. **Organic**
   - Decomposed bark mulch – available through the Planner.
   - Planting Soil Mix – available at the Maintenance Yard or through the Planner.
   - Peatmoss - available through the Planner.

2. **Inorganic**
   - Ecolite - available at the Maintenance Yard or through the Planner.
   - Omni - available through the Planner.
   - Moisture-lite - available through the Planner.

Mulches

1. **Organic**
   - Shredded bark – available south of the KAFB dump site at the Chugach tree chipper location.
   - Bark nuggets – available through the Planner.
   - Pecan shells – available through the Planner.

2. **Inorganic**
   - Crusher fines – available at the Maintenance Yard or through the Planner.
   - Crushed rock - available at the Maintenance Yard or through the Planner.

Plant Spacing

1. Determining spacing and calculating how many plants to buy.

   - Calculate the square footage of the area to be planted using the following formulas;
     1. Triangle = ½ base x height
     2. Rectangle = length x width
     3. Circle = 3.14 x r^2 (radius x radius)
   - Determine the "plants per square foot" factor for the plant you are planting according to the following chart:

Plant Spacing	Plants/Sq. Ft.
4"	9.00
6"	4.00
8"	2.30
10"	1.40
12"	1.00
15"	0.65

18”	0.45
24”	0.25

- Every plant species will have a different spacing requirement based on its size at maturity.

- For example, if you want to plant a 10’ by 30’ bed of petunias (it is recommended to plant the petunias 10 inches apart) the number of plants required is calculated by multiplying 10’ x 30’= 300 sq.ft., 300 sq. ft. x 1.4 (plants/sq. ft. factor from the chart) = 420 plants divided by 32 – 2 ½” plants per flat = 13 flats.

- The number of 1 gallon plants required will vary depending on the spread of the mature plant. It will take an average of 5 min/plant to plant a 1 gallon plant complete in place.

2. Lay out of plant material

- Use string or chalk line to lay out straight lines when necessary. Work from one side of the planting bed only rather than several at one time.

Fertilizing

- Apply and incorporate a “starter” fertilizer into the soil at the rate listed on the container.

Irrigation Check and Watering-in of Fertilizer

- Turn the system on and confirm that all heads and emitters are working properly and covering the plant material completely.
- Water in the fertilizer enough to wet the soil to the root depth of the plants.

Planting Tip

- When planting in recently roto-tilled soil which is loose install the plants a little deeper than normal to allow for settling of the soil.

Equipment Needed

- Knee pads
- Hand pruning tools
- Digging spade
- Roto-tiller
- Hand-held sprayer for liquid fertilizer applications
- Hand-held rotary granular fertilizer spreader

- PPE as listed on any fertilizer label

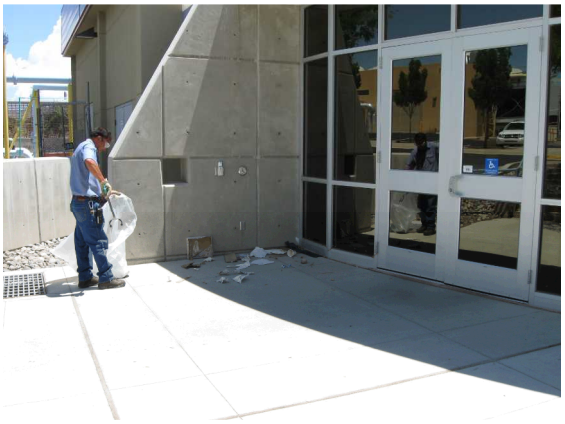
Equipment Maintenance

- Clean all equipment after using and before storing.

5.0 General Clean-up

Weekly Pick-Up of Trash, Debris, Spot Spraying of Weeds, & Pallet Pick Up

- At the start of each work week patrol all grounds, building entrances, gates and turnstiles, and parking lots in the area to pick up trash and other debris throughout the grounds that has accumulated during the past week. This policing includes blowing out parking lot curblines and other hardscapes.
- Remove full trash bags and replace trash can liners on an "as frequently as needed" basis.
- Apply herbicide or hand remove isolated, small "patches" of weeds at this time and note other, larger more time intensive "patches" of weeds on the Weekly Inspection Form to be treated by the weed spraying contractor.
- Remove trash such as plastic bags that have become lodged in trees and shrubs.
- Pick-up wood pallets and containers encountered on the "Patrol" and dispose of them at the Reclamation Facility as per SOP.
- Dead animals should also be removed during this "Patrol" and disposed of as per OP – 017: Clean-up and Disposal of Dead Animals, Droppings, and Debris.
- During the growing season visually check all cool season turf areas for browns spots or other obvious problems.
- A "General Note" here which really applies to each and every section of this Manual is to always check all of your equipment before you use it for the following:
    1. Proper engine oil level
    2. Enough gasoline to complete the job
    3. All hazard or warning lights working
    4. Trailer stocked, organized, and ready to go
    5. Safety chains in place and crossed under the trailer tongue when hooked up to the towing vehicle
    6. Note any damage to the equipment before or after using and report it for repair immediately



Weekly Inspection Form

- During this "patrol" be observant and note on the Weekly Inspection Form any changes in the landscape such as toppled trees/broken branches after wind/rain storms, erosion after rain storms, and any significant adverse changes to plant health.
- Note any observable significant damage to any landscape caused by mechanical means such as construction damage. If applicable obtain any available information such as names of construction companies' in the area so that damages may be recovered.
- Information noted on this form will be used to help establish priorities for work to be performed that week and for weeks to come.

