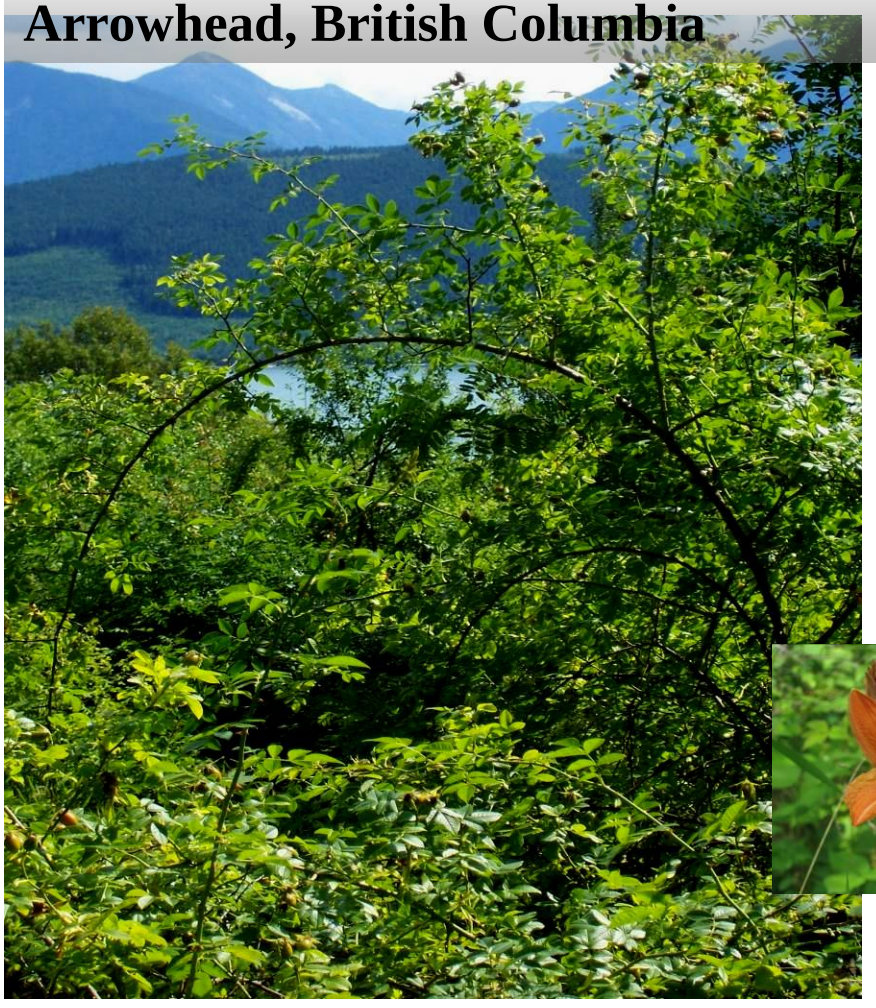
Heritage Plants of a Ghost Town
Arrowhead, British Columbia



Final report submitted to:

The Arrowhead Conservation Society

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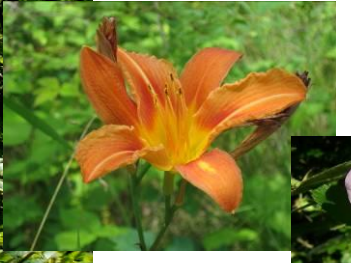

Summary

For over 200 years plants have been arriving in the Pacific Northwest brought by early settlers for culinary, aesthetic, and associative reasons. Some of these plants have survived until now to become historical. The abandoned town of Arrowhead is a unique site rich in history. The past shows itself through the horticultural plants that are present, once cultivated by the people who settled here in the early 1900s. The landscape provides a connection to the people who settled at Arrowhead through the historic plants that still exist and are living monuments to the people who planted them. Designating this site with Heritage Status ensures the protection of the assets in which makes the site special. This ensures that generations to come will be able to learn about, and connect with, the history and people of the past.

Acknowledgements

We would like to thank the Arrowhead Conservation Society for making this project possible and pursuing the conservation of the Arrowhead Townsite. We would also like to thank the Columbia Basin Trust who provided the funding for this project.

Table of Contents

Glossary

Cultivar: A variety of plant that has arisen or been selected in the course of cultivation, commonly as the result of hybridization. There are thousands of cultivars in such complex hybrid groups as the roses. It is propagated to preserve its distinctive character [1].

Heritage value: The aesthetic, historic, scientific, cultural, social or spiritual importance or significance for past, present or future generations. The heritage value of a historic place is embodied in its character-defining materials, forms, location, spatial configurations, uses and cultural associations or meanings [2].

Heritage character: means the overall effect produced by traits or features which give property or an area a distinctive quality or appearance [3].

Horticulture: The art and science of gardening [1].

Hybrid: A plant originating from the cross pollination of two different species, either in the wild or by the intentional doings of a gardener [1].

Invasive: Characteristic of plants that have the ability to spread rapidly, either by self-sown seedlings or by rhizomes or stolons, crowding out or smothering other garden plants or native vegetation [1].

Naturalized species – Behaving like a native plant in a particular geographical region but has originally been introduced from another region either as a cultivated plant or accidentally as a weed [1].

Introduction

The Arrowhead town site was abandoned approximately 45 years ago with the damming of the Columbia River and subsequent formation of the Arrow Lakes Reservoir. The town was founded around 1898 and was alleged to have the largest lumber mill in the British Empire during the First World War. According to the 1911 census, the total population was 467 people. Although most settlers were British, there was also a diverse range of ethnic backgrounds (Cathy English, personal communication). Presently, a cemetery, some remnants of a school building, and an array of horticultural plants are left as signs of the people who once lived at Arrowhead and provide insight into the history of the area. However, these assets are threatened because of non-management of the area, vandalism to the cemetery, and the loss of heritage value through the scavenging of artefacts and non-native plants by collectors.

