BOARD OF PESTICIDES CONTROL
APPLICATION FOR VARIANCE PERMIT
(Pursuant to Chapter 29, Section 6 of the Board's Regulations)

I. Erik Grove (207) 625-7100
Name Telephone Number

Southern Maine Forestry Services, Inc.
Company Name

PO Box 910, North Windham, Me 04062
Address City State Zip

II. Area(s) where pesticide will be applied:
The property is located in Scarborough off Marion Jordan Road directly on the ocean.

The project is aimed at controlling invasive species. Honeysuckle and bittersweet are the dominant species of concern. See the attached maps. The invasives are found directly along the high water mark in places. I have also attached my proposal to the client showing my proposed methodology related to the plant species, herbicide to be used and timing of application. The honey suckle is sporadicly found along the water. The bittersweet is heavily infested in an area about 150 feet long just east of the prominent pine in the middle of zone one. Another 150feet is found at the north end of the property as well as individual plants found adjacent to these areas.

III. Pesticide(s) to be applied:
GArlon 3A is to be applied to control the honey suckle during the window of early leaf out so as to be a selective application killing only the target shrubs. A follow up treatment is to be made to the bittersweet growing over a smaller area but is more established in areas of previously mowed meadow as well as shrub growth. The Garlon 3A treatment is intended to be somewhat selective leaving the grass in place to hold the soil and site reducing the ability of new plants becoming established by seed.

IV. Purpose of pesticide application:

V. Approximate dates of spray application:
The honey suckle will be treated during the week to ten day window when they are leafed out before the native vegetation leafs out. Timing of treatment will be made early in the day when wind is lighter and with an onshore breeze, likely coinciding with an incoming tide.

VI. Application Equipment:
Most of the application will be made with a Solo back pack mist blower. Areas adjacent to sensitive plants will be done with a hand pump back pack sprayer. All applications will be done by my self as I have many years of experience operating a mist blower.

VII. Standard(s) to be varied from:

The standards to be varied from are the application being made with a motorized sprayer and in excess of the area allowed.

VIII. Reason for variance:

The reason for the variance is the ability to treat the area relatively fast during the best window of opportunity to selectivly treat the honey suckle, make treatments during quickly during optimum weather conditions to minimize opertunity for drift, and to treat the bittersweet that is so well established on the site.

IX. Method to assure equivalent protection:

The selection of herbicide and timing of application will ensure that relatively few native non-target plants will be killed in the application ensuring a well vegetated buffer along the ocean remains. Removing the invasive plants will ensure a more dynamic plant community in the future providing better natural function to protect soil and water quality over time.

The herbicide of choice is registered for aquatic use.

Applying only during advantageous, low, on shore wind will ensure no pesticide lands directly in the water.

See the attached proposal that describes the methodology in more detail and the entire scope of the project.

Signed: Erik F Grove Date: February 18, 2013

Return completed form to: **Board of Pesticides Control, 28 State House Station, Augusta, ME 04333-0028**

OR E-mail to: pesticides@maine.gov


Not a priority
management zone
1,864.30'± CENTERLINE LENGTH FROM EDGE RIGHT OF WAY TO
PROPOSED PROPERTY LINE
GAR.
ZONE 2
~1.2 acres

GRAPHIC SCALE

DATE	REVISIONS

SITE PLAN

M/F CECIL CARVER PROPERTY

MARION JORDAN ROAD

SCARBOROUGH, MAINE

Albert Frick Associates, Inc.
Environmental Consultants
Gorham, Maine 04038

Drawn: B.J. | Checked: A.F.

Date: 3/20/2013 | Scale: 1" = 100'

Request For Proposal

Invasive Species Control

At

Marion Jordan Road, Scarborough Maine

Prepared by:

Erik F. Grove
Maine Licensed Forester #3273
Maine Commercial Master Applicator License CMA43481/ 2, 3A, 6B

Project:

The project presented is the control and elimination of invasive species from property at Marion Jordan Road, Scarborough so as to restore natural plant comunities to the site. The

site to be treated is estimated to be 21.8 acres subdivided into four treatment zones. In addition to controlling the invasive species, it is desiered to cut and remove them from zones one, two and three.

The project is complicated by portions of the site being affected by shoreland zoning and other ortions being situated on wetland soils with areas of surface water. Altering vegitation within the shoreland zone requires a permit and frequently a plan to revegitate the site. The use of herbicide within 25 feet of the shore line or wetland edge also requires a permit to apply within this zone.