Equipment Needed

- Trash bags
- Trash "wheelbarrow" (with wheels)
- Pick-sticks
- Hand pruners
- Clipboard with "Weekly" form and pencil
- PPE and equipment needed for dead animal removal
- Blower/broom
- Gloves
- Backpack sprayer
- Herbicide

6.0 Irrigation Strategies

Watering Strategies – Xeric/Native Trees and Shrubs

- **Initial establishment (1-3 years old):** The target watering depth should be shallower than that of a mature tree or shrub and will be close to that of the original planted root ball. Therefore runtimes will be lower because watering depth is shallower. Watering frequency will be greater than that of a mature tree – probably three times per week for a 1 year old tree dropping off to twice per week for a 2 year old tree. Stop watering after 3 years to reduce the growth and size of xeric plants. Stopping irrigation will also substantially reduce proliferation of new plants from stolons, rhizomes, and seeds from the parent plant. Irrigation should be resumed only in times of extreme drought.

- **Established plantings (3 years and older):** Ideally, xeric plantings should be "off the water bottle" after 3 years. If not, the watering depth should be about 24" deep for trees and 18" for shrubs. The area watered should extend past the dripline several feet. As this is not always possible do your best using common sense regarding how "wide" you can practically apply the water in relation to the dripline. Watering frequency will be reduced because watering depth has been increased compared to a younger plant. This has the effect of increasing the water holding capacity or moisture "bank" of the soil. The bank of soil water should be allowed to dry out about 50% before replacing it by irrigating.

Watering Strategies – Traditional Shade Trees and Shrubs

- Initial establishment (1-2 years old): Assuming irrigation will be made using 1 gpm bubblers initial establishment of a traditional shade tree should be made by irrigating 2-3 times per week (depending on age, size, and species) for about 15 – 20 minutes. If, due to the number and size of the bubblers, the gpm delivered to the tree is more or less than 1 gpm you should increase or decrease the length of time you irrigate accordingly (double the run time length if the bubbler is .5 gpm, etc).

- Young Trees (3-5 years old): Again, assuming irrigation will be made using 1 gpm bubblers this phase of growth should be accomplished by irrigating 1 – 2 times per week (depending on age, size, and species) for about 25 - 40 minutes. Increase or decrease run times based on the number and size of the bubblers per tree.

- Middle Aged Trees (5-10 years old): Again, using 1 gpm bubblers as the standard, a middle aged tree should be irrigated 1 time per week (depending on age, size, and species) for about 40 - 60 minutes. Increase or decrease run times based on the number and size of the bubblers per tree.

- Mature Trees (11 years and older): Finally, mature trees should be watered 1 time per +/- 10 days for about 60 to 90 minutes if using a 1 gpm bubbler. Run times should be adjusted up or down depending on the number and size of the bubblers used.

- The times recommended above are estimates and you should always keep in mind that you have the freedom to increase or decrease watering run times as you see fit as indicated by the condition of the plant in the field.

Watering Strategies - Evergreen Plants

- Evergreens (especially Ponderosa pine) **must** be irrigated monthly through the winter season because they are continually manufacturing sugars with the chlorophyll in their leaves. If they are allowed to dry out during the cold months significant damage can and will occur.

Watering Strategies – Cool Season Turf

- New turf – seed or sod should be watered in order to keep the seed/sod and all associated roots moist (not wet). In order to achieve this it will be necessary to water lightly and frequently. As the seed germinates or the sod begins to root out the depth of water application should increase in order to accommodate the deeper root system, but the frequency should be decreased because water will be held longer in the soil due to deeper water penetration. This "shift" in watering depth and frequency should continue until the turf plant is fully rooted and can be placed on a normal watering schedule. Because new seed/sod is more susceptible to drying out the irrigation system should be checked once per day to ensure no system outages are occurring which would adversely impact the turf.

- Established turf – does not need to be watered every day during the summer! If the turfgrass plant is watered correctly enabling the root system to become deeply rooted the plant will have more of a "moisture bank" to draw on for its daily water needs. In order to accomplish this the turf should be trained by watering deeply and as infrequently as possible. This should be done by closely monitoring the moisture content or condition of the grass plant on a regular basis until some sort of benchmark can be established for any given area.

Watering Strategies – Warm Season Turf

- New turf – the same strategies used for the establishment of cool season grass seed or sod should be followed for warm season turf establishment. Buffalo grass seed requires about 21 days of moisture with accompanying warm soil temperatures (June through August) to fully germinate all of the seeds. Blue gramma grass will normally start germinating within two days and fully germinate within seven days. After this the frequency and duration of the

watering cycles for both species should be adjusted as described in the section above for new cool season turf establishment.

- Established turf:
    1. Buffalo grass – should be watered twice per week during the heat of the summer (June through August) and tapered off according to the season. This tapering off be similar to this: spring and fall - once per week, winter - once per month.
    2. Blue gramma grass – after establishment blue gramma grass will not need to be watered except during drought conditions.

Calendar Watering

- 7 day calendar – use when irrigation is required everyday or once per week (seven days).

- 14 day calendar – use when irrigation is required every other day or once every two weeks (14 days).

- 21 day calendar – use when irrigation is required on every third or seventh day.

- 28 day calendar – use when irrigation is required every fourth, seventh, or fourteenth day.

PM Strategies

- Turn drip zones on about 1 hour before you walk your system down in order to generate a "wet spot" around the shrub which will be seen easily during your walkdown and will therefore indicate to you if the emitter is working.