The Arrowhead Conservation Society (ACS) is seeking heritage designation for the abandoned Arrowhead town site. The stated purpose of heritage designation is to facilitate conservation of, and grant long-term protection to heritage property. The heritage conservation act provides specific protections for designated sites including access limitations and usage guidelines. Heritage designation acts as a tool for planning and helps encourage preservation and manage change. Most often used at the local level to identify and protect properties that possess cultural heritage value or interest, heritage designation has proven its ability to sustain community resources. Canada's Historic Places organization prescribes a comprehensive analysis of a historic location in order to discover the character defining elements of that place, and to identify its heritage value. The organization defines heritage value as the aesthetic, historic, scientific, cultural, social or spiritual importance or significance for past, present or future generations [2]. Historic sites are crucial to our understanding and appreciation of the identity and character of our communities and by celebrating these places we contribute to the future of our communities [4].

One of the requirements to achieving designation is to show the property has heritage value and/or heritage character. This project was commissioned by the society in order to survey, catalogue and assess horticultural plant

species located at the town site. This report will provide support to the goal of the conservation society by discussing the value of the heritage plant species of Arrowhead and their context within the town site. It makes recommendations to the ACSon the management of significant heritage plants.

Works Description

Site Description

Arrowhead is located approximately 60 km south of Revelstoke, British Columbia. The town site sits on the north shore of the Upper Arrow Lakes between the north and northeast arm. The town site lies at approximately 50.69° latitude and -117.92° longitude (NTS Mapsheet 082K12). The site lies on the toe of the slope of Mt. Sproat of the Duncan Ranges in the Selkirk Mountains. The access is via the Alkolkolex-Dumont Forest Service road and passes through private property just prior to the town site.

As the town site is approached there is a cemetery that sits amongst native forest. Much of the town site is overgrown with the surrounding native trees and plants. Near the centre of the town site there are a few blocks that are still characterized by non-native plants that were planted by the inhabitants of Arrowhead. Much of the layout of the town site is still identifiable from roads that still exist. The foundation of the old school building is still apparent.

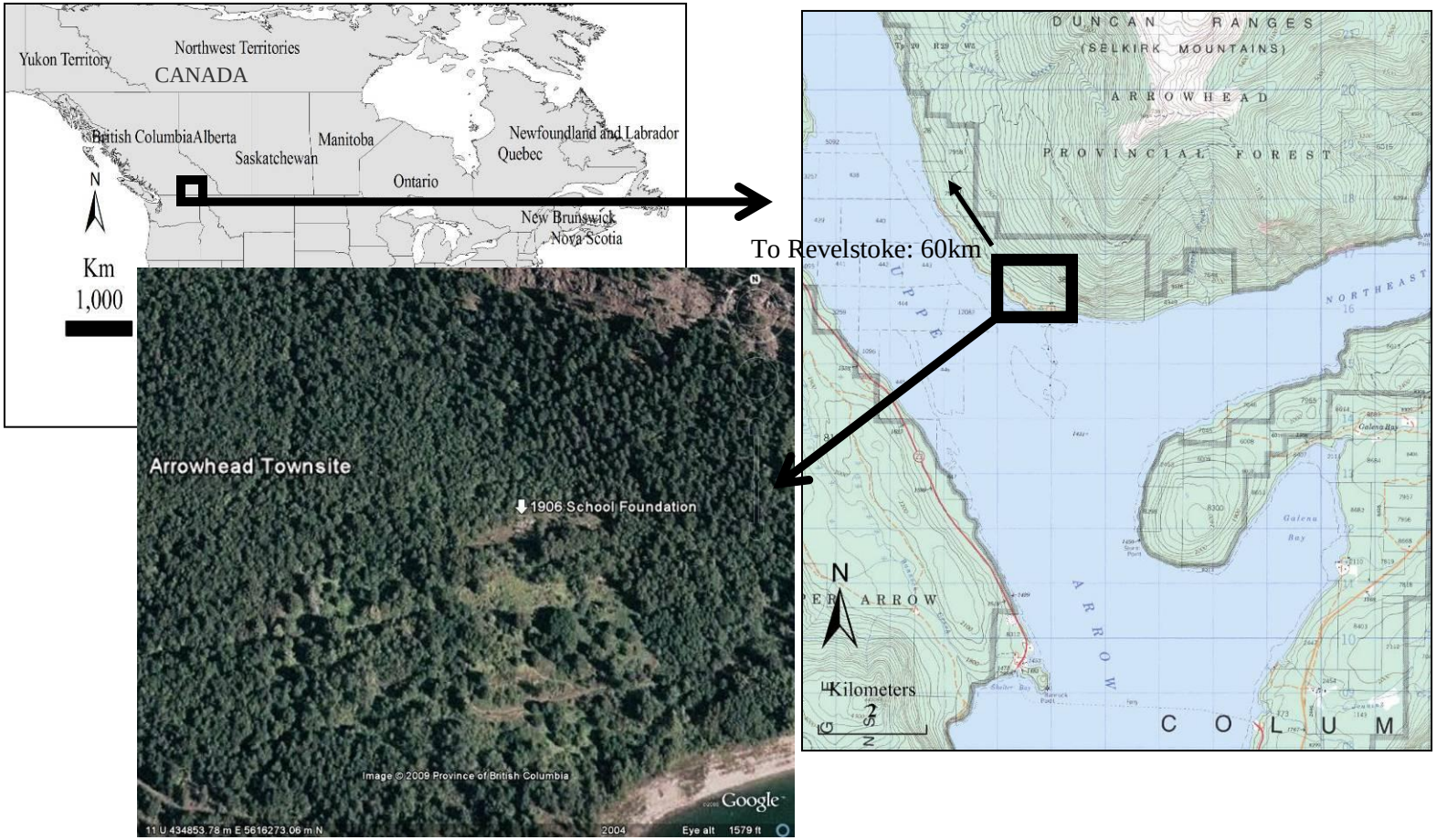

Figure 1. The location of the abandoned town site of Arrowhead, British Columbia.

