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Native & Non-native Plant Survey, Assessment & Long-term Management Plan for The Prairie Club's Camp Hazelhurst

**September 14, 2020
By Randy Counterman
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PREFACE

By Mike Maloney

The Prairie Club, founded in 1908, is one of the Chicago region's earliest environmental groups, and Camp Hazelhurst, a 65-acre community of dunes, forest and beach, is designed for Club members to live harmoniously with nature. Roughly 35 acres are deemed natural areas, 12 of which have been identified as high priority and are in scope for this plan.

Presently, we have problems with invasive plants throughout the camp. The Second Century Conservation Committee determined that a plan was needed to initiate an organized effort to conserve Camp Hazelhurst natural areas. After a competitive bidding process, Native Landscapes, LLC was selected to produce the plan. This Conservation Plan for rehabilitation and maintenance of Camp Hazelhurst natural areas is the result of that effort and is intended to provide the guidance we need to properly care for our land.

The Conservation Plan for the in-scope natural areas that includes an assessment, a conservation approach and inputs to our budgeting process required to execute the plan. We anticipate that the plan will be completed over a multi-year timeframe. See Exhibit 1 for a map of the high priority in-scope natural areas.

Scope

- 1) Assess the high priority natural areas that are in scope for the plan. The assessment should be systematic and methodical and should result in a fact-based description of the flora that exist in the assessed areas including the canopy layer, the understory/shrub layer, and the ground layer. The presence/absence and coverage percent of desirable native plants and invasive/non-native plants should be identified for each high priority in-scope natural area.
- 2) Develop a list of general conservation actions and define each action to promote common understanding of the work required (e.g., Remove Buckthorn with a description of what is entailed in such removal).
- 3) Correlate conservation actions to specific areas of the in-scope acreage based on the assessment results. Identify specific areas of the in-scope acreage that will require replanting once invasive species have been removed.

- 4) Develop estimate of work effort required to complete the recommended conservation actions and make a recommendation as to the work effort that could be completed with Prairie Club volunteers and work effort that is recommended to be completed with qualified contractors.
- 5) Develop a high-level cost for the work effort that is recommended to be completed by contractors and provide an hourly cost estimate for supplemental contractor labor for the work effort that could be completed by Prairie Club volunteers.
- 6) Provide a recommended set of objectives that we could measure against over time and a recommendation as to how we collect data and measure our results.

The Second Century Conservation Committee thanks Randy Counterman of Natural Landscapes, LLC for his excellent work, the Prairie Club Board of Directors for its support, and all the Prairie Club members who collaborated with Randy in the creation of the plan. We would also like to thank Nor Seroki, from Cooperative Invasive Species Management Area (CISMA) for Michigan for her assistance.

Please recognize that this plan is the first step. Consistent and concerted volunteer effort and funding will be needed to fully realize our objectives.

This plan was officially submitted to the Prairie Club Board, July 2021

THE SECOND CENTURY HAZELHURST CONSERVATION COMMITTEE

Sharon Lemler (Chair)
Randy Ball (Vice Chair)
Sally Craig
Mike Maloney
Anna Vincenti

1 Introduction

A fatal flaw of many ecological restoration projects can occur before the first perceptible change to the targeted environment is even realized. The collection of quantifiable data at the start of a project is the most neglected aspect of ecological restoration. Without this key component, well thought out and explicitly stated quantitative objectives cannot be included in a management plan and determining if a project is on the right trajectory to succeed is impossible.

When designed and executed effectively, measuring and monitoring several key components of an ecosystem can be a powerful tool allowing for the successful management of a natural area. The completion of background tasks that explore the historic, current and potential outcomes of a site and a project before hands-on management takes place can provide valuable information and allow for accurate and explicitly understood and stated outcomes.

Excuses for the lack of monitoring have been attributed to several factors including a lack of financial resources, the improper allocation of available resources and even poor planning. Sometimes assessment is unbefittingly excluded in favor of active management to prove that funding is justified. There are even cases where assessment is included, but the lack of background investigation resulted in a situation where the indicators chosen to represent progress may not have the ability to accurately describe the potential outcomes.

The key to this project lies in the ability to delineate, describe and characterize discrete areas inside the entire site so that we can accurately determine management decisions and iteratively develop a system that will maintain a desired outcome. The discrete areas that will be used as guidelines for the duration of this project will be known as “cells”. Each cell measures in at 15-m x 15-m square and each has a unique number name. All active management in each management unit will be performed in a consistent manner, from south and west, to east, in rows. Management objectives and goals will be explicitly stated and the project is planned to be completed over a 10-year period.

2 Assessment Methodology and Results

2.1 Methodology

During a pre-assessment trip to Camp Hazelhurst, a Global Positioning System (GPS) was used to take waypoints and tracklogs at several key locations throughout the site. The collected waypoints and tracklogs were then entered into a Geographic Information System (GIS) and third-party software was used to create a virtual grid of evenly spaced (at 15-m intervals) points across the entire site. The perimeters of three identified natural areas were identified and all data points falling outside these areas were eliminated from consideration. These actions resulted in the delineation of the three virtual management units known as The Beachwood Unit (Figure 1), The Blowout Unit (Figure 2), and The Farmhouse Unit (Figure 3). The Beachwood Unit consists of 8.2 acres and equates to 149 data points. The Blowout Unit consists of 1.2 acres and equates to 21 data points. The Farmhouse Unit consists of 2.9 acres and 53 data points. Total coverage of all units is 12.3 acres and 223 data points.

These points were downloaded onto an Apple iPad and subsequently used to locate the center point of each quadrat in the field. Pin flags, marked with lat/long coordinate information related to each sampling point, were placed at each sampling point. When locating sampling points, the iPad was set to a mode displaying a circle around the targeted point on the screen and flags were placed when and where the targeted point was at the center of the displayed circle. Each flag was then visited, and a presence/absence determination of specific plant species (known as the “indicators”) was taken at each sampling point location. A 1-m² area quadrat was used to sample herbaceous vegetation, a 4-m² area quadrat was used to sample shrubby vegetation, and a 10-m² area quadrat was used to sample tree species. For a presence indication to occur, at least part of the root collar area of each indicator had to originate from inside the sample unit. Only shrubs taller than 1-m and only tree species having a diameter at breast height (dbh) > 2” were recorded as present. All species identified in each quadrant were noted. Presence indications were recorded on a data sheet. Information from the data sheet was transcribed into an Excel spreadsheet, converted to a .csv file and uploaded into the GIS. The Excel spreadsheet program was used to calculate frequency of occurrence for each indicator as well as for each of the documented individual species.