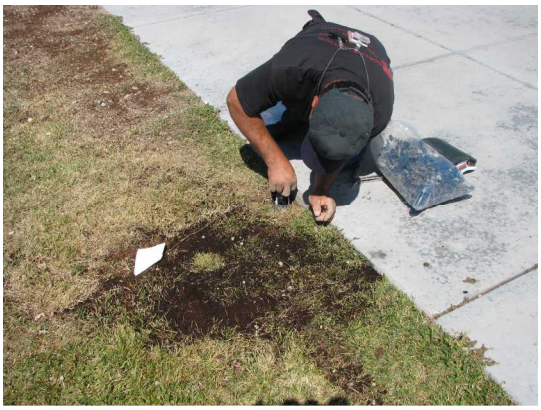
- Winter time PM's should be performed on warm days. If manual drains are present they should be opened after the walkdown is finished in order to allow any water to drain out of the lines. When finished leave your controller in the Rain Off position so that it will not start any automatic programs stored in its memory.

- Flag (and note if necessary) malfunctioning valves, broken heads or lines, plugged nozzles, incorrect nozzles, high pressure occurrences, or other issues requiring corrective maintenance. Complete corrective repairs entirely and with attention to leaving the site clean and better than you found it when you started.

- Check sprinkler (bubblers less regularly) head nozzling to make sure part circle heads and full circle heads have the correct nozzles. Also, make sure sprinkler heads are adjusted so that they are not applying water onto sidewalks (as much as practically possible while still keeping the grass alive) buildings, or fences.

- Always make sure all valve box lids, and any other open in-ground container lids are firmly in place after your PM walk through.

- On Calsense brand controllers make sure the flow rates have been checked while the zone is in proper working condition and then set each flow rate accordingly.



Equipment Needed

- Flags
- Calsense Remote Control Radios
- Pocket Notebook
- Calsense controller key and password

7.0 Leaf Removal

Frequency

- Leaves shall be removed from all SNL property on an on going, as needed basis beginning in October of each year and continuing through February.
- Leaves shall be removed monthly or more frequently if needed.

Locations

1. Hardscapes
   - Leaves shall be removed from rock landscapes and hard surfaces such as walks and parking lots using leafblowers and spring rakes.
2. Landscapes
   - Leaves shall be removed from lawns using mulching lawnmowers if possible and using bagging lawnmowers if necessary. Vacuum attachments may also be utilized as well leafblowers and spring rakes.
   - Leaves shall be removed from underneath shrubs, in flower beds, and other hard to get to places with a leafblower and/or spring rake.

Collection Methods – Bulk vs. Bagging

1. Bulk removal involves blowing or raking leaves to a collection point and positioning them onto a tarp, canvas, or other large containment material for loading onto a trailer or dump vehicle. One other bulk option is to forego tarping them and loading them directly onto a trailer or dump vehicle or vacuuming them into a dump bed with a cover.
2. Bagging involves blowing or raking leaves to a collection point and bagging them in garbage bags rather than disposing of them in bulk.

Dumping Sites

- All lawn clippings and leaves shall be taken to the KAFB landfill and dumped there.
- All tree and shrub pruning debris shall be taken to the Chugach tree chipper located south of the dump site and piled next to the chipper. **Do Not** operate the chipper. Chugach has agreed to shred your trimmings and provide shredded bark for your pick up and usage.

Equipment Maintenance

- Check for and remove any leaf debris which may cause backups or clogging of any vacuum equipment.

Safety Tip

- Turn your equipment off before making any adjustments or clearing any blockages from chutes.

Equipment Needed

- Leafblower
- Wheeled push blower (8hp)
- Mulching mower
- Lawn sweeper
- Spring rake
- Tarp
- Garbage bags
- Dump trailer or truck

8.0 Mulch Maintenance

Procedure

- It is important to match any existing mulch present in the location you are maintaining. If in doubt contact the FMOC Landscape Architect or Grounds & Road Services Planner for assistance.
- After estimating the type and amount of mulch material needed to replenish a given area obtain mulch material at FMOC Maintenance Yard, south of the KAFB dump site at the Chugach chipper location (shredded bark mulch only), or by ordering through the Grounds & Road Services Planner.
- Filter fabric should be obtained through the Grounds & Road Services Planner as needed.
- Pick up and deliver material in the appropriate container (dump truck, trailer, etc.) to the job site.
- Use flags and cones to mark out the work site as appropriate.
- Apply filter fabric as necessary. Use only weed barrier fabric that is breathable and will allow water to percolate through.
- In large areas requiring the addition of mulch use a front-end loader to dump large quantities of material and then spread the material out with the front bucket, gannon blade, box blade, york rake, or hand tools.
- Provide finish grading with hand shovels and rakes.

Types

- Coble and river rock
- Crushed rock
- Crusher fine
- Bark mulch
- Pecan shells
- Other

Frequency

- Organic
    1. Shredded bark mulch should be replenished approximately every two years or as needed. It should be added to achieve a 4" depth and should be kept away from the trunks of trees and shrubs.
    2. Pecan shells should be replenished approximately every year or as needed if bleached out by the sun and calcium deposits from irrigation water.
- Inorganic
    1. Replace whenever depth is so shallow that the filter fabric underneath becomes visible.

Locations

- A map indicating the types of mulch throughout the SNL landscape is being developed. Until it is completed obtain small samples of the mulch material to determine the particular color, size, and type.

Creating New Mulched Areas

- Expanding or creating new mulched areas is encouraged in order to: 1) provide a more optimum environment for trees and shrubs to grow in, 2) create visually appealing designs in the landscape, and 3) cover bare soil conditions to reduce wind and water erosion.
- When creating new mulch areas use steel edging where needed to separate different types, sizes, or colors of mulch. Steel edging may be obtained from the Planner.

Equipment Needed

- Tractor with front-end loader
- Tractor with gannon blade, box blade, or york rake implement
- Necessary hand tools

Miscellaneous

- Obtain weed barrier fabric "staples" from one of the irrigation supply houses or garden supply centers (John Deere Landscapes, Greenhouse & Garden Supply, etc.).