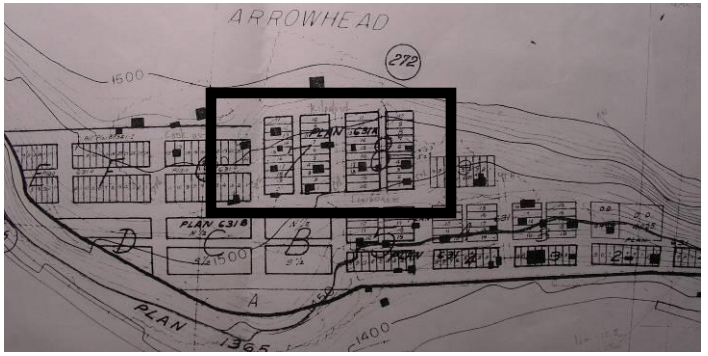

Figure 2. Ordnance Map 1:2500 of the town site of Arrowhead property lay out with the main area of interest highlighted.

Site Surveys

The Arrowhead town site was introduced to us by members of the Society and corresponding Ordnance Survey Maps of the area were obtained from the Arrowhead Conservation Society. The initial site survey was completed from July 13–15th. The site was examined relative to the major street intersections in the area surrounding blocks G, C, B, 7, and 8. The locations of Kilpatrick, Cook, Foley, Lonsdale, and Front Avenues, and 4 - 8th streets were determined. All survey measurements were taken relative to the SW corner of the school foundation just north of block 7. The area was sampled by block; each block consists of 20 lots that are 12m X 36m in size. The blocks of specific interest, blocks G, B, 5, 7, 8 were surveyed by walking line transects. Five transects spaced approximately 25m apart, running the length of the block were walked and presence of non-native plants was recorded. One sample of each plant identified as non-native and cultivated, was collected and pressed to be sent to the Royal British Columbia Museum (Table 1). For each plant sample, a data card was filled out (see appendix 1), photographs were taken, and the GPS location and location of the specimen relative to the southwest corner of the school foundation were recorded. Locations were recorded in datum NAD 27. Photographs were taken of all significant heritage plant specimens and of significant landscaped features, e.g. planted rows of *Acer saccharum*, and potential problem areas such as areas encroached upon by invasive species. On September 1st, we conducted a second site visit. The visit was particularly important to examine mature fruit and seedpods to confirm identification, and to identify any late blooming species.

Post Survey Works

A photograph catalogue was compiled including photos of each plant specimen we identified and other areas of significance we noted. A word document accompanies the photos which indexes and describes each photo in the catalogue. We created a site schematic showing the approximate locations of each of the specimens collected. Plant specimens were collected according to the protocol recommended by the Royal British Columbia Museum. A 12" x 18" frame was used to collect and press samples. The samples were forwarded to the Royal British Columbia Museum in Victoria, BC to be archived.

Results

Table 1. Non-native heritage plant species and their locations at the Arrowhead town site.

BOTANICAL NAME	COMMON NAME	COLLECTION NUMBER	UTM EASTING	UTM NORTHING
Acer saccharum	Sugar Maple	AR01	434841	5616014
Acer saccharinum	Silver Cutleaf Maple	AR02	434969	5616060
Rosa rubiginosa (syn. eglanteria)	Sweet Briar Rose	AR03	434987	5616007
Iris spp.	Iris	AR04	434973	5615993
Prunus americana	Plum	AR05	434948	5616014
Rosa canina	Dog Rose	AR06	434944	5616008
Symphytum officinale	Comfrey	AR07	434945	5616007
Rosa woodsii	Woods Rose	AR08	434944	5616000
Syringa vulgaris	Lilac	AR09	434943	5616007
Hemerocallis fulva	Daylily	AR10	434961	5615994
Aesculus hippocastanum	Horse Chestnut	AR11	434970	5616003
Asparagus officinales	Asparagus	AR12	434978	5615974
Lathyrus latifolia	Perennial pea	AR13	434979	5615971
Achillea millefolium	Yarrow	AR14	434951	5616003
Robinia pseudoacacia	Black Locust	AR16	435112	5615952
Prunus avium	Cherry	AR17	435113	5615954
Rosa spp. # 4	Rose	AR18	434851	5616023
Rosa spp. # 5	Rose	AR19	435038	5615829
Populus deltoides	Eastern Cottonwood	AR20	434926	5616059
Malus Mill	Common apple	AR21	434953	5616048