It is also desired to utilize the site for research and documentation of invasive species control.

The stated goal is to utilize the best science and technique available while being mindfull of cost. It is also greatly desired to start work within zone one during the fall of 2012.

Proposed plan of work:

While there is great desire to move forward on this project during the fall, a work plan starting in the spring of 2013 is strongly recomended. The primary reason for starting work in the spring is better control of the target plants, less chemical ussed, more efficent herbicide application and a more cost effective treatment over all.

Whole healthy functioning plants take in and process herbicide most efficently resulting in the most thorough kill ussing the least herbicide. Foliage provides the largest and most suceptible entry point to move herbicide into a target plant. Optimum entry in to the plant allows the least amount of herbicide to be ussed. Foliar applications also allow for the most efficent and cost effective means of treating large areas. Based on several factors, foliar applications allow for very selective treatments on this project.

A cut stump treatment or basal treatment are the only control options remaining this fall during the leaf off conditions. Both cut stump and basal treatment require substantialy more active ingrediant be applied to achieve control, much more time to apply and are more likely to result in some stems being missed or untreated. Herbicides available for this method of treatment that are also registered for aquatic use must be applied within an hour of the stem beeing cut to be effective and at full strength, 40-50% active ingrediant. A more effective ester formulation used for basal treatment and cut stumps, 14% active ingrediant, is not recomended for use around surface water or high water table soils.

Substantialy more herbicide is ussed with the cut stump or basal treatment methods. In the most heavily infested areas of the property 90-100% of the growth is invasive shrubs and vines. Assuming the heaviest infestation, one shrub is found every five feet for a total of 25 square feet per shrub or 1,742 shrubs per acre. Assuming a stump treatent of 20 milleliters, one might use up to 34.8 liters or almost 8 gallons of chemical. This is aproaching the maximum dosage allowed by the lable in non crop areas and exceeds the lable rate of six gallons on forest sites if the most effective Garlon4 ester formulation is ussed.

Another reason to schedual cutting and chipping of killed shrubs after control is complete is the diffrence in skill sets for the people performing the labor. There is a large pool of

contractors able to cut and chip brush. The majority of those people do not have good shrub identification skills to selectively cut and remove just the invasive plants. Once the invasive shrubs have been controlled, it is easy to designate just the dead shrubs for cutting.

Permits to alter vegitation in the shoreland zone can be aquired during the fall of 2012. A permit from the Board Of Pesticide Control can also be obtained in leisure during the fall of 2012. The board meets monthly except for two months over the winter.

The initial control work eliminating all established plants can all be compleeted during the 2013 growing season. Work will be compleeted in three phases. Each phase will be designed to maximize the efectiveness of the herbicide on the target plant and the selectivity of the application to minimize the effects on surounding vegitation and environment.

Two follow up treatments are also prescribed. A follow up controll will be prescribed specificaly for areas of bittersweet infestation. A second treatment is prescribed in anticipation of seedlings developing from the seedbank developed from the mature plants currently occupying the site.

A discussion of the merits of cutting or leaving killed vegitation standing will be given. A proposal for removing killed vegitation will be given as well as a proposal for removing vegitation this fall following the specific goals as stated during the field tour.

Phase one

Honey suckle is the predominant invasive species on this property. Many invasive shrubs and vines have a charecteristic of leafing out earlier or keeping their foliage longer than surounding natural vegitation. Honeysuckle demonstrates the early leaf out charecteristic, usualy doing so a week to ten days before the surounding native shrubs.

Early leaf out provides a great window of opertunity to selectivly control this species with a foliar application.The surounding dormant natural vegitation is left unharmed and also allows greater access to the honeysuckle foliage A foliar application in general is relativly fast and uses minimal herbicide per unit controlled. Garlon 3A is the recomended herbicide. Garlon functions by speeding up growth to the point cell walls burst causing the plant to die. Maximizing growth works best when the plant is naturaly entering a phase of active growth. Garlon does not effect or control grasses. Any treatments will not kill any of the sod in the surounding meadows and fields. Garlon 3A is also registered for aquatic use.