Figure 1. The Beachwood Unit lies at the northwestern corner of Camp Hazelhurst and consists of 149 cells.

<Blowout Unit Photo Here>

Figure 2. The Blowout Unit lies at the center portion of Camp Hazelhurst and consists of 18 cells.

<Farmhouse Unit Photo Here>

Figure 3. The Farmhouse Unit lies at the southeast corner of Camp Hazelhurst and consists of 53 cells.

2.2 Results

2.2.1 Inventory – Native and Non-native Plant Species

During the setup, sampling, and travel to/from sampling points, an unsystematic plant inventory was performed within and outside of the three natural areas that were outlined as part of this project. The results are presented in Table 1 and Table 2. Please note that many of these plants were only keyed to genus level and some categorical placement may be speculative (e.g., Is yucca actually native or is it naturalized in Michigan?).

Table 1. Non-native plant species of concern encountered during the surveys at The Prairie Club's Camp Hazelhurst.

Non-native Tree Species	Non-native Shrub Species	Non-native Ground Cover Species
Black locust	Autumn olive	Dame's rocket
Norway maple	Black jetbead	Garlic mustard
Tree of Heaven	Buckthorn spp.	Lily of the valley
	Euonymus spp.	Soapwort
	Japanese honeysuckle	Vinca spp.
	Japanese honeysuckle vine	
	Japanese barberry	
	Multi-flora rose	
	Oriental bittersweet	
	Privet	

Table 2. Native plant species encountered during the surveys at The Prairie Club's Camp Hazelhurst.

Native Tree Species	Native Shrub Species	Native Ground Cover Species
American Beech	Chokeberry spp.	Aster, Bigleaf
Arborvitae	Currant spp.	Aster spp.
Ash spp.	Dogwood, Alternate leaf	Avens spp.
Basswood	Dogwood, Red osier	Bedstraw
Black cherry	Dogwood, White flowering	Bergamot
Black walnut	Goldenrod spp.	Columbine
Box elder	Gooseberry	Cohosh
Butternut	Greenbriar	False rue anemone
Catalpa	Ironwood	False Solomon's seal
Cottonwood	Paw Paw	Fern, Rattlesnake
Elm spp.	Prunus spp.	Fern, Sensitive
Hickory spp.	Rubus spp.	Fern spp.
Maple spp.	Sand cherry	Geranium, Wild
Red oak	Serviceberry	Goldenrod spp.
Red pine	Spicebush	Jack-in-the-Pulpit
Sassafras	Witchhazel	Jumpseed
Spruce spp.	Yukka (?*)	Little bluestem
Sugar maple	Redbud	Marram grass
Tulip poplar	Mulberry spp.	Milkweed, Common
White oak	Wafer ash	Mint spp.
White pine	Willow spp.	Moonseed
		Moss spp.
		Orchard grass
		Poison ivy
		Sedge, Lake
		Sedge, Pennsylvania
		Sedge spp.
		Virginia creeper
		Wild grape
		Wood grass
		Smartweed

2.2.2 Baseline Assessment of Priority Natural Areas

At the coarsest level, and without specifying the specific species encountered, in any instance where a Non-native or Native Canopy, Shrub, or Ground Layer plant species was noted inside a sampling area, the results for the three management units are shown in Tables 3, 4, and 5. Exhibits 1-25 show the locations of each specific non-native indicator within each of the three management units. Specific species identification and location in each of the three management units are provided in the Appendix and will also be provided in .xsl and .csv formats for use in a Prairie Club chosen GIS.

2.2.2.1 Native Species

The entire site shows a fair-to-good amount of native plants with ground cover species occurring at 75.8% of all the data points tested, shrub species represented at 46.2% of data points tested and canopy trees found at 75.3% of the data points. All three categories show excellent diversity with 21 different species of trees, 21 species of shrubs, and 31 species of ground layer plants. A good restoration goal for a site such as Camp Hazelhurst would be > 90% native ground cover, 40-50% native shrub cover and around 50% native canopy tree cover.

2.2.2.2 Non-native Species

The site has a large percentage of invasive shrubs (76.7%). Autumn olive, multi-flora rose, buckthorn, Oriental bittersweet, Japanese barberry, privet, and Japanese bush and vine honeysuckle, Euonymus, and black jetbead were all recorded within survey plots. The highest percentage of non-native ground cover occurrences belong to garlic mustard, but vinca spp. and lily-of-the-valley had larger areas of coverage. Black locust and Norway maple were the only types of non-native trees occurring in the sampled areas, but Tree of Heaven was noted outside of the priority natural areas. An acceptable target for non-native ground cover, shrub cover, and tree cover is < 5% of each. It would be nice to get rid of all invasive plant species, but with no mechanism for keeping seeds out of the area, this would be a very difficult task.

Table 3. Results of Blowout Unit Sampling (21 Sample points).

Non-native			Native		
Canopy	Shrub	Ground	Canopy	Shrub	Ground
0	8	17	21	1	10
0.0%	38.0%	81.0%	100.0%	5.0%	48.0%

Table 4. Results of Farmhouse Unit Sampling (53 sampling points).

Non-native			Native		
Canopy	Shrub	Ground	Canopy	Shrub	Ground
35	48	24	50	34	42
66.0%	90.6%	45.3%	94.3%	64.2%	79.2%

Table 5. Results of Beachwood Unit Sampling (149 sampling points).

Non-native			Native		
Canopy	Shrub	Ground	Canopy	Shrub	Ground
63	115	87	97	68	117
42.3%	77.2%	58.4%	65.1%	45.6%	78.5%

3 Recommended Actions

The total size of the three restoration areas sampled was calculated at 12.39 acres. Because of the size of the area, the type of work proposed for this project, and the desire to have several all native areas as part of a 100-year anniversary celebration, it is recommended that the project occur over a 10-year period. Patience and persistence are the keys to eliminating invasive plant species and replacing them with native groundcover should be part of the plan. If done properly, the likelihood of re-invasion is greatly reduced.

At this point, I would not recommend removal of any canopy tree species (native or non-native). This topic can be part of an on-going discussion, but unless you are shooting for a large-scale and specific type of ecosystem (e.g. Southern mesic forest), I would tend to leave these out of the equation at this time. Most of the black locust species were found in the Beachwoods Unit. Most appear to be older and may succumb to natural causes. This occurrence will naturally and passively reduce the non-native canopy layer. The Farmhouse Unit contains most of the Norway maple species and removing them may be cost prohibitive if included in this project. There are some options that can be explored later or as a separate project (e.g., harvesting Norway maple for firewood).