Safety Tip

- Always wear gloves when installing large cobble mulch.

9.0 Shrub Pruning

Water Well Maintenance

- This is typically not applicable to shrubs because they are irrigated by drip irrigation which requires no water well.

Mulch Maintenance

- Ensure that adequate mulch (2" minimum of rock or organic – whichever is currently in place) is present around the plant. Replenish as necessary.
- Ensure that organic mulch is pulled back several inches from the trunks/main branches.
- Ensure that all mulched areas outside of the water well have adequate mulch. Replenish as needed.

Inspection for Birds

- Before pruning any shrub inspect it for the presence of nesting birds and nests. If nests are present you must contact one of the SNL staff biologists via radio on Band "B" channel 2 and request direction from him or her.

Biotic Inspection

- Inspect shrubs for indications of insect damage such as; boring tunnels or holes, fras, pitch or sawdust from borers, damage to any leaves indicating chewing or sucking damage, dead limbs, or other obvious signs of biotic damage such as the actual presence of insects or diseases.
- All significant numbers of insect or disease problems should be recorded on the work order and communicated to the Planner so that a PMR work order can be made to apply the appropriate pesticide to the affected tree(s).
- Inspect shrubs for any damage due to rodents such as rabbits or prairie dogs. Note any significant damage on the Weekly Inspection Form (WIF).
- Note on the WIF any shrubs which are in significant decline or dead. Note any follow up treatments or inspections you feel may be necessary.

Abiotic Inspection

- Inspect shrubs for the presence of any mechanical damage. Any substantial damage should be treated with currently accepted arboriculture practices. For recommendations concerning these contact the SNL Landscape Architect. If applicable obtain any available information such as obvious construction activities so that damage can be recovered.
- Inspect shrubs for moisture deficiency indicators such as wilt, browning edges, or interior leaf drop on deciduous shrubs.

- Inspect shrubs for nutrient deficiency symptoms such as overall leaf chlorosis or interveinal chlorosis.
- Note on the WIF any shrubs which are in significant decline or dead. Note any follow up treatments or inspections necessary.

General Plant Pruning Guidelines

- **Size and shape –** The normal or natural growth habit of any particular shrub shall be encouraged. This means that "hedging" or pruning into "compact balls" is **not** acceptable. The only plants that may be hedged are Japanese boxwood, Eleagnus species, or plants used for the purpose of hedging.
- **Schedule** – Shrubs will generally be pruned between the months of November and March, although they may be pruned at any time.
- **Thinning –** Shrubs shall be shaped to encourage or enhance their natural growth habit by removing individual stalks and limbs to thin out or reduce the crown of a given plant. These individual limbs shall be cut all the way back to the ground. Dead or diseased limbs shall also be removed back to the ground or to the next healthy branch union.

Special Directions - Perennial Plant Pruning

1. Forsythia, dogwood, and other early spring blooming shrubs shall be pruned in late spring after blooming is completed.
2. "Dead-heading" or the removal of dried/completed blooms shall be accomplished on a regular, as needed basis to promote an aesthetically pleasing landscape. Dead-heading will also help to keep many xeric plants blooming continuously.
3. Beargrass – never shear beargrass leaves. Remove the dried basal leaves as needed.
4. Agave – after an agave plant has bloomed remove and dispose of the "spent" plant (make sure proper PPE is worn to protect you from the sharp spines).
5. Ornamental Grasses – threadgrass, sand lovegrass, muhly grass, fountain grass, and blue avena grass – cut leaves back as close to the ground as possible in late winter or early spring.
6. Artemisia (Powis castle, & silver mound) – cut back leaves to about 6" from ground level in late winter or early spring.
7. Catmint – cut back leaves as close to the ground as possible in late winter or early spring.
8. Russian Sage – rejuvenate established plants by cutting stems down close to the ground anytime after frost (winter).
9. Yarrow – remove spent flowers regularly to keep plants blooming continuously. At the end of the growing season cut dried flower stems close to the ground. In spring trim away dead foliage to rejuvenate established plants.

Special Directions - Woody Shrub Pruning

- Apache Plume – requires more frequent pruning to keep a more manicured appearance. To do this remove the oldest stems every 2 – 3 years. To prevent self-sowing, cut seedheads off before they mature and are released to the soil.
- Blue Mist Spirea – Trim weathered seedheads down to 1' from the ground when spent.
- Butterfly Bush –
- Pyracantha – allow to grow to "fill the area" it is located in. Selectively remove overgrown growth and dead limbs.
- Lavender – in early spring, prune lavender back by half to that soft new growth replaces winter-weathered stems.
- Lilac – prune lilacs by removing spent flowers as they fade; buds for the following year are set soon after plants finish blooming so avoid pruning after this time. To rejuvenate older plants remove all dead wood immediately after flowering, cutting 1/3 of oldest stems and all suckers down to the ground. Repeat the process for three years after which all of the growth will be young and vigorous.
- Ornamental Cherry – this shrub requires a small amount of slow release fertilizer each spring and sulfur in the winter.
- Pomegranate – this shrub requires a small amount of slow release fertilizer each spring and sulfur in the winter.
- Rosemary – removing 1/3 of the oldest branches or cutting 1/3 of the length of branches back to side shoots every two years keeps rosemary in check. Rosemary suffers from winter freezing and will therefore need to have any deadwood removed every spring.
- Rose of Sharon – thin ¼ of the oldest branches in the early spring to allow light to filter through to the lower branches.
- Four-winged Saltbush – thin out the oldest branches every couple of years to keep the plant robust looking.
- Santolina – in early spring, trim back to 1' from the ground so that new growth replaces old, weathered growth.
- Salvia species – to stimulate new growth cut back cherry and garden sage to about 1' from the ground each spring just as they start to show new leaves.
- Spanish Broom – remove ¼ of the oldest branches back to live wood or back to ground level after they bloom to keep plants vigorous.
- Turpentine Bush – in early spring, trim to ground level so that soft, new growth replaces old, weathered stems.