A 5% solution of Garlon3A will be applied using a motorized back pack mist blower. A motorized mist blower can provide relativly precise application by controlling the velocity of the air stream and the volume of herbicide being released into the air stream. Areas of heaviest infestation are estimated to need up to (8) eight 2.5 gallon batches of mixed chemical per acre. Such application may take up to 2 hours per acre.A batch of herbicide can be applied in 12 minutes under peak efficency. An average of four to five batches per hour are applied during good working conditions. Areas along field edges with ready access to herbicide can be treated at maximum efficency. Entering shrub thickets to ensure through coverage will slow application somewhat. Treating in the interior of zone 4 will result in low productivity due having to walk extra distance from the source of the herbicide to the target plants. If the

area could be accessed with an ATV to haul batches of herbicide, maximum productivity could be maintained. There are atleast several acres of heavy infestation to be treated in the interior area of zone four.

Any honeysuckle adjacent to softwood trees will be treated with a hand sprayer to avoid drift or over spray on to the needles. Softwood needles are sensitive to garlon during the spring and early summer.

All areas to be treated within 25 feet of surface waters, I will petition the Board of Pesticide Control to allow motorized application due to the selectivity of target and native vegitation not being leafed out yet. Additionaly, utilizing a motorized sprayer will allow all work to be compleeted in a shorter period of time during optimum wind conditions of no wind or wind consistently blowing on shore away from the surface water. Should the board decline the application, it is assumed that the board will allow the work to be caried out with a hand pump back pack sprayer.

While on site any bitter sweet vines deemed to tall to treat with a foliar application or entwined with desirable natural vegitation shall be treated with a basal application of Garlon4 in methalted seed oil. The vines to treat are primarily located in zone three.

Additional bittersweet vines adjacent to the surface water in zone four are to be cut. The purpose of cutting is to promote the growth of foliage at a lower height where it can be treated more precisely with a foliar application. It is estimated there are atleast four groups of vines in this area of zone four.

Phase Two

Phase two is also a foliar garlon application. The majority of phase two would be planned for early June. Recent mowing and cutting will require thiose areas to be treated later in the summer or the following yera in June.

Bittersweet is the second most common invasive plant found on the preoperty. Bittersweet will also be the hardest plant to gain control of. Established vines expand the areas colonized by sending out new shoots that climb up through other desirable native growth. Cutting and mowing the vine further encourage this habit with many more new shoots being produced. Bittersweet also produces a substantial seed bank from large anual seed crops. Those seeds remain viable and continue to sprout and develop for years after the origional plant has been removed.

Bittersweet is found in numerous small to large well established colonies in all four treatment zones. The largest infestation is found in the middle of zone one and runs along the edge of the medow for at least 200 hundred feet. This patch spans the area of shrub growth growing from the meadow edge over to the edge of the ocean. It has atleast 100 feet of growth directly along the ocean edge. There are additional satelite patches of growth running west along the side of the ocean to where the wetland in front of the building area drains across the foot path.. Another large patch is found at the east end of the medow and runs out right along the edge of the ocean.

Just east of the prominant pitch pine in zone one the meadow extends right to the edge of the ocean. The area is aproximately 75 to 100 feet square. The air apears to have been long

managed and mowed as part of the meadow. In recent years this area has become infested with bittersweet with vines of knee height. Grass is still fairly well established in this area.

Bittersweet sprouts profusly when it is cut or mown. The recent mowing to reestablish the edge of the medow and develop the foot paths to and along the ocean have disturbed large areas of bittersweet. This action was a poor choice and will complicate and lengthen the time and effort required to gain control of this growth. This cutting will result in numerous new sprouting that will come up through the desired native growth along the edge of the trail. The control is further complicated by being directly adjacent along the ocean edge in many places.

Numerous new sprouts are alredy evident along the meadow edge where mowing was done. Theese sprouts are analegous to the tip of an ice burg. There is a huge well established root mass with large energy reserves with very little stem and foliar mass in relation to it. This provides very little exposed surface area to treat to get enough herbicide in to the remaining plant to kill the entire root sytem. The disturbed areas of bittersweet will have to be allowed to grow so as to provide more surface area for uptake of herbicide.

A 5% foliar treatment of Garlon 3A is proposed for undisturbed areas of bittersweet growth. Having killed the honey suckle 4-6 weeks prior, the bittersweet foliage will be better exposed for treatment. The largest infestations are likely in areas that were also heavily infested with honeysuckle. In theese areas there will be little or no native vegitation to avoid. These areas I propose treating with the mist blower. The undisturbed growth in areas of established sod should also be treated the same way. The selective treatment will leave a live healthy grass sod in place. This will help prevent additional seedlings from becoming established as well as maintaing soil from eroding in areas within the shoreland zone. Unfortunately, other broadleaf plants within the areas of infestation will need to be sacrificed. If the other plants were not killed by the herbicide they would soon be overgrown and smothered by the bittersweet infestation anyways.