Although Fall & Winter are typically the traditional times to treat woody species, Spring & Summer can be used to set these species back a bit. In this event, re-treatment of re-sprouting vegetation will most likely be required. It is suggested that a “wait and see” approach be used to see if the native ground covers begin to spread on their own. This could take several years as native plants tend to put most of their energy into root development when establishing. If the natives fail to spread, seed and/or plugs could be used to establish native ground cover.

A focus on the removal of shrub and ground layer invasive species inside all three of the priority management units would be a good plan of attack. There is already a good layer of native ground cover in two of the management units and this may spread opportunistically after the removal of the non-native species. A temporary cover crop, in the form of an annual rye or oat species, could be used in areas where invasive plant seeds would require growth competition or where adjacent native species are sparse.

Costs for hiring contractors to assist in ecological restorations projects can be expensive. Typical labor costs can range anywhere from \$45 to \$80 per hour and it may take upwards of 90 hours to eliminate non-native plants from a heavily infested 1-acre area. The use of contractors

may be essential to the project, but the associated costs means that their labor must be strategically and efficiently applied. I recommend gleaning as much knowledge as possible from chosen contractors by incorporating the concept of integration between contracted professional labor and on-site volunteers. Using contractors, and their often expensive equipment, to clear heavily infested areas and then using volunteer labor to perform the “maintenance mode” work of early detection and rapid response and often less-expensive mechanical removal (e.g. scouting and hand-pulling) could stretch your budget a long way. More information pertaining to this is explored in the next section.

3.1 Specific Management Actions for Each Management Unit: Techniques in Removal of Non-native Plant Species

Many common and a few uncommon non-native and invasive plant species have been noted to exist at Camp Hazelhurst. The baseline assessment that was performed provides a quantitative amount of each of these. Using this information, recommendations for treatment of each species within each of the three management units has been provided.

Beachwoods Unit

Japanese barberry (*Berberis thunbergia*)

Although herbicides are an option, the fact that this species has shallow roots and that it was only found in one area, and the fact that this area contains sandy soils, it is recommended that this species be pulled or dug up when encountered in this management unit. The shrub puller might work well on this species.

Dames’ rocket (*Hesperis matronalis*)

Herbicides are an option, but because of the small amount of leaf area associated with this species, it is recommended that this plant be hand pulled. The fact that there are not a lot of these plants in this management unit also contributes to this decision. Dame’s rocket is part of the mustard family of plants and is often found in seed mixes (sometimes erroneously as part of a native seed mix). It is often misidentified as a phlox and a good way to determine the species is

to look at the petals. Dame's rocket has 4 petals and phlox has 5. It typically blooms in June-July and this would be a good time to pull it (especially after a rain). Plants should be several feet tall at this point so pulling is fairly easy.

Soapwort, aka, bouncing Bet (*Saponaria officinalis*)

Legend has it that the leaves and roots of this plant were used as a soap by the early settlers, thus the name, "soapwort". Try rapidly compressing and rubbing together some leaves from this plant and see what you get! This plant was found in quite a few locations inside the Beachwoods Unit, but I am going to recommend that the preferred method of removal be to hand pull this species. They are clonal and root fragments will often remain in the ground requiring repeated pulling, but I believe over time that this species can be successfully eliminated using the recommended method. There is conflicting evidence as to the effectiveness of herbicides on this plant and monitoring of the effectiveness of the recommended method is warranted. If it is determined that hand pulling is not doing the job, then I would suggest using glyphosate and a hand-held spray unit to apply at a 1.5% concentration.

Japanese honeysuckle (*Lonicera japonica*)

There are several different species of Japanese honeysuckle, but for our purposes, I am suggesting that we treat them all the same in regards to management aimed at treating them. There are quite a few sample points that tested positive for this species so I am recommending that chemical treatment be used. This shrub is fairly shallow rooted so pulling may be an option, but for larger plants, and if pulling is too much, I suggest cutting plants as close to the ground as possible in the Fall and over the Winter and then spraying either glyphosate or triclopyr at a 1.5% solution in the Spring and/or Summer months. This will be one of the earliest plants to green up in the Spring so if you hit it early, you can avoid some collateral damage to non-targeted plants.

Lily of the Valley ()

I would recommend hand pulling Lily of the Valley, but there is quite a bit of it in the Beachwoods Unit. I am going to recommend using glyphosate at a 1.5% solution and that spraying be done in the early Spring, whilst the leaves are still somewhat tender (spray prior to

and through the flowering stage). In areas of light infestation, hand pulling is still a viable option.

Black jetbead ()

This is one of the more uncommon invasive plants found in the area and well-established methods are not well documented. I am going to recommend cutting this species in the Fall and over the Winter and then applying a chemical spray in the Spring and over Summer months. This may be a situation where we would want to use several different chemicals at several different concentrations and then see what works best. I am going to suggest setting up some test plots and start out using glyphosate @ 1.5% or triclopyr @ 1.5% solutions. Use all typical spraying guidelines (i.e., follow the label!).

Garlic mustard ()

I have always and will continue to promote the use of hand-pulling as the only form of management for garlic mustard... It's just fun to get out there and pull this plant! I realize that there are quite a few locations containing this species, but it is a good volunteer day activity.

Euonymus ()

A fair amount of Euonymus was found in the Beachwoods Unit, but it is not very dense. I would try using the weed wrench on this species, but if it is too much labor, then I would simply cut it close to the ground at any time of the year and spray it with either glyphosate or triclopyr during the Spring or Summer. Use a 1.5% solution.

Buckthorn spp. ()

As with many invasive shrubs, a Fall/Winter cut & treat technique is often used. Cut the plant and then apply a 20-25% solution of either glyphosate or triclopyr to the stump. If using an oil-based chemical – such as triclopyr – you can use a vegetable oil and work in temperatures down to the low-20's without your mix freezing. I like to use a small paint roller and handle to apply the herbicide. If you do not want to use chemicals and want to just cut this species down in the Fall/Winter, you can do this and then spray the resprouts in the Spring/Summer. Use glyphosate or triclopyr at a 1.5% solution. An alternate method does exist and I've found it to be

effective... use a propane torch and burn the stumps immediately after cutting or early in the Spring after the plant begins to resprout. Take care to not start a forest fire!