Safety Tip

- Watch out for spiders and insects that build their homes in shrubs. Wear long sleeves. If bees are present delay pruning until you can prune the shrub early in the morning before the bees become active for the day. You may want to carry

some "Wasp Freeze" in your vehicle for use in an emergency. This may obtained from the Planner.

Pruning Tips

- When pruning shrubs that appear to have disease symptoms dip your pruning blades in a dilute solution of bleach in between pruning cuts. This will reduce the spread of any diseases to healthy tissue.

Equipment Needed

- Shovel
- Hoe
- Hard rake
- Spring rake
- Hand saw
- Loppers
- Hand pruners
- Bleach
- Dump trailer/truck

Pruning Waste Removal

- Bulk removal involves gathering pruned plant material and placing it onto a bulk collection point such as a tarp or canvas for loading into a trailer or dump vehicle. One other bulk option is to forego tarping and load cuttings directly onto a trailer or dump vehicle with a hard cover or tarp.

Pruning Waste Dumping Sites

- All tree and shrub pruning debris shall be taken to the Chugach tree chipper located south of the dump site and piled next to the chipper. **Do Not** operate the chipper. Chugach has agreed to shred your trimmings and provide shredded bark for your pick up and usage.
- All lawn clippings and leaves shall be taken to the KAFB landfill and dumped there.

10.0 Special Features Maintenance

MESA/WIF Water Fountain Feature

- PM work details are currently being developed for insertion into the Manual.
- Start-up fountain at beginning of April each year.
- Check and remove any trash and other debris in and around the fountain.
- Weekly check for and remove any animals that have become trapped within the confines of the fountain. If the animal is alive re-locate as per …If the animal is dead dispose of according to Standard Operating Procedures.
- Shut-down fountain at the end of October of each year.

Rainwater Harvesting System

- Currently being developed.

Outdoor Furniture and Bike racks

- Currently being developed.

Inspection of Outdoor Furniture and Bike racks

- Currently being developed.

11.0 Steam Cleaning Pedestrian Gates

Gates

- There are 18 access gates located throughout the SNL campus. Sometimes some of the area around them requires washing. This will be performed once in the spring – typically in April. Other than that they will only be power washed on an as needed basis.

Turnstiles

- There are 34 turnstiles located throughout the SNL campus. Sometimes some of them require washing. This will be performed once in the spring – typically in April. Other than that they will only be power washed on an as needed basis.

Equipment Needed

- Map showing locations of gates and turnstiles
- Power washer
- Scrapers (for gum)
- Cloths (for wiping down turnstiles as necessary)

12.0 Tree Fertilization

General Purpose Fertilizer Instructions

- **Do not** fertilize native trees or shrubs unless nutrient deficiency symptoms are present.
- **Do not** fertilize trees located in cool season turfgrass areas.
- General purpose fertilizing should be performed after leaf drop from November through February.
- For general purpose fertilizing use Simplot Best fertilizer 16-6-8 and apply 1 lb of fertilizer per 1 inch of tree trunk caliper (measured 6" above the soil surface) two feet on either side of the drip line around the entire circumference of the tree. If another fertilizer is used follow the instructions given on the label of the product.
- In order to know how much 1 lb of actual fertilizer is weigh the container you will be using to hand apply the fertilizer and then weigh into that same container 1 lb of fertilizer. Finally, subtract the weight of the container from the total.
- A scale for weighing is available in the office.
- After applying the fertilizer, weather permitting, water the fertilizer into the soil using the irrigation system.

Sulfur Fertilizer

- **Do not apply** to native trees or shrubs unless chlorosis symptoms are present.
- **Do apply** to any tree or shrub exhibiting chlorosis symptoms.
- Apply only during dormant season – November through February.
- Apply at a rate of ½ lb per 1 inch of tree trunk caliper.
- Weather permitting, water the sulfur into the soil using the irrigation system.

Aqua-pHix Fertilizer

- Apply to any tree or shrub which has exhibited unexplained desiccation or defoliation during the growing season.
- Apply to any tree or shrub which has exhibited chlorosis during the growing season.
- Apply as necessary throughout the growing season.
- Apply the granular product at a rate of 1 ½ lbs per 1 inch of tree trunk caliper. Product should be applied from the base of the tree trunk out to several feet past the dripline.
- Apply the liquid product at the rate indicated on the label.
- Weather permitting, water the Aqua-pHix into the soil.

Organic Fertilizer

- Using bulk supplied city compost organic fertilizer, broadcast 2 lbs of fertilizer per every 1" of tree trunk caliper. The area of application/coverage should straddle the drip line of the tree approximately 5' on both sides. Water in with an adequate amount of water to wet the entire root zone to a depth of 2'.

Chelated Iron Fertilizer

- Apply EDDHA Iron Chelate fertilizer as a foliar spray to trees and shrubs exhibiting iron chlorosis symptoms. Follow the directions on the container. Do not apply during the heat of the day to avoid burning the leaves.

Davey Arbor Green PRO

- Apply Davey Arbor Green PRO fertilizer via soil injection at the two-year rate of 30 lbs of fertilizer per 100 gallons of water per 2,000 sf of tree canopy.

Equipment Maintenance

- Rinse all containers three times. Do not rinse into any drains. Apply resulting rinse over rock mulch landscape and allow to dissipate into the soil.