Directly along the edge of the ochean there are several infestations to treat. Those areas within 25 feet of the water will be sprayed with a back pack hand pump sprayer. In some places there is still an established grass sod. In this situation the grass sod will be left in place to prevent erosion and the leaching of nutrients. Along the recently cut path, it is anticipated that the spray can be precisely applied below the foliage of the native shrubs and onto the new bittersweet vines providing a reasonably selective removal. Some small areas of native growth may need to be sacrificed to gain control of the bittersweet in this area.

The treatment of the recently mown areas may need to be delayed until July so that sufficient foliage has developed to apply herbicide to. If the grass over tops the new vine growth, treatment may need to be further delayed and made the followimng year in early June.

Other invasive shrubs found on the property include privet, autumn olive, multiflora rose and barberry. Theese shrubs will be controlled either by a foliar application made with a back pack hand pump sprayer or basal treatment ussing Garlon4 in metholated seed oil. A foliar treatment will be used where sensative native plants will not be harmed. The basal treatment method shall be used where invasives are found amungst many other plants.

The patch of Knot weede found on the north side of zone three will also be controlled with a foliar treatment of 5% Garlon4. The ester formulation helps increae herbicide uptake and

efficacy in the notoriously hard to kill plant. The initial treatment will likely kill the plant back, weakening it resulting in modest regrowth over the summer. A second treatment is anticipated for late summer. Garlon is recomended for both treatments as it will leave any grass in place to develop a sod to ocupy the site limiting the oertunity for other invasives to become established.

Phase Three

Phase three is a small final application and can be made in late August or September. Bittersweet vines growing in zone four near surface water will be given a foliar treatment with Rodeo, a glyphosate product with an aquatic registration.

During late summer the water table will be at its lowest point of the year. This will reduce the likelihood of herbacide directly coming in cantact with water. For those plants growing directly over water Rodeo with no surficant will be foliar applied with a hand held sprayer. Glyphosate is extremly chemicaly active being tied up to any carbon based material including decaying plant material, agea and similar material in water making the chemical no longer active. It is the surficant or wetting agent that is harmfull to some aquatic animals.

Any invasive plants that may have been missed during previous applications can also be controlled at this time.

Glyphosate is a nonselective herbicide in that it will kill broad leaf plants, grasses and sedges. However, in late summer and fall it will not damage conifers. It functions by preventing the plant from utilizing energy produced during photosynthesis. The plant is eventualy starved to death. Glyphosate is the most enviornmentally beneign herbicide because the active ingrediant is so easily tied up chemicaly and it breaks down so fast.

Follow up Treatment

Once the current invasive plants have been removed, small to large ares of exposed soil will be present. This will create a great oportunity for new plants to become established. Due to the large surounding are having been open field there is likely a large seed bank of native or more desitrable grasses and forbes including wildflowers such as brown eyed susam and golden rod.

Unfortunately there is also a huge seed bank left in place by the large mature invasive shrubs and vines just removed. In addition there are large well established populations of invasive shrubs and vines on all surounding properties. Theese two facors greatly affect the ability to maintain long term success in maintaining the property free of invasives.

Of all the species present, Bittersweet apears to demonstrate the most capacity to sprout from the seed bed. In the best growin conditions plants can begin to produce seed in five years. For the first three years it can be hand puled with success. Once it is older than that, pulling the entire root is unlikely and remaining fragments will resprout.

Bittersweet seeds will continue to sprout from the seed bank with regularity for atleast five years, likely longer. Spotting a young seedling in areas where all previous growth was removed is easy but rather difficult amungst grass and other natural growth. Only once the seedling is at least several years old will it be easily identified. A seedling would need to be at least five years old and growing well to begin to produce fruit. A follow up treatment is recomended for 2017 or 2018. The property should be thoroughly inspected by gridding across all of the land to find any seedlings. If seedling growth is sparse, a foliar application with either Garlon3A or Glyphosate is recomended. If seedlings are abundent a mist blower application may be more practicle.

As with most things, the law of diminishing returns. You can get control of most of the seedlings with some ease and moderate expense of time and chemical. Finding and killing all of the remaining seedlings will be exponentialy harder and more expensive.