Oriental bittersweet

There is a lot of Oriental bittersweet in the Beachwoods Unit. This is a species that I suggest can be cut at any time of the year. If you cut it during the growing season, no herbicide should be used at that time... you are simply trying to slow it down and keep it from damaging surrounding native woody species. You can treat cut stumps when you cut in the Fall/Winter timeframe by using either glyphosate or triclopyr at a 20-25% solution. Make sure you read the label on the herbicide container prior to use. You can treat resprouts in the Spring by using a 1.5% solution of either glyphosate or triclopyr.

Multi-flora rose ()

I do not like to spray this species because of the small amount of leaf area associated with the mature plants. This is a species that I would simply cut down in the Fall/Winter and either treat the stump with a 20-25% solution of either glyphosate or triclopyr or spray resprouts in the Spring (there should be a nice “bundle” of leaves) with a 1.5% solution of the same chemical. Be wary of the thorns! Those things hurt.

Vinca spp. (*Vinca spp.*)

I would say that this plant can be repeatedly pulled if you are trying to get rid of it, but there is a lot of it in the Beachwoods Unit. Spray in the Spring/Summer using a 1.5-to-2% solution of either glyphosate or triclopyr. Using a surfactant to help the chemical stick to leaves is always a good idea, but it is a necessity with vinca because the waxy nature of the leaves allows for quick runoff of the applied chemical. If you do not want to use chemicals, then this plant can be pulled year-round... might give you something to do if you get bored in the Winter months.

Blowout Unit

Vinca spp. (*Vinca spp.*)

I would say that this plant can be repeatedly pulled if you are trying to get rid of it, but, just as encountered in the Beachwoods Unit, the Blowout Unit also has quite a bit of this invasive. Spray in the Spring/Summer using a 1.5-to-2% solution of either glyphosate or triclopyr. Using a surfactant to help the chemical stick to leaves is always a good idea, but it is a necessity with vinca because the waxy nature of the leaves allows for quick runoff of the applied chemical. If you do not want to use chemicals, then this plant can be pulled year-round.

Privet ()

There is not much Privet in this management unit and I think pulling, digging, or using the weed wrench in this area would be a good idea. Monitor the area for resprouts and hand pull when encountered.

Lily of the Valley ()

I would recommend hand pulling Lily of the Valley, but there is quite a bit of it in the Blowout Unit. I am going to recommend using glyphosate at a 1.5% solution and that spraying be done in the early Spring, whilst the leaves are still somewhat tender (spray prior to and through the flowering stage). In areas of light infestation, hand pulling is still a viable option.

Euonymus ()

A fair amount of Euonymus was found in the Blowout Unit, but it is not very dense. I would try using the weed wrench on this species, but if it is too much labor, then I would simply cut it close to the ground at any time of the year and spray it with either glyphosate or triclopyr during the Spring or Summer. Use a 1.5% solution.

Oriental bittersweet

There is not a lot of Oriental bittersweet in the Blowout Unit. This is a species that I suggest can be cut at any time of the year. If you cut it during the growing season, no herbicide should be used at that time... you are simply trying to slow it down and keep it from damaging

surrounding native woody species. You can treat cut stumps when you cut in the Fall/Winter timeframe by using either glyphosate or triclopyr at a 20-25% solution. Make sure you read the label on the herbicide container prior to use. You can treat resprouts in the Spring by using a 1.5% solution of either glyphosate or triclopyr.

Farmhouse Unit

Garlic mustard ()

I have always and will continue to promote the use of hand-pulling as the only form of management for garlic mustard. There is not a ton of it in this unit and it is a good volunteer day activity.

Vinca spp. (*Vinca spp.*)

I would say that this plant can be repeatedly pulled if you are trying to get rid of it, but just as encountered in the Beachwoods and Blowout Units, the Farmhouse Unit also has quite a bit of this invasive. Spray in the Spring/Summer using a 1.5-to-2% solution of either glyphosate or triclopyr. Using a surfactant to help the chemical stick to leaves is always a good idea, but it is a necessity with vinca because the waxy nature of the leaves allows for quick runoff of the applied chemical. If you do not want to use chemicals, then this plant can be pulled year-round.

Privet ()

There is a lot of Privet in this management unit. I recommend cutting during the Fall/Winter timeframe and either treating the stumps with a 20-25% solution of either glyphosate or triclopyr at that time or spraying the resprouts during the Spring/Summer using a 1.5% solution of the same chemicals.

Multi-flora rose ()

I do not like to spray this species because of the small amount of leaf area associated with the mature plants. This is a species that I would simply cut down in the Fall/Winter and either

treat the stump with a 20-25% solution of either glyphosate or triclopyr or spray resprouts in the Spring (there should be a nice “bundle” of leaves) with a 1.5% solution of the same chemical.

Oriental bittersweet

There is a fair amount of Oriental bittersweet in the Farmhouse Unit. This is a species that I suggest can be cut at any time of the year. If you cut it during the growing season, no herbicide should be used at that time... you are simply trying to slow it down and keep it from damaging surrounding native woody species. You can treat cut stumps when you cut in the Fall/Winter timeframe by using either glyphosate or triclopyr at a 20-25% solution. Make sure you read the label on the herbicide container prior to use. You can treat resprouts in the Spring by using a 1.5% solution of either glyphosate or triclopyr. There are a lot of younger plants in this unit and hand pulling small plants (especially after a rain) can be an effective use of time.

Lily of the Valley ()

I would recommend hand pulling Lily of the Valley, but there is quite a bit of it in the Farmhouse Unit. I am going to recommend using glyphosate at a 1.5% solution and that spraying be done in the early Spring, whilst the leaves are still somewhat tender (spray prior to and through the flowering stage). In areas of light infestation, hand pulling is still a viable option.

Japanese honeysuckle (*Lonicera japonica*)

There are several different species of Japanese honeysuckle, but for our purposes, I am suggesting that we treat them all the same in regards to management aimed at treating them. There are quite a few sample points that tested positive for this species so I am recommending that chemical treatment be used. This shrub is fairly shallow rooted so pulling may be an option, but for larger plants, and if pulling is too much, I suggest cutting plants as close to the ground as possible in the Fall and over the Winter and then spraying either glyphosate or triclopyr at a 1.5% solution in the Spring and/or Summer months. This will be one of the earliest plants to green up in the Spring so if you hit it early, you can avoid some collateral damage to non-targeted plants. Keep a close eye out (monitor) for small plants and hand pull them when encountered.