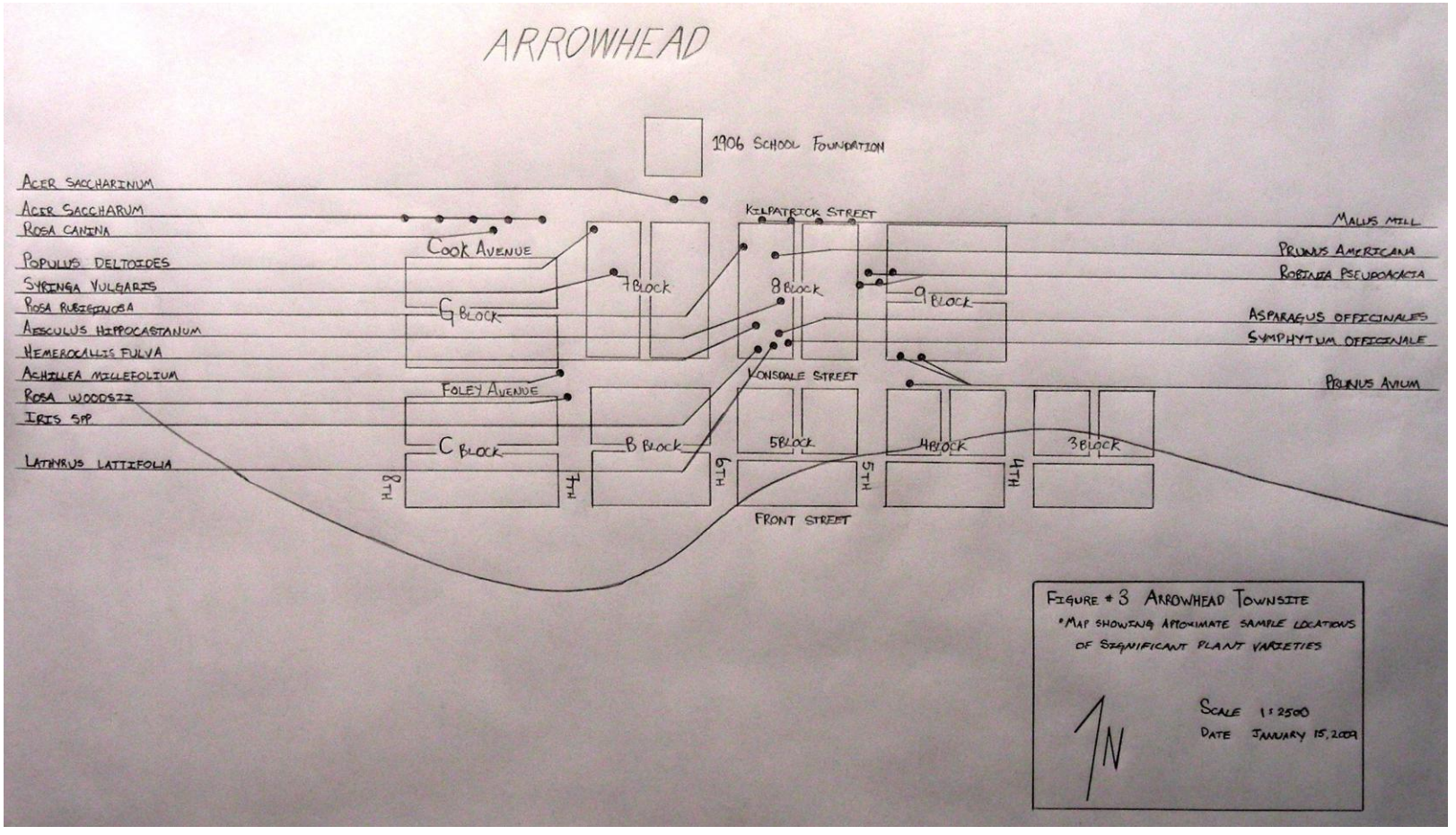

Figure 3. Schematic of collection locations of significant horticultural plants identified at the abandoned town site of Arrowhead, BC.

Sugar Maple *Acer saccharum* AR01

Figure 4. Row of 5 Sugar Maple Trees (*Acer saccharum)* planted at Arrowhead along Cook Avenue.

Description: Five superb sugar maple specimens are planted along Cook Avenue which serves as the main access to Arrowhead, and leads to the area of horticultural interest in blocks 7 & 8 (above Figure 2).

Other: Sugar maples are native to eastern North America and are important commercially for syrup and hardwood production. This species is cultivated across North America and widely appreciated as an attractive ornamental [1]. Sugar maples are stately and display a range of fall colours including yellows, oranges and scarlet.

Figure 5. Leaves of Sugar Maple sapling turning fall colours.

Silver Cutleaf Maple *Acer saccharinum* AR02

Figure 6. Silver Cutleaf Maple (*Acer saccharinum)* just south of the school foundation.

Description: Two Silver Cutleaf Maples are located just south of the school foundation. They appear to be in unsatisfactory health and are in a state of physical decline. Seedpods (or samaras) could not be found on specimens or in ground litter, and leaf growth was noted to be somewhat sparse. A third specimen was located along the shoreline south of block 4 and appeared in better condition with a bushier canopy, but again no seedpods were found.

Other: Silver maples are a well known ornamental species and are featured in many established gardens. They are native to the southernmost regions of Ontario and Quebec and along the eastern seaboard of the United States. Their delicate leaf structure and attractive fall colour make them a desirable species.

Silver maples are subject to damage from wind, ice storms and heavy snow [1]. Exposure to the elements is evident on the Silver Maple trees located at by the school foundation at Arrowhead.

Black Locust *Robinia pseudoacacia* AR16

Figure 7. Stand of Black Locust (*Robinia pseudoacacia)* planted along the north side of Lonsdale Avenue south of block 8.

Description: Black locust is an abundant species at the Arrowhead town site with several well established stands. There are many large diameter trees and several areas are filling in with locust saplings.

Other: Native to the southeast United States, the settlers of Arrowhead would have planted this species for its showy racemes of fragrant white flowers and attractive seed pods. Black locusts are a fast growing and suckering species with spiny shoots [5]. They are a valuable commercial species and are often encountered in urban street plantings as an ornamental tree.

Black locusts are prolific and in some areas difficult to control due to its rapid growth and clonal spread. In some areas they are considered invasive [6]. The Black Locusts in Arrowhead may be monitored to ensure they do not encroach on other areas of significance.

Figure 8. Close up photo of the leaves and thorns of the Black Locust Tree found at Arrowhead.