Safety Tip

- Wear a dust mask or more stringent PPE when applying sulfur products to prevent breathing in the dust.

Irrigation Check and Watering of Fertilizer

- After fertilization is completed check the tree irrigation system for proper operation by activating each station and visually checking to make sure all bubblers/emitters are working and that none are broken.
- Soil should then be wetted to a depth of 12"-24" (30 – 90 minutes depending on the type of application device).

Equipment Needed

- 100 gallon power sprayer
- Backpack or pump up sprayer
- Fertilizer or growth regulator
- 5 gallon bucket
- Small "scoop" or preferred application device
- Gloves, dust mask, and any other required PPE

13.0 Tree Pruning

Tree Pruning Goals

- The desired outcome of pruning is to produce strong, healthy, attractive trees. This involves removing limbs that could fall and cause personal or property injury, trimming branches that interfere with line of sight on walkways and streets, removing disease or insect infested wood, thinning the crown to increase air and light flow, and removing crossing or rubbing branches. All of these will also improve the appearance of the tree and thus the campus.

Water Well Maintenance

- Ensure that a large enough dirt berm or water well is maintained around trees irrigated with a bubbler irrigation system. Allow approximately 15" diameter of water well for every 1" of tree caliper: for example a 4" caliper tree would require a 60" (5') water well around it. The height of the well walls should be about 4".

Mulch Maintenance

- Ensure that adequate (2" minimum) mulch is present within the water well. Replenish as necessary.
- Ensure that organic mulch is pulled back several inches from tree trunk so that it is not touching the trunk.
- Ensure that any areas outside of the water well, if mulched, have adequate mulch. Replenish as needed. Large areas that need to be re-mulched will require the creation of a PMR (Preventive Maintenance Repair Work Order).

Creating New or Expanded Water Wells

- Expanding or creating new mulched areas around trees is encouraged in order to: 1) provide a more optimum environment for them to grow in, 2) create visually appealing designs in the landscape, and 3) cover bare soil conditions to reduce wind and water erosion and moisture evaporation from the soil.
- The size of the new or expanded mulched area should be determined by the current and anticipated size of the tree in question. The water well should be "supersized" to allow for the growth of the tree. Guidelines for size are as follows: 2' of water well diameter for every 1" of tree trunk caliper.
- The shape of the water **does not** have to be round! Be creative and make different shapes – kidney shapes are always nice.
- When creating or expanding water wells around trees located in rock mulch areas organic material is strongly recommended in order to create a better growing environment for the tree by improving soil and moisture conditions.

- When creating new mulch areas use steel edging where needed to separate different types, sizes, or colors of mulch. Steel edging may be obtained from the Planner.

Inspection for Birds

- Before pruning any tree inspect it for the presence of nesting birds and nests. If nests are present you must contact one of the SNL staff biologists via radio on Band "B" channel 2 and request direction from him or her before proceeding with any pruning.

Biotic Inspection

- Visually inspect tree trunks and limbs for indications of insect damage such as; boring tunnels or holes, fras, pitch or sawdust from borers, branch dieback or dead limbs. Also, visually inspect leaves for any discoloration or evidence of insect chewing and sucking damage.
- Visually inspect branches, trunk, and root flare for the presence of cracks, cavities, splits, hollows, decay, and mounding around root flare and basal area of tree.
- Inspect bark and crotches for the presence of fluxing. Fluxing is indicative of decay.
- Inspect trees for any damage due to rodents such as rabbits or prairie dogs. Perform any necessary horticultural treatment to the wound such as trimming bark damage back to healthy tissue and smoothing rough edges.
- All significant problems associated with the above inspections should be recorded on the Weekly Inspection Form (WIF) which is attached to your work plan. Also note on the WIF any trees which are in significant decline or dead and the approximate location of them. Note any follow up treatments or inspections you feel may be necessary. Turn this form in with your completed work order. It will be used to generate PMR work orders and for follow up inspections.

Abiotic Inspection

- Inspect trees for the presence of mechanical damage to trunk or limbs. Any substantial damage should be treated with currently accepted arboriculture practices. For recommendations concerning these contact the SNL Landscape Architect. If applicable obtain any available information such as obvious construction activities and names of contractors so that damage can be recovered.
- Inspect tree for moisture deficiency indicators such as wilted leaves, browning leaf edges, or interior leaf drop with deciduous trees.
- Inspect tree for nutrient deficiency symptoms such as overall leaf chlorosis or interveinal chlorosis.
- Note on the WIF any trees which are in significant decline or dead. Note any follow up treatments or inspections you feel may be necessary.

General Tree Pruning Guidelines

- **Size –** Typically young trees - less than 15' tall – will be the trees requiring pruning.
- **Schedule** - Trees will generally be pruned between the months of November and March, although they may be pruned at any time.
- **Crown Raising** – All shade trees shall be pruned with the ultimate goal of the first or lowest limb originating no lower than 7' from the ground. This may need to be accomplished over the course of several years in stages in order to prevent more than 25% of a tree's foliage from being removed in any one year. As you are pruning take note/compare in order to keep the lowest limbs of the same species at similar heights.
- **Crown Thinning** – Thinning should also not remove more than 25% of a tree's foliage in a given year. Crossing branches, dead branches, and branches growing toward the trunk shall be removed back to the next stem or trunk union.
- **Crown Reduction** – When a tree has reached its space limit for the area it is growing in crown reduction is necessary (except for trees with a pyramidal shape). To perform crown reduction pruning refer to SNL Pruning manual.
- **Training Young Trees** – Depending on the species young trees less than 15' tall shall be pruned so that a single central leader is developed. When possible, this shall also apply to existing multi-trunked trees. A branch selected as a scaffold branch shall be ½ the diameter or less of its parent branch.
- **Special Directions** – Trees prone to co-dominance such as Bradford Pear, Silver Maple, Locust, and Pistache – shall be pruned, when practical, to develop a single central leader. Trees such as Purple Robe Locust, Idaho Locust, and flowering Pear species, which are prone to weak branch bark unions should be pruned to remove branches with narrow crotch angles to the trunk. Remember: flush cuts are not acceptable! They will prevent the tree from walling off and compartmentalizing the wound to prevent the spread of diseases.