4 Budget Guidance (with minor edits by Mike Maloney)

Funding for conservation at Camp Hazelhurst could be allocated to expenditures on equipment and supplies, plant materials, goat rental, and contractor services. The Second Century Conservation Committee intends to work with the Hazelhurst Camp Chair, Camp Council and the Prairie Club Board of Directors and Treasurer to advocate for conservation related budgets and to develop conservation investment plans based on budget availability.

The following discussion is intended to provide guidance on engagement of contractors for conservation related activities. The funding amounts specified below are illustrative. Specific funding proposals and plans will depend on budget availability and the degree to which volunteer support can be utilized in lieu of contractors.

It is important that priorities are clearly established and budgets are well understood prior to hiring a contractor. Typical contractor labor costs can range anywhere from \$50 to \$80 per hour and it may take several years and upwards of 100 hours to eliminate non-native plants from a heavily infested 1-acre area. Through trial and error and experience, Randy Counterman has found that it takes, on average, about 96 hours for 1 person to clear 1-acre of a site that is heavily infested with invasive species. Using an average charge out rate of \$65.00 per hour, this equates to \$6,240.00 per acre. Having a core group of dedicated and effective volunteers can go a long way in assisting in the success of a project. One of the goals for this management plan was to find a way to effectively use volunteers to assist in the elimination of invasive species at Camp Hazelhurst. The use of contractors may be essential to the project, but the associated costs means that their labor must be strategically and efficiently applied. Randy Counterman recommends gleaning as much knowledge as possible from chosen contractors by incorporating the concept of integration between contracted professional labor and on-site volunteers. Using contractors, and their often-expensive equipment, to clear heavily infested areas and then using volunteer labor to perform the “maintenance mode” work of early detection and rapid response and often less-expensive mechanical removal (e.g., scouting and hand-pulling) could stretch our budget a long way.

The management plan presented is based on the concept that it will take 2-to-3 years to clear an area of non-native plant species to a condition where it should only take 6 hours to monitor and hand pull any non-native species that are found within a 1-acre area. This condition

would equate to <5% non-native species per management unit and is known as “Maintenance Mode”. Because of the premise that achieving this objective will take several years, using a system of “draws” to pay for contracted services will be required. It is recommended that draws will be requested after specific actions and outcomes are achieved (Table 4).

Table 4. Contractor Draw Schedule.

Draw 1	After completion of 1 st Year Fall/Winter
Draw 2	After completion of 1 st Year Spring/Summer
Draw 3	After completion of 2nd Year Fall/Winter
Draw 4	After completion of 2nd Year Spring/Summer
Draw 5 (Final)	After achieving Maintenance Mode

Table 5. Estimated Time and Cost to Treat All Possible Scenario Conditions.

Scenario #	Baseline Condition of Non-native Shrub Layer	Baseline Condition of Non-native Ground Layer	Estimated Treatment Time (Hours)	Estimated Cost of Treatment (@ \$65.00 per Hour)
1	Dense	Dense	96	\$6,240.00
2	Dense	Patchy	90	\$5,850.00
3	Dense	Sparse	84	\$5,460.00
4	Dense	None	78	\$5,070.00
5	Patchy	Dense	72	\$4,680.00
6	Patchy	Patchy	66	\$4,290.00
7	Patchy	Sparse	60	\$3,900.00
8	Patchy	None	54	\$3,510.00
9	Sparse	Dense	48	\$3,120.00
10	Sparse	Patchy	42	\$2,730.00
11	Sparse	Sparse	36	\$2,340.00
12	Sparse	None	30	\$1,950.00
13	None	Dense	24	\$1,560.00
14	None	Patchy	18	\$1,170.00
15	None	Sparse	12	\$780.00
16	None	None	6	\$390.00

Table 6. Total estimated time and cost to treat each Camp Hazelhurst Management Unit and entire site.

Management Unit Description	Area (Acres)	Scenario #	Estimated Time to Treat Entire Unit (Hours)	Estimated Cost of Treatment for Entire Unit (@ \$65.00 per Hour)	Charge per Draw
Beachwoods 1	1.55	2	139.50	\$9,067.50	\$1,813.50
Beachwoods 2	1.13	3	95.00	\$6,175.00	\$1,235.00
Beachwoods 3	1.40	11	50.50	\$3,282.50	\$656.50
Beachwoods 4	1.10	1	105.50	\$6,857.50	\$1,371.50
Beachwoods 5	0.93	1	89.25	\$5,801.25	\$1,160.25
Beachwoods 6	0.58	1	55.75	\$3,623.75	\$724.75
Beachwoods 7	0.69	1	66.25	\$4,306.25	\$861.25
Farmhouse West	1.12	2	100.75	\$6,548.75	\$1,309.75
Farmhouse Central	1.30	3	109.25	\$7,101.25	\$1,420.25
Farmhouse East	0.99	2	89.00	\$5,785.00	\$1,157.00
Blowout	1.00	5	72.00	\$4,680.00	\$936.00
Total All Units	11.79	-	972.75	\$63,228.75	\$12,645.75

Through trial and error and experience, Randy Counterman has found that it takes, on average, about 90 hours for 1 person to clear 1-acre of a site that is heavily infested with invasive species. Using a charge out rate of \$50.00 per hour, this equates to \$4,500.00 per acre. The system that was used to perform the baseline assessment uses a grid of sampling points at the center of a virtual sampling quadrat. The size of the quadrat is 15-m x 15-m. It just so happens that 18 of these quadrats is very, very close to equaling 1 acre. When broken down, this means that management aimed at eliminating all invasive species inside one 15-m x 15-m should take 1 person 10 hours and would cost \$500.00. Of course, not all cells are equal in their abundance of invasive species, but I have characterized each cell by taking the data collected during the baseline assessment and quantifying it into a “Degree of Difficulty” in treating it. The results from this action are provided in the Master Table of Data supplied in the Exhibits Section of this document. Counterman used the patch density data to develop this model. If a cell had at least one “sparse” classification of any ground layer non-native, a score of “1” was given. If a cell had at least one “patchy” classification of any ground layer non-native, a score of “2” was given. If it had a “Dense” classification, it was scored as a “3”. The same procedure was used to score non-native shrub species. Canopy species were not scored because, at this time, the plan does not include removal of any canopy species. With this system, the highest score (described as

“Degree of Difficulty”) attained would be a “6” and the lowest score – meaning no non-native species were found in the sampling area- would be a “0”. It is recommended that this scale be used as a guide in using contractors vs. using volunteer labor. A gradient from 0-6 will coincide with a volunteer-professional contractor labor gradient.