Eastern Cottonwood *Populus deltoides* AR20

Figure 9. One of four Eastern Cottonwoods *(Populus deltoides)* found surrounding blocks 7 & 8 in the Arrowhead town site.

Description: There are four very large Eastern Cottonwood specimens at Arrowhead located roughly in the four corners of the square formed by blocks 7 and 8. These towering trees can be seen from most places in Arrowhead.

Other: Eastern cottonwood is native to eastern North America. Poplars are widely cultivated in parks and large gardens and as avenue trees, windbreaks and screens [1]. This genus has rapid growth and is relatively short lived and weak wooded. The species is susceptible to high winds [1].

Horse Chestnut *Aesculus hippocastanum* AR11

Figure 10. Looking North at a Horse chestnut (*Aesculus hippocastanum*) planted in the middle of block 8.

Description: At least three horse chestnut trees can be found at the Arrowhead town site. One specimen is roughly located in the middle of block 8 beside a prominent western red cedar (*Thuja plicata).* The second is located in block B just north of Front St. and the third lies within block 4 closer to the shoreline.

Other: Horse chestnuts are native to south east Europe and specifically the Greek-Albanian region, and is now widely planted in parks, gardens, and street sides around Europe and North America [1]. The specimens at Arrowhead display a unique variation for this species with the fruit being sparsely spined (see Figure 11).

Figure 11. Fruit of Horse Chestnut trees *Aesculus hippocastanum* found at Arrowhead showing spineless variation that is uncommon.

Iris *Iris spp.* AR04

Figure 12. Bed of Irises planted in block 7.

Description: There were a few clumps of Iris found at Arrowhead within blocks 7 and 8. The largest Iris bed was found near to the large Horse Chestnut tree and remnant Red Western Cedar tree.

Other: Irises are native to the temperate regions of the northern hemisphere. They are classic cottage garden perennials and at home in any situation. They are cultivated for their colourful, often spectacular flowers and distinctive green fronds [5]. The iris at Arrowhead had finished blooming by the time of the initial survey, limiting identification to genus. From the sample collected we can determine that these irises belong within the rhizomatous-beardless group. Further examination places them within either the Siberian or Laevigatae sub-group. A fresh bloom is required for definitive identification.

Daylily *Hemerocallis fulva* AR10

Figure 13. A bed of daylilies (*Hemerocallis fulva)* planted in block 7.

Description: Expansive drifts of daylilies were found within blocks 7 and 8 as well as several small clumps found at various locations throughout Arrowhead.

Other: This daylily is native to China or Japan but has been naturalized worldwide. Daylilies are a classic cottage garden perennial and have been in cultivation for several thousand years. Some 50,000 cultivars are known to be in existence and the majority trace their parentage to this particular species [5]. *Hemerocallis* plants are hardy, hence their persistence at Arrowhead today. In North America, *Hemerocallis* is considered a hardy ornamental species that will persist in the toughest conditions. All parts of this species are edible and in Asia it is grown as a food crop. This perennial has the potential to become invasive and is considered to be a weed by the United States Department of Agriculture [7].

Figure 14. Planting of Daylilies around Willow trees (*Salix sp.*) throughout block 7 and 8.

Perennial pea *Lathyrus latifolia* AR13

Figure 15. The flowers from a large drift of Perennial Pea *(Lathyrus latifolia)* found in blocks 7 and 8.

Description: A large bed of the Perennial pea can be found in block 7 with few smaller scattered ones throughout blocks 7 and 8. It is relatively abundant throughout these 2 blocks.

Other: The Perennial or Everlasting pea is introduced from southern Europe and is now considered naturalized in BC [8]. Perennial peas have long been cultivated for their showy scented bloom and are a beautiful garden border addition with a profusion of colour. This species is on the invasive plant list in some states of the USA. It has the potential to show invasive characteristics at Arrowhead and may be monitored. It is encroaching on beds of daylilies in its vicinity.

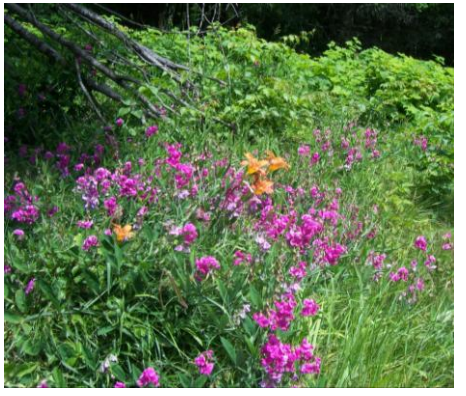

Figure 16. Perennial pea (*Lathyrus latifolia*) encroaching on bed of Daylilies (*Hemerocallis fulva)*.

Pink Yarrow *Achillea millefolium var. rosea* AR14

Figure 17. Pink Yarrow (*Achillea millefolium rosea*) located along Lonsdale Avenue south of block 7.

Description: Pink Yarrow was found in 2 different locations along Lonsdale Avenue within approximately 30 metres of each other.

Other: There are about 85 species of *Achillea* most native to Europe and temperate Asia with a few in North America. *Achillea millefolium* is native to North America. The specimen here is a cultivar of *Achillea millefolium* which is now widely distributed across Europe and Asia. This common species is hardy, and naturalizes freely and in some areas to the point of weediness [1]. There is no sign of this occurring at Arrowhead. Yarrow will multiply by rhizomes or are easily propagated by division in late winter or from cuttings in early summer [1].

Common Lilac *Syringa vulgaris* AR09

Figure 18. Lilac bush located along Lonsdale Avenue south of block 7.

Description: Lilac bushes were found in multiple locations throughout the Arrowhead town site and are known to be naturalized across North America. Both mature and juvenile specimens are present at Arrowhead and must put on a good show during bloom.