The Integrated Pest Management system recognizes this and sugests an economic threshold be identified where populations below a certain levle are tolerated to minimize further expense. It is recomended that plants of seed bearing size be established as the threshold 25 feet or more away from surface areas. Plants are large enough to identify easily and still tend to have a single stem without numerous shoot growth coming from the root sytem. Within 25 feet of surface areas a younger threshold is recomended. Theese areas should be inspected on a yearly or biyearly basis so that seedlings can be hand pulled reducing or eliminating the need for future herbicide treatments in this sensitive area.

Cutting and Removal of Invasives:

Cutting and removing controlled shrubs is purely an easthetic issue and a value judgement to be determined by the owner. Leaving the dead plants within the shoreland zone will help hold the site as it is revegitated naturaly or with plantings. The dead standing brush will also provide good cover for wildlife including cotton tail rabits. Coton tail rabbits are a species in decline due to habitat loss. Some cotton tails are thought to be located on the Camp Ketcha property near by. The expansive meadow and scrub edge of this property provides ideal cottontail habitat.

<u>Post Control Removal</u>
If cutting and chipping of the invasive shrubs is desired, it is recomended to be done followig the herbicide treatment described above. Once the controlled plants are dead they can be easily identified for removal. This would allow the work to be done by workers unskilled in species identification. The work could then be agressively shopped around for the most competitive price. The single shrubs amungst native growth may not need to be treated as they will be qyuickly covered over and obscured by the native growth. The heavy invasive growth directly along the field edges of zone one. Two and three are likely to be the areas in need of treatment for easthetic reasons. It is estimated that a three man crew can cut and chip a third of an acre per day. A quote was given by a landscape crew for three men, a 12 inch

chipper and a tractor to manuver the chipper along the field for $850.00 . Due to the variation in stocking the contractor was not willing to quote a flat rate on compleeting the work in each zone.

Areas of heavy bittersweet vines are not feasible to cut and chip by hand. Such work would be extreemly tedius and expensive. It is recomended that such areas of vines be left as brush piles for wildlife habitat. Bittersweet vines break down and decompose rather rapidly. After several winters of heavy snow load the areas of vines would be flattened down and less than a foot in height in most places. If it is still desired that areas of controlled vines be reduced for easthetic purposes, it is recomended that they be shredded using a fecon mulching mower. A contractor has such a head mounted on a full size excavator. The mower can handle at least one acre per day of heavy shrub and sappling growth, more where thematerial is smaller and the stems are less coarse. The minimum cost for the machine for one day from this contractor is $2,000.00 for eight hours. The machine is available for multiple days at the rate of $200.00 per hour.

The most cost effective solution for cutting and chipping brush would be to hire the excavator mounted fecon mower for two days to mow heavy areas of infestation within zones one, two and three and possibly the field edge of zone four. Additional days of hand cutting and chipping could then be hired to remove stems not reached with the fecon head due to adjacent natural growth.

2012 Fall Control Option:

Although not recomended, it is recognized that the owner is always right and in that spirit a proposal to match those desires is given.

It is proposed that the areas of heaviest growth including the bittersweet along the meadow edge in zone one and two be mowed with the Fecon mulching head. It is recomended that two days of work be purchased to get better cost per unit. Areas of zone one, two and possibly small areas of zone three could be treated as well as the field edge of zone four could be accomplished in two days. In addition to the cost of the machine, there would be a layout and supervision cost for the forester to be on site directing the machine operator as it works. The cost for supervision would be the hourly rate of $75.00 bringing the fecon mowing rate to $275.00 per hour.

Remaining shrubs in zone one would then be cut by hand and chipped.Cutting would be done by the forester with chainsaw and clearing saw and billed at his hourly rate. The shagging of brush and chipping would be done by the subcontractor at the rate of $850 per day for the three man crew.

Stumps of shrubs cut by chainsaw or clearing saw would be treated this fall with a Garlon4 ester formula. Areas mowed with the fecon head would be treated the following year with a mist blown formula of Garlon 3A described above.

Shoreland Revegitation:
The shoreland zone is currently occupied by a range of early successional growth ranging from grass to small trees but being dominated by shrub growth. It is recomended that any planting required by the code enforcement officer be done with a mix of native shrubs including a mix of fruiting hardwoods, primarily viburnums, and juniper. Viburnums produce soft mast utilized by song birds and is an important food source during migration which occurs along the coast line. Staghorn sumack can also be planted to provide a feed source for early spring migrating birds. The juniper is recomended as it provides good winter cover for wildlife, especially cotton tail rabits. During winter field work on camp Ketcha, it was seen that the rabits were heavily utilizing juniper that winter.