It is proposed that a 10-year plan which includes the use of a contractor to clear 1 acre per year and Camp Hazelhurst volunteers used to clear 0.25 acres per year be instituted and would allow for a consistent year-to-year budget (with this plan, the conservation budget would be \$4,500.00/year) with the ability to use volunteers in place of contractors in case budget demands dictate it.

5 Objectives and Measurement Approach

The most efficient and effective way to restore a natural area is by using a systematic approach and emphasizing patience and persistence. This is made even more effective through the use of consistent monitoring and feedback which allows for adjustment to management. No two sites are the same and what works for one area may not necessarily work for all areas. Sunlight, shade, position in the landscape, slope, aspect, proximity to trails, buildings, and waterbodies all play a part in an outcome.

It is recommended that management begins at one point and then proceeds in an orderly manner to a targeted destination. It is also recommended that work be done in “cells” as previously described and that 1.25 acres of area be cleared of non-native species per year.

Using the Beachwoods Unit as the example (See Figure 1), work would start at the southeastern-most point (Cell #1) and would proceed in a row from west to east through Cell #2. Reaching the end of the first row, work would then continue to the second row at the west end (Cell #3) and continue east to the end of the second row (Cell #8). This protocol would be used until 1.25 total acres are cleared each year. This means that during the first year of the project, work would continue until halfway through Cell # 22. Dividing up the work between the contractor and the volunteer crew, it is recommended that the contractor would be responsible for clearing 18 cells (1.0 acres) and the Camp Hazelhurst volunteers would be responsible for clearing 4.5 cells (0.25 acres). Using the Degree of Difficulty data supplied in the Exhibits section, the cells assigned to the volunteers would be the cells with the lowest DoD. This

happens to be Cell #17 (DoD of 1) and Cells #'s 1 and 7 (DoD of 2). Since there are no Cells with a DoD of 3 and there are 14 Cells with a DoD of 4 and there still needs to be 1.5 Cells assigned to volunteers, I would suggest that the last Cell (#23) and a Cell that is somewhat equally divided in distance (such as Cell # 12) be assigned to volunteers. The volunteers would only be responsible for clearing half of Cell #23. This arrangement makes it possible for the contractor and the volunteers to work in close proximity to one another or at least allows for the volunteers to observe what is being accomplished by the contractor. There are several reasons that this is a good idea. One being that it allows Camp Hazelhurst folks to keep an eye on their contractor! Another reason is that it allows an exchange of knowledge that can allow even novice conservationists to learn from professionals and hopefully enhance the knowledge base through the entire Camp Hazelhurst community. Volunteers should not be underestimated and a chosen contractor should keep an open-mind to techniques that have proven to be successful at the site.

It is recommended that a reassessment of the previous year's management activities be completed. It may take several years to completely eliminate invasive species. After an area has been treated and follow up actions take place, you should see a dramatic reduction of the non-natives inside each cell. But it is also recommended that volunteers monitor and address any species that may have not been completely eliminated or that may have been brought in by an outside source. After a cell has been treated and assessment performed to ensure that the <5% requirement has been met, the site will be characterized as being in "maintenance mode". It is important that you be vigilant in monitoring these areas and using a "early detection, rapid response" to any new invader be used to keep unwanted plants out of the area.

Volunteer Action and Stewardship (by Mike Maloney, for the Committee)

Volunteer support and action have been consistent hallmarks of the Prairie Club and will continue to be essential. The Second Century Conservation Committee will continue to schedule "landscape workdays" at Camp Hazelhurst for specific conservation tasks.

In addition, the Second Century Conservation Committee will be launching a stewardship program that will allow Prairie Club members to take responsibility for conserving specific Camp Hazelhurst natural areas. Stewards would work *on their own time and without supervision*.

Key Stewardship Program attributes include:

- Stewards can opt in and out at any time but are encouraged to stay in the program for at least a growing period.
- Stewards will meet Camp Hazelhurst Site Holder volunteer obligation by signing up
- Stewardship areas vary in size based on expected scope of conservation efforts. Stewardship areas that are out of public view may be relatively large (.25 acres) and base scope of these areas could be limited to removal of vines (Oriental Bittersweet, English Ivy) from canopy trees. Stewardship areas in high traffic areas will likely be smaller (.1 acres) and scope will be more comprehensive. Some stewardship areas may be reserved for professional management.
- Site holders can volunteer to become stewards of Hazelhurst Camp areas that are not included in the scope of the Hazelhurst Camp Conservation Plan.
- Stewards will be able to improve their stewardship areas with new native plantings. The Second Century Conservation Committee will collaborate with stewards on their plans. Approval is required if Prairie Club funds are to be used for new native plants.
- The Second Century Conservation Committee will assist Stewards in determining the conservation actions that should be performed for the Stewards Stewardship Area.
- The Second Century Conservation Committee will supply a set of tools for use by stewards.
- Stewards will be encouraged to follow safe practices and select Stewardship Areas within their physical capacity.

6 Exhibits

Exhibit 1. Blowout Unit Vinca spp. Locations.



Exhibit 2. Blowout Unit Privet Locations.



Exhibit 3. Blowout Unit Oriental bittersweet locations.



Exhibit 4. Blowout Unit *Euonymus* spp. locations.



Exhibit 5. Blowout Unit Lily of the valley locations.



Exhibit 6. Farmhouse Unit *Euonymus* spp. locations.



Exhibit 7. Farmhouse Unit Garlic mustard locations.



Exhibit 8. Farmhouse Unit *Vinca* spp. locations.