Other: The Common Lilac is native to south-eastern Europe. Most common garden varieties of *Syringa vulgaris* were raised in France in the late 1800s to early 1900s [1]. Lilacs have added a touch of elegance and heady fragrance to palace and cottage alike and are prized in many situations. The genus and species was evident from the growth habits of the plant but the variety of lilac was indeterminate because of the lack of flowers. At the time of our first visit the lilacs had finished flowering. The flowering season for lilacs is in early to mid-spring.

Rose *Rosa rubiginosa (syn. eglanteria)* AR03
Rosa canina AR06
Rosa woodsii AR08
Rosa spp. # 4 AR18
Rosa spp. # 5 AR19

Figure 19. One of the Rose species, *Rosa canina*. found in Arrowhead, BC.

Description: The Arrowhead town site has a fine collection of species roses in shrub and bush forms. Rose shrubs were found throughout Arrowhead both in obviously planted positions and where they have become unruly and overgrown. Some specimens are in conspicuous roadside plantings, some are unruly and overgrown while others have been naturalized to this location. All rose varieties at Arrowhead bear simple, 5-petaled flowers but display variation in form (cupped or flat), size and fragrance and rose hip assemblage.

Species roses are vigorous, free branching with arching shoots and bloom in spring to early summer either singly or in clusters, usually in one flush from second year wood [5]. The flowers are followed by spherical to elliptical to ovoid fruits known as hips. The roses at Arrowhead exhibit all the above characteristics.

Other: There is over 150 different species of rose and countless hybrid derivatives valued for their beauty and perfume and sometimes their colourful rose hips [1].

Species Roses tend to be untidy, scrambling bushes while many smaller growers are covered in thorns, spines or prickles. The flowers are generally rather small, very simple and only appear for a short time in the lat spring. The species are usually tough and adaptable, able to shrub off pests and diseases and many produce a marvellous display of rose hips from later summer [1]. Species roses are naturally occurring non-grafted rose species which when self-pollinated come true from seed. They are

synonymous with wild roses; however they may be freely cultivated.

Species roses are widely recognized to hybridize or cross pollinate and may thereby develop unique characteristics that obscure precise identification. However, at least 3 species exist at Arrowhead with the possibility of an additional two being present. Identified species are *Rosa rubiginosa* (syn. *Rosa eglanteria*), *Rosa canina,* and *Rosa woodsii.* The dog rose and the eglantine rose are native to Europe and Western Asia while the wood rose is native to eastern North America. Ros*a canina* has long been used in stock building for hybrid tea and modern roses due to its hardiness (Carmen Varcoe, personal communication).

The Prickly Rose (*Rosa acicularis)* and the Rugose Rose (*Rosa rugosa*) may also be present at Arrowhead as several specimens expressed characteristics common to these varieties (i.e straight spines and large flower size). Also, as these two species are native and associated with disturbed sites in southern interior British Columbia their presence would not be unusual. Samples were collected and simply named as *Rosa spp.* # 4 and 5. The expressed characteristics could be a result of localized hybridization of the prolific eglantine and dog rose species at Arrowhead. In either event the settlers ar Arrowhead would likely have been responsible for their introduction to the townsite.

Common Comfrey *Symphytum officinale* AR07

Figure 20. Comfrey patch planted in block 7 of Arrowhead.

Description: Comfrey was rare on site. There were a few patches found within block 7/8.

Other: This herb is native to Europe and western Asia. Comfrey is a vigourous clump-forming perennial that is renowned for its impressive wound healing properties [9]. Comfrey does have the potential to become invasive in gardens and smother smaller plants in its vicinity [1]. At Arrowhead it does not impose on any other significant plants in the area.

Asparagus *Asparagus officinales* AR12

Figure 21. Asparagus patch growing in block 7 of Arrowhead.

Description: One patch of Asparagus was found in block 7/8. There were approximately 7 plants growing.

Other: Asparagus is an introduced garden and crop plant believed to be native to the Mediterranean and western Asia but cultivated from times before Christ [1]. It has become naturalized in areas throughout low elevations of the Thompson and Okanagan plateaus and basins being an escapee from cultivation. Although it is naturalized in BC it is likely that these specimens are present as a result of the settlement. If asparagus is sited where they will not be disturbed they can persist for up to 20 years and more [1].

Apple Tree *Malus* Mill. AR21

Figure 22. Apple tree growing on the north side of block 7.

Description: A single but well established species of apple was found at the Arrowhead town site. In structure it ranges from being unruly bushy affairs to saplings and upright conical trees. The mature fruit were round to conic, small to medium sized with a tough skin and crisp juicy flesh. The flavour was tart to mildly sweet with a medium acidity. The mature skin was primarily red with a green background and susceptible to scabbing.

Some specimens are noticeably organized in their plantings; a row of 5 along the north side of Kilpatrick Avenue and a grouping on either side of the eastern extent of Lonsdale Avenue. There was no observable evidence to show that these apples are a product of grafting. Grafting is the process of making an artificial union between the top-growth of one plant and the roots of another so that they eventually function as one plant [12].

Other: While their characteristics preclude them from being a true crab-apple they also do not fit the profile of a domesticated species and we must relegate them to the common or wild apple group – *Malus* Mill. The apple genus *Malus* Mill. includes about 25 species of deciduous trees or shrubs native to the temperate regions of North America, Europe and Asia [10, 11]. The *Malus* Mill. comprise the species that gave rise to the modern *Malus domestica* and its many cultivars and varieties. The apple at Arrowhead is a member of this group but would need to undergo DNA analysis to determine its exact species.

Cherry Tree *Prunus avium* AR17

Figure 23. Cherry Tree *(Prunus avium)* located along Lonsdale Avenue.