Species Specific Guidelines

- Blue Spruce – rarely needs pruning. Allow low branches to sweep the ground and form a skirt around the spruce tree.

- Cedrus species – very little pruning is necessary. Remove dead branches as they occur and allow to form a low skirt around the perimeter of the tree.
- Cedar deodora – this tree should also be allowed to form low branches and form a skirt around the perimeter of the tree.
- Chaste Tree (Vitex) – select the shapeliest trunks or branches as the framework for scaffold branches and remove the smaller limbs from them in early spring until the lowest branches are 7' or more from the ground. The biggest issue is removing basal sucker growth and keeping it off with PGR's.
- Chinese Pistache – select for central leader early by removing any co-dominant leaders. This tree produces good scaffold branches.
- Chitalpa – very susceptible to a virus that will eventually kill the tree. Prune any diseased branches back to healthy wood and sterilize pruning tools as you go.
- Desert Willow – select the shapeliest trunks and limbs to form the main trunks and scaffold branches. Remove other trunks and limbs from these until the lowest branches are 7' or more from the ground. The biggest issue is removing basal sucker growth and keeping it off with PGR's.
- Golden Raintree – finding and selecting a central leader is the most difficult task when pruning a golden rain tree. After the central leader is completed most of the work left to do is crown elevating to 7' or higher.
- Hackberry – winter dieback is common with hackberry and therefore spring pruning should focus on removing deadwood after the crown has been elevated to the correct height of 7'
- Hawthorn – lots of crossing branches and branches growing toward the trunk to be removed.
- Locust species – once a central leader is selected and pruned regular pruning to elevate the crown and maintain the central leader is most of what is required.
- Mesquite – select the shapeliest main trunks and limbs for the framework and scaffold branches.
- Maple – these trees normal branching habit causes them to form shallow branch angles and therefore wide crotch angles should be selected for and pruned.
- Japanese Pagoda – this tree requires more effort early in its life than most in order to select and prune for a central leader and a strong branch scaffold.
- New Mexico Olive Tree – this is one species that does not require the standard crown elevating process as the branches tend to grow vertically rather than horizontally. The biggest issue is removing basal sucker growth and keeping it off with PGR's.
- Oak species – this is an easy species to select scaffold branches for the tree's future frame.
- Pine species – prune only to remove dead or diseased branches. Only if security requirements necessitate the removal of lower branches are they to be removed.
- Cottonwood species – prune young to develop a strong branch scaffold of limbs that are well spaced and structurally sound up to a minimum height of 7'.
- Redbud – if multi-trunked, prune to remove any trunks that will grow into another trunk by selecting the strongest and shapeliest trunk to remain.

Safety Tip

- Do not overreach when using a ladder in order to get to that "hard to reach limb" in order to prune it.

- Keep the limbs picked up while you trim to keep the ground free of tripping hazards.

Pruning Tips

- When pruning trees that appear to have disease symptoms dip your pruning blades in a dilute (1 part bleach to 4 parts water) solution of bleach in between pruning cuts. This will reduce the spread of any diseases to healthy tissue.

- When pruning always look for and stay outside of the branch bark ridge to avoid making flush cuts.

Pruning Waste Removal

- Bulk removal involves gathering pruned plant material and placing it onto a bulk collection point such as a tarp or canvas for loading into a trailer or dump vehicle. One other bulk option is to forego tarping and load branches directly onto a trailer or dump vehicle with a hard cover or tarp.

Pruning Waste Dumping Sites

- All tree and shrub pruning debris shall be taken to the Chugach tree chipper located south of the dump site and piled next to the chipper. **Do Not** operate the chipper. Chugach has agreed to shred your trimmings and provide shredded bark for your pick up and usage.
- All lawn clippings and leaves shall be taken to the KAFB landfill.

Equipment Needed

- Shovel/hoe
- Hard rake
- Spring rake
- Chain saw
- Pole saw
- Hand saw
- Loppers
- Hand pruners
- Bleach
- Dump trailer/truck

14.0 Turf Fertilization

Cool Season Turfgrass

- Cool season turfgrass (bluegrass, fescue, perennial rye) in Albuquerque requires about 6 lbs of nitrogen per growing season. In order to supply this to the turfgrass plant an annual fertilization program will consist of **four applications per season**: a winter application of sulfur, a spring application of ammonium sulfate, an early summer application of a balanced all-purpose fertilizer such as Turf Supreme, and a late fall application of a winterizing fertilizer. Any fertilizer application should be followed with a thorough irrigation as per the directions given in this manual.

Warm Season Turfgrass

- Warm season turfgrass (buffalo, blue gramma) in Albuquerque requires about 2 lbs of nitrogen per growing season. In order to supply this to the turfgrass plant an annual fertilization program will consist of **a single early summer application** of a balanced all-purpose fertilizer such as Turf Supreme. Any fertilizer application should be followed with a thorough irrigation as per the directions given in this manual.

Sulfur

- Using a rotary spreader apply 4 lbs of elemental sulfur per 1,000 sf in either November or December. Water in by irrigating 15 minutes using fixed spray sprinkler heads and 30 minutes using rotary sprinkler heads.