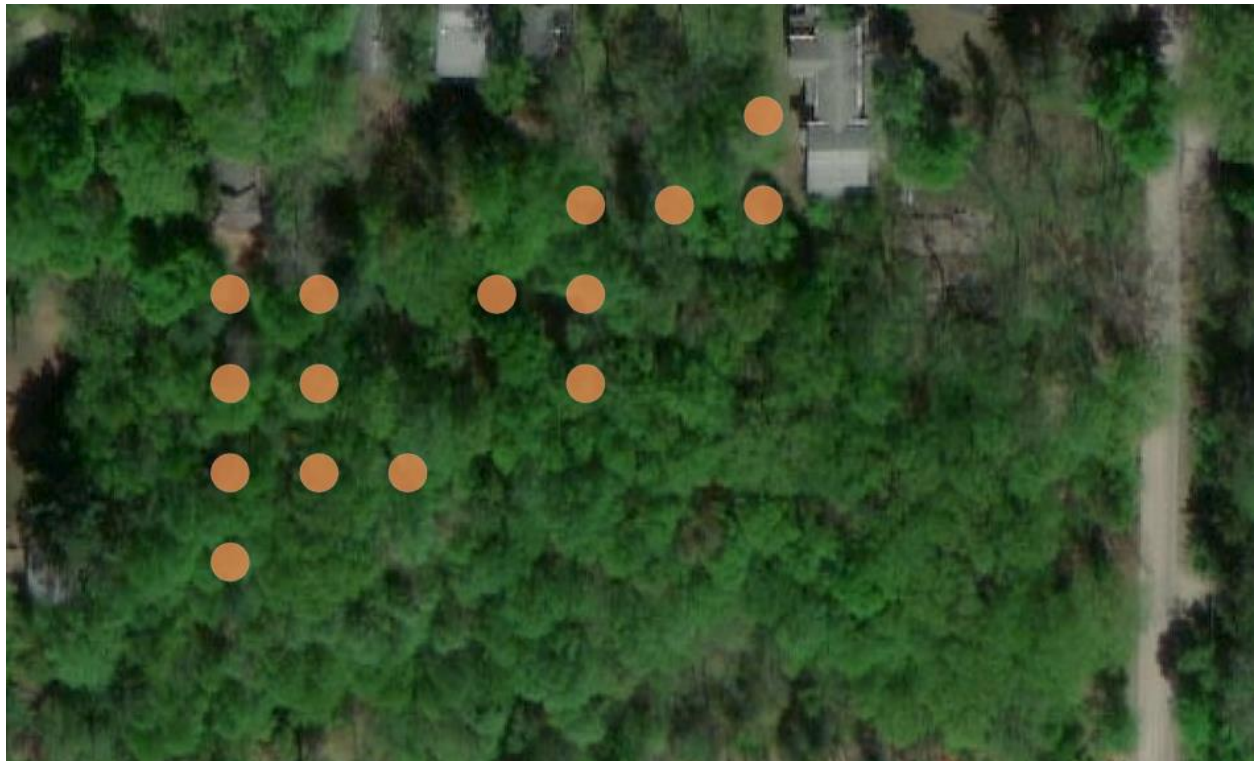


Exhibit 9. Farmhouse Unit Privet locations.



Exhibit 10. Farmhouse Unit Multi-flora rose locations.



Exhibit 11. Farmhouse Unit Oriental bittersweet locations.



Exhibit 12. Farmhouse Unit Lily of the valley locations.



Exhibit 13. Farmhouse Unit Japanese honeysuckle locations.



Exhibit 14. Beachwood Unit Lily of the Valley locations.

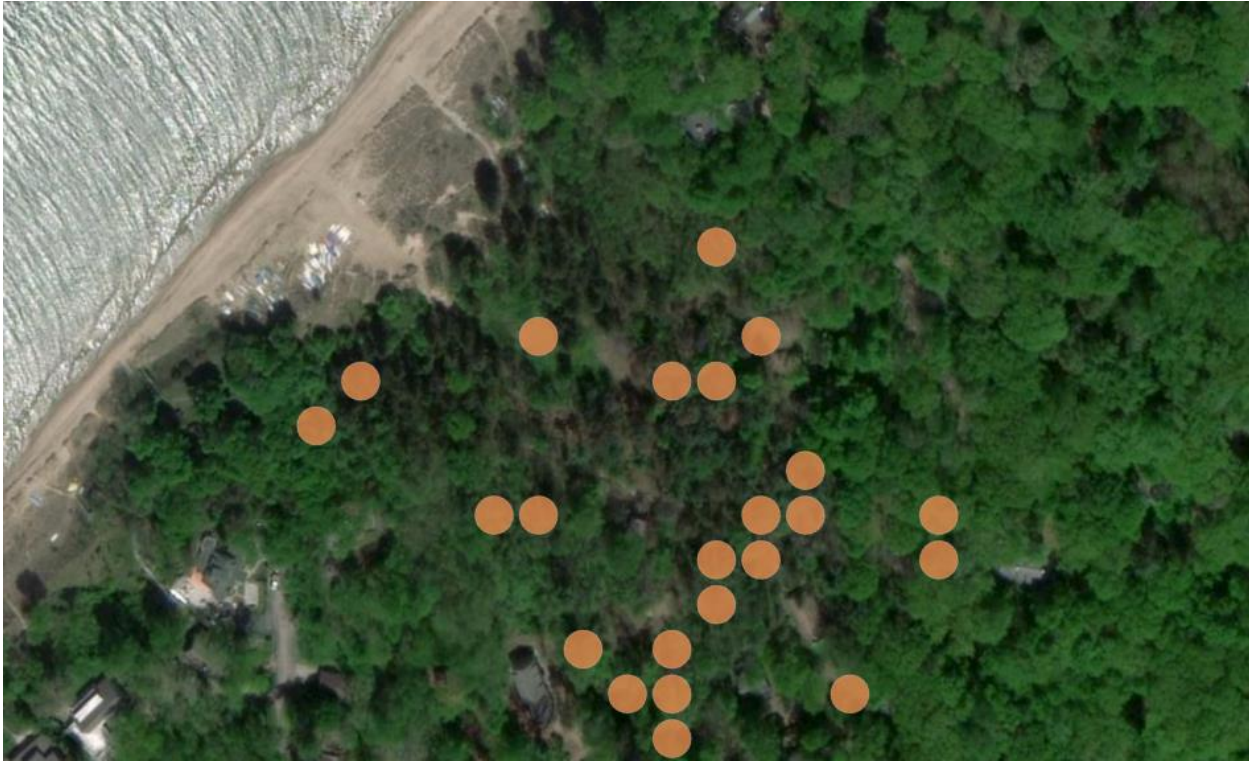


Exhibit 15. Beachwood Unit Black jetbead locations.



Exhibit 16. Beachwood Unit Soapwort locations.