Description: Cherry trees are abundant at the Arrowhead town site and can be along roadside and shoreline alike. They are bushy spreading to conical trees and clearly a favourite food item for the local bear population. Many trees have broken tops and claw marks on their trunks, and this may explain the cherries wide distribution at Arrowhead. The heart-shaped to ovoid fruits are small and generally sour to taste.

Other: *Prunus avium* is a native of Europe, Western Asia and North Africa. Common names for this species include bird cherry, sweet cherry, gean and mazzard cherry. The mazzard cherry is used by commercial fruit producers as a rootstock for modern varieties [12]. *Prunus avium*, the recognized parent of sweet cherry varieties can be found in historical settlements around the Kootenay's (e.g Rossland, Kaslo)..

Plum Tree *Prunus americana* AR05

Figure 24. Plum tree *(Prunus americanus)* planted in Arrowhead.

Description: Several plum trees were found throughout the Arrowhead town site. They bear small (2.5 cm across) round, yellow to red fruit that are sweet and pleasing in appearance.

Other: The plums at Arrowhead are a wild variety that responds well to cultivation and is used commercially as a rootstock for modern varieties. American plum is native to North America and is distributed from Manitoba to New Mexico [5]. The species has naturalized in virtually every region of North America as an escapee of cultivation such that many varieties exist [11]. The settlers at Arrowhead would have found many uses for this species, from jams to pies and bundling the twigs to make brooms.

Heritage Value and Character Defining Elements

The town site of Arrowhead must show that it has heritage character and/or value in order to receive a heritage designation. Heritage character refers to traits or features which give a distinctive quality or appearance to a property. Heritage value refers to the worth or usefulness of a property with respect to its historical or cultural value. In terms of the horticultural remnants, Arrowhead embodies a distinctive character and story of the history of the site. The horticultural plants on the landscape represent a connection to the one time inhabitants of the town site and the history of the area. These historic plants that still persist are living monuments to the people who planted them and must be protected. Besides the plants at Arrowhead, there are other artefacts and heritage structures that exist on site. A study was conducted during the same summer to identify these artefacts and structures (14).

Places such as Arrowhead record changing agricultural practices, change of rural landscapes, and long-standing food and ornamental plant varieties. Gardens can reveal a story about people as a society in regards to past recreation, leisure patterns, aspirations for a more beautiful environment and their views of nature. Small gardens and landscapes reveal the efforts, attitudes, and expressions of local citizens in their response to their homes, gardens, and community places [15]. The early settlers of Arrowhead changed the face of the natural landscape with the buildings that once existed and the horticultural plants that still exist. These plants brought a certain ambience with a variety of colours and structures. Currently, where these plants remain a story can be told about the age and the nature of the garden that might have been.

There are four distinct groups of horticultural interest at Arrowhead:

(1) Ornamental Trees
(2) Fruiting Tree varieties
(3) Roses
(4) Naturalized Perennials

Besides the strong cultural association of the plants to the people of Arrowhead, the key elements that define the heritage character of the horticultural plants are:

- species themselves
- ordered planting and spatial configuration of specimens
- longevity of the trees and plants
- size of the tree specimens
- deciduous nature of the trees present and their autumn colours
- array of flowers from fruiting tree varieties, the ornamental trees, and roses in the spring
- show of fruits and rosehips in the fall

The real heritage value of the plants is in context with the whole of the abandoned town site. The presence of these plants shows the cultivating hand of man was present in years past; now, left to their own devices the plants have thrived and become established drifts. They are commonly found across gardens in the Kootenays and are often associated with older establishments. Daylilies, irises, and sweet peas have long been part of the cottage garden pallet and are at home in Arrowhead's abandoned fields. Many notable trees are present on the property, and as with the Eastern Cottonwoods and Sugar Maples, clearly have been planted with a sense of place and purpose. They stand as tell-tale reminders of the organizing hand of man and have become magnificent specimens over the passing years.

By ensuring the persistence of the horticultural plants on site, it will aid in maintaining the historical context of Arrowhead and its heritage value.
Clearly, well established hardy varieties are of interest to breeders and seed savers alike, so the area could remain a repository for inquisitive, persistent gardeners.

Case Studies

Other sites in British Columbia have received significant attention because of their horticultural amenities. In Surrey, British Columbia the Avenue of Trees were assigned a heritage designation under the Local Government Act, s. 967. These trees are Douglas Fir trees (*Pseudotsuga menziesii*) and signify the connection to the pioneers of the Surrey Centre and establishment of the Christ Church [16]. Also under the same status, with the same heritage designation, a planted row of 38 Redwood trees *Sequoia sempervirens* were awarded heritage status because of the strong historic and environmental significance; they represent a physical link to early days of

the community of Langley, BC [16]. In two cases, Sugar Maple Trees *(Acer saccharum)* have been given heritage designation under the Local Government Act, s.954. In one case, two Sugar Maple trees in Maple Ridge are reminders of the early settlers and the family who planted them [18]. The other case is the Blair Sugar Maple Tree in the Township of Langley, and it is significant because of its historic, aesthetic and associative values [19].

Potential Threats to the Heritage Plants of Arrowhead

Invasive Plants

Some non-native plants species are considered to be invasive. They will compete with native and cultivated plants for resources. In the Arrowhead town site there may be some concern of invasive plants both from cultivated plants and the unintentional non-native plants that occur there. These invasive species may pose a threat to some of the more significant heritage plants that occur at Arrowhead. In addition, there is also the native plants that are beginning to encroach on the town site.

Introduced species (not cultivated)

The following list of plants was present at the town site. These plants are considered to be introduced species in British Columbia.