Ammonium Sulfate

- Using a rotary spreader apply 1 ½ lbs of nitrogen per 1,000 sf. Water in by irrigating 15 minutes using fixed spray sprinkler heads and 30 minutes using rotary sprinkler heads.

Turf Supreme

- Using a rotary spreader apply 1 ½ lbs of nitrogen per 1,000 sf. Water in by irrigating 15 minutes using fixed spray sprinkler heads and 30 minutes using rotary sprinkler heads.

Winterizing Fertilizer

- A fertilizer used to "winterize" turfgrass should, in a normal fall, be applied in November during the week before the Thanksgiving Holiday or during the following week after the Holiday. If it is applied too soon while the temperatures are still warm it will produce succulent lush growth which will be susceptible to winter injury. If applied too late it will be of no benefit in winterizing the turf. A good winterizing fertilizer will have a N:K ratio of 3 or 4:1.

Organic Fertilizer

- Using a rotary spreader apply 1 ½ lbs of nitrogen per 1,000 sf. Water in by irrigating 15 minutes using fixed spray sprinkler heads and 30 minutes using rotary sprinkler heads.
  1. Using bulk supplied City of Albuquerque compost organic fertilizer, broadcast 10 lbs of fertilizer /1,000 sf of turf.
  2. Using Green Spec broadcast 3 lbs of fertilizer /1,000 sf of turf.

Calibrating a Rotary Spreader

- Place the recommended amount of fertilizer to apply to 1,000 sf into the spreader hopper.
- On a hard surface that can be swept off spread out a sheet of plastic 1,000 sf in size (20' x 50' or 32' x 32', etc.).
- Set the spreader setting at the recommended opening if given on the bag. If not given use your judgment and select what you think is the closest setting for your model spreader.

- First, apply fertilizer in a "perimeter band" along the edges of the plastic sheet and then to the "interior" portion of the plastic sheet. After you have covered the entire plastic sheet with fertilizer, stop spreading. Look to see how much fertilizer is left in the spreader hopper. If it is empty and you have covered the entire plastic sheet with fertilizer note the spreader setting used. That is the correct setting. If you still have fertilizer left in the hopper you must sweep the fertilizer off of the plastic sheet and start over using a higher setting (bigger opening) for the spreader. If you ran out of fertilizer in the hopper before you finished covering the plastic sheet you must sweep the fertilizer off of the plastic sheet and start over using a lower setting (smaller opening) for the spreader. Continue this method until you completely empty the spreader hopper over the entire plastic sheet with a single pass. When you have done this you will have ascertained the correct spreader setting for the fertilizer type you are using and you should note this setting for future use.

Safety Tip

- When spreading sulfur it is advisable to wear a dust mask to prevent to prevent sulfur particles from entering your breathing passageways.

Fertilizing Tips

- Never fill your fertilizer spreader while it is located on a lawn area

Irrigation Check and Watering-in of Fertilizer

- After fertilization is completed check the tree irrigation system for proper operation by activating each station and visually checking to make sure all heads are operating correctly. Apply enough water to wet the soil to rooting depth: about 15 minutes for fixed spray heads and 30 minutes for rotary heads.

Equipment Needed

- Scale for weighing
- Bucket for weighing
- Flags
- Walk behind rotary spreader
- Tractor pull behind rotary spreader
- Dump trailer/truck (for City of Albuquerque organic fertilizer)
- PPE to include a dust mask

15.0 Warm Season Turf Mowing

Mowing Frequency

1. Buffalo Grass Turf

- At buildings where buffalo grass is used in a lawn application (see list below) it shall be mowed once per month from June through October or when it reaches a height of 5" – whichever comes first.
- Locations of buffalo turf are: **879** south, **894** east, **895** north & east perimeter, **858** south.

2. Blue Gramma Grass (BGG) Turf or Mixes

- Lawn areas, meadows, or utility turf areas which are composed entirely of Blue Gramma Grass or mixes of BGG shall be mowed once per year in early spring – March or April (see list below). The exception to this guideline shall be situations in which there are unsightly weeds within the same lawn area which detract from its appearance if left unmowed. In these cases mowing shall be performed more frequently if needed in order to control weeds.

- Locations of BGG are: **701** north, east, & south, **720** west, **905** all directions, **956** track, **954** pond, **1008** north & southeast, **6585** north, south, and east, **6587** south, **897** north, and **857** southwest.

Mowing Height

- All mowing (summer and fall) shall be at a height of 3".
- Mowing shall be performed with a mulching mower whenever possible.

Edging

- Edging for both types of turf areas shall be performed at the same time turf is mowed.
- Edging shall typically be performed with a string-trimmer. In locations where edge growth is too thick to be adequately done with a string trimmer or at locations where it is desirable to have a more defined edge a mechanical edger shall be used.

Clean-Up

- After mowing and edging are completed all sidewalks and other hardscaped areas shall be blown off with either a gas powered or electrical blower or, if necessary, swept off manually with a broom.

Irrigation Check

- After clean-up is completed check the turf irrigation system for proper operation by activating each station and visually checking to make sure all heads are turning and that no heads are broken.

Equipment Maintenance

- Mower blades should be sharpened after all the monthly or annual mowings are completed. The mower deck and undercarriage should also be washed at this time.

Safety Tip

- If turf is so tall as to hinder viewing of objects (rocks, trash, other debris, high sprinkler heads) in the area you are mowing take a few minutes before mowing and "walk down" the area looking for and removing hazardous objects mentioned above. Never leave the mower running while you get off to remove debris or make adjustments to the equipment.

Miscellaneous

- Flag sprinkler heads as necessary before mowing and string trim around them.

Equipment Needed

- Riding mower
- Walkbehind mower
- String trimmer
- Edger
- Blower
- Broom