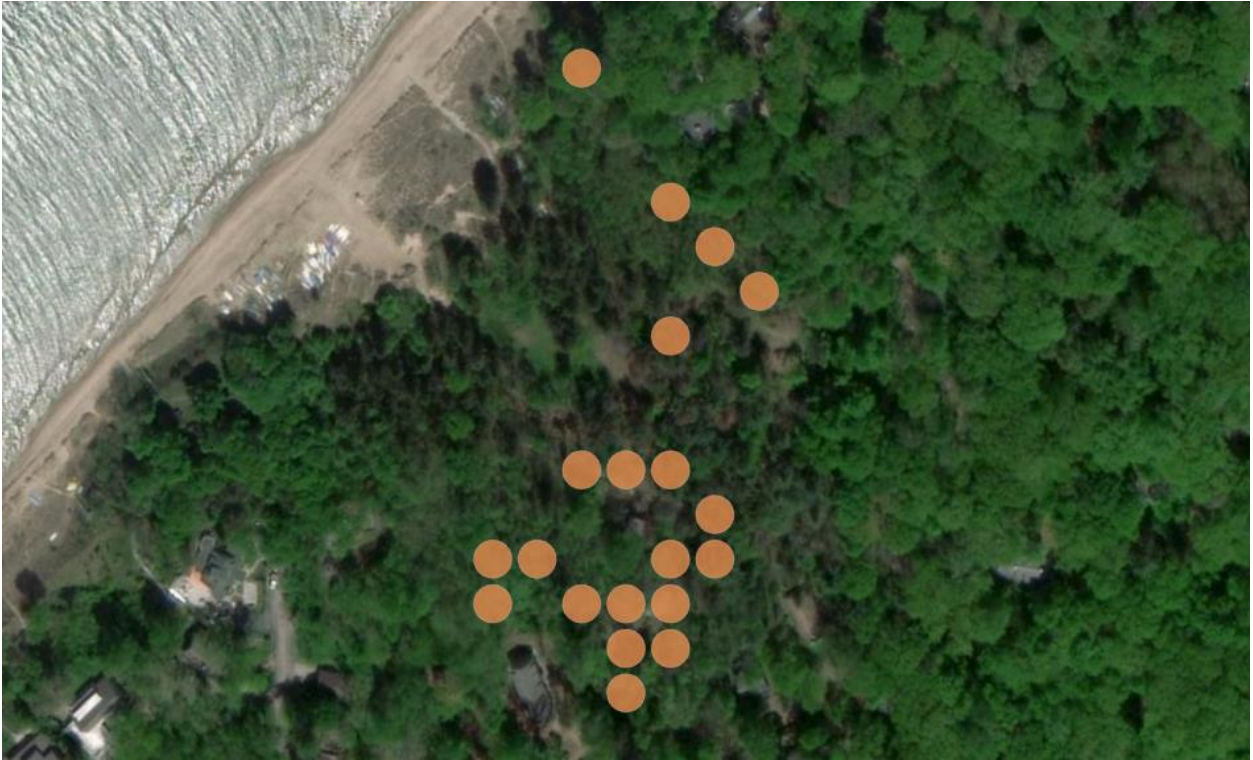


Exhibit 17. Beachwood Unit Garlic mustard locations.



Exhibit 18. Beachwood Unit Buckthorn spp. locations.



Exhibit 19. Beachwood Unit *Euonymus* spp. locations.



Exhibit 20. Beachwood Unit *Vinca* spp. Locations.



Exhibit 21. Beachwood Unit Multi-flora rose locations.



Exhibit 22. Beachwood Unit Oriental bittersweet locations.

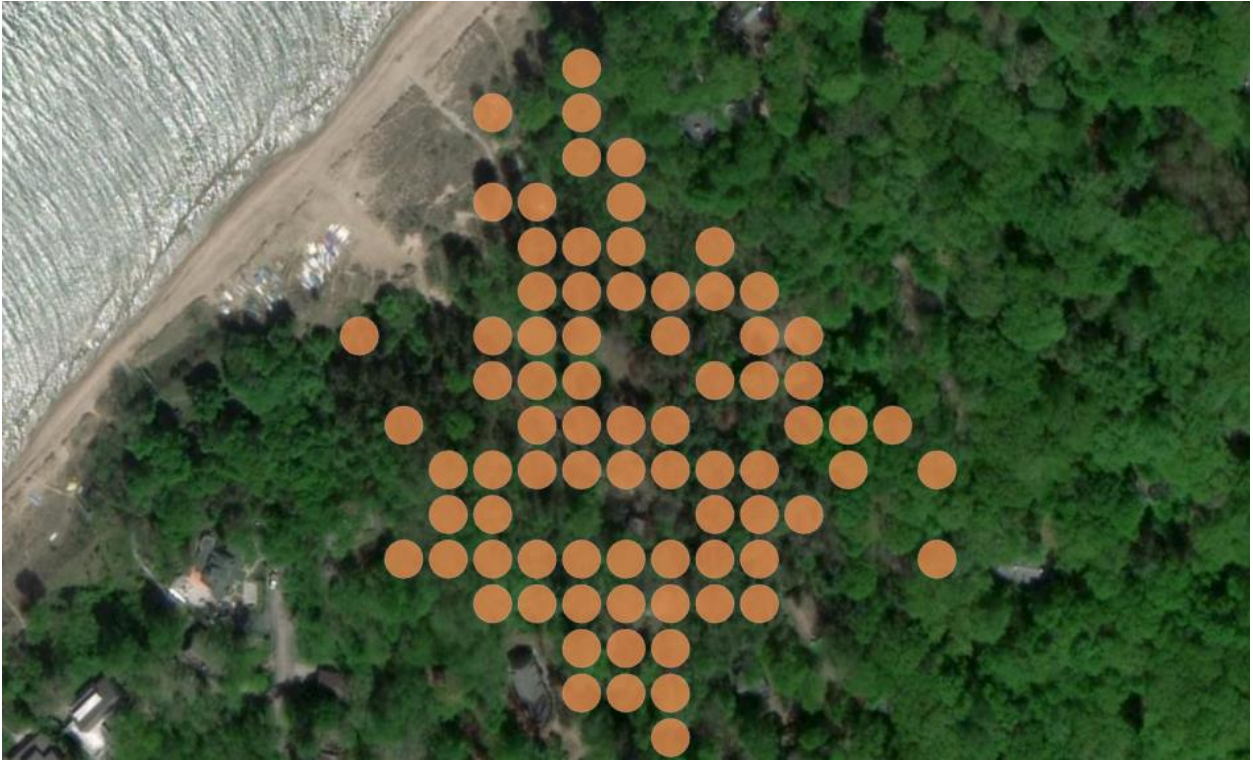


Exhibit 23. Beachwood Unit Dame's rocket locations.



Exhibit 24. Beachwood Unit Japanese barberry location.



Exhibit 25. Beachwood Unit Japanese honeysuckle locations.



<7 Master Data Table Here>