No planting should be done until it is certain that the current bittersweet growth has been successfully controlled.

The only areas of compleete shrub removal are some distance back fron the ocean edge. It is estimated that no more than an acre will be compleetly cleared and need to be replanted with shrubs. It is recomended that areas of bare soil be seeded with grass to hold the site, minimize any soil or nutrient movement and will also help discourage sprouting and development of invasive plants.

Research and Outreach:

The Maine Board of Pesticide Control, The Maine Forest Service and Maine Extension Service host numerous workshops each year to educate the general public as well as provide continuing edducation credits for licensed pesticide applicators and foresters.

I would advocate utilizing this site for such purposes.Numerous tours could be hosted before and after work is done to sducate local landowners and professionals working within the industry.

Pre control population estimates should be estimated and mapped . As control is made declines in populations should be documented quanitatively and with photos.

Cost estimate

Southern Maine Forestry strives to provide its customers with efficent and cost effective service. The standard billing for invasives control work is time and materials. An estimate of time and material for each treatement and each zone will be given but is not a garuntee. As an alternative a flat rate for treating each area will also be given.

Subcontractors were not willing to make flat rate quotes.

Fee schedule:
Pesticide applicator & licensed Forester: $75.00/hour
Foliar applied herbicide: $20:00 per 2.5 gallon batch of 5% Garlon 3A or Rodeo.
Basal applied herbicide: $50:00 per gallon of Garlon4 in methoated seed oil.

Subcontracted crew for chipping: 3 man crew with tractor towing 12 inch chipper with mechanical feed rollers $850:00/day

Fecon mulching mower mounted on full size excavator, $2,000.00 minmum charge, or $200.00 per hour for more than one day. Additional forester supervission of fecon operator, $75.00 per hour.

Permit to Board of Pesticide Control to apply within 25 feet of surface waters, $200

Written plan and one meeting with code enforcement officer for shoreland zoning work, $300.

Documentation of pre and post treatment species location and relative abundence with with GIS mapping system, $600.00

Chemical controle only, Phase one, selective foliar honeysuckle treatment

Zone	Estimated hours and chemical use			Estimated time and materials cost	Fixed cost offer
	hours	chemical Foliar	basal		
1	6	16		$770.00	$1,000.00
2	5	10		$575.00	$700.00
3	5	12	1	$640.00	$800.00
4, all mist blown	13	30		$1,575.00	$2,000.00
4 with hand application	25	30		$2,475.00	$3,000.00
total				$4,460.00	$5,500.00

Phase two, June treatment

Zone	Estimated hours and chemical use			Estimated time and materials cost	Fixed cost offer
	hours	chemical Foliar	basal		

1	8	9		$780.00	$1,000.00
2	1	3		$135.00	$225.00
3	6	8		$610.00	$800.00
4	2	4		$230.00	$300.00
Total				$1,755.00	$2,325.00

Phase three

Zone	Estimated hours and chemical use			Estimated time and materials cost	Fixed cost offer
	hours	chemical Foliar	basal		
1	1	1		$95.00	$125.00
2	1	1		$95.00	$125.00
3	1	2		$115.00	$125.00
4	5	10		$575.00	$800.00
total	8	14		$880.00	$1,175.00

Cut and removal estimat, post chemical treatment hand cut only

Zone	Estimated days	Estimated cost
	Hand cut only	
1	3	$2,550.00
2	3	$2,550.00
3	2	$1,700.00
total		$6,800.00

Cut and removal estimat, post chemical treatment with Fecon mower

Zone	Estimated days		Estimated cost
	Hand cut	Fecon head	
1	1	0.5	$2,100.00
2	1	0.5	$2,100.00
3	2		$1,700.00
total			$5,900.00

Pre chemical control cut and removal, hand work only

Zone	Estimated days		Estimated cost
	Hand cuting	chipping	
1	3	2	$3,500.00
2	3	2	$3,500.00

3	2	2	$2,900.00
total			$9,900.00

Pre chemical control cut and removal, with fecon head

Zone	Estimated days			Estimated cost
	Hand cut	chip	Fecon head *	
1	1	1	0.5	$2,900.00
2	1	1	0.5	$2,900.00
3	2	2		$2,900.00
total				$8,700.00

* includes forester supervision

Chemical control of shrubs would be through phase one foliar application in two years to allow for adequet foliage to redevelop.