- Daisy *Bellis sp.*
- Chicory *Cichorium intybus*
- Alfalfa *Melilotus alba*
- Buttercup *Ranunculus sp.*
- Clover *Trifolium repens*
- Thistle *Circium sp.*
- Himalayan blackberry *Rubus discolor*
- Common Burdock *Arctium minus*

We concluded that most of these species were insignificant as threats to the significant heritage plants of Arrowhead. However, Himalayan blackberry is known to be a noxious species in other areas of British Columbia [20]. There is the potential that this plant was introduced by the settlers of Arrowhead but we did not treat it as a

significant horticultural specimen. Below (Figure 26) shows a dense patch of Himalayan blackberry growing along Lonsdale Avenue. Although we feel that it does not pose a threat to any heritage plants, it merits attention and perhaps monitoring.

Figure 25. Thicket of blackberry growing along Lonsdale avenue. Photo taken looking east.

Other introduced species that were present on the site are relatively mundane. Below (Figure 26 and 32) shows small amounts of some of the introduced species that is common in the town site.

Figure 26. Looking East at block 8 with Trembling Aspen and Black Locust trees in background with alfalfa, clover, buttercup, and daisy in foreground.

Cultivated Plants

The reproductive characteristics of some of the cultivated plants at Arrowhead have resulted in some plants overgrowing and potentially hindering the persistence of other plants of significance at the site. These characteristics have also allowed these plants to thrive in such a wild setting. In the absence of management some plants have become unruly. They have reproduced freely and some areas have lost any trace of pattern of what was once planted. In the long term some of these plants may become a threat to the character of what currently exists at Arrowhead.

In some areas fruit trees have reproduced in patches of thick regeneration or saplings. Along the shoreline of the Arrow Lakes on the south side of the town site, the fruit trees are growing in abundance and creating thickets (see Figure 27).

Figure 27. Thick regeneration of fruit trees near shoreline at Arrowhead town site.

There are thickets of young fruit tree saplings throughout blocks 7 and 8. In block 7, a bed of Irises are somewhat compromised because of the encroaching young fruit trees (see Figure 28).

Figure 288. Thick regeneration of fruit trees taking over Iris bed in block 7.

Figure 29. Black locust regeneration frequent throughout block 7 and 8, photo taken from north side of block 7 looking south.

The planted stands of Black locust trees on the site are apparent. These trees are prolific and may become a threat to other species on the site. Small seedlings can be found throughout the town site (Figure 29).

Rose bushes may also be invasive to certain areas. The photo below (Figure 30) shows the south side of the foundation of the school. There is flat area with coniferous forest encroaching from the north onto the open area of the school. In the right hand side of the picture below, there are roses encroaching along the side of the opening.

Figure 29. This is a photograph taken looking east at the south side of the remaining school foundation at the Arrowhead town site.

Native Plants

Most of the town site has been overgrown with the surrounding native forest. Where the majority of heritage plants were found in blocks 7& 8, the blocks are still relatively open in terms of in growth, tree regeneration and canopy cover. Thimbleberry *Rubus parviflorus* is the most abundant native shrub throughout these blocks. It is an early successional species found in disturbed sites, usually such as road sides and clearcuts. Thimbleberry forms dense thickets through vegetative sprouting. There is the potential that Thimbleberry could prohibit the growth of some perennials by shading them out. Below is a picture (Figure 31) looking south onto block 7. Note the in growth of Thimbleberry throughout the block. Similar conditions have been recorded on Vancouver Island where Scotch broom and Himalayan blackberry overgrowth have limited native bulb species like shooting stars and camus through excessive shading. Once the overgrowth is removed, it has been shown that the native species return from their imposed dormancy [21]. It is possible there are bulbs that do not come up anymore because it is now too shady for them. In Figure 32, there is Thimbleberry encroaching into

a patch of Asparagus, Perennial Pea, and Daylilies. In the long term, overgrown native and cultivated plants may be a threat to the current diversity of plants that exist at Arrowhead today.

Figure 31. Looking south onto block 7 & 8 with Black Locust stand in background and thimbleberry (*Rubus parviflorus)* overtaking the shrub layer of the block.

Figure 32. Thimbleberry (*Rubus parviflorus*) in background encroaching on perennial bed of Sweet Pea and Daylilies and patch of Asparagus in the middle of block 7/8.

Human Access

Currently the access into the Arrowhead town site is restricted by a gate because the access road goes through private property. The property owners are in cooperation with the ACS in terms of access into the site which can only occur with prior permission and scheduling with the property owners through contact with the ACS. However, motorized off-road vehicles are still getting around the gate, which blocks off private property. Human access management may be of concern in how people are using the site. Since 1965, there has been some loss of the heritage value in the site through scavenging by collectors of artefacts and non-native plants (Arrowhead Conservation Society, personal communication). Uninformed actions such as these may be detrimental to the persistence of the heritage plants on site.

Management Recommendations

It is our recommendation that actions be taken to appoint Arrowhead with a heritage designation to protect the historic and cultural values of the site and specifically the non-native heritage plants of the site. The heritage plants of Arrowhead provide a connection to the people who once lived there and tell a story of the life that once happened. The ambience of Arrowhead is currently characterized by a wild setting of native forest that is lit up in the town site centre by cultivated plants of different structures and colours. The rustic nature of Arrowhead contributes to its unique character and separates it from other places of historical significance in BC. The process of maintaining and operating a site can be an important part of the heritage message being conveyed to the visitor. By concentrating on minimizing maintenance and operation costs, it is often possible to find creative and appropriate solutions to a heritage site [15]. The following management recommendations are specific to the non-native heritage plants at the site.

Further Identification of Horticultural Plants

Plants that we were unable to definitively identify to species (e.g. irises, apples, roses) could be further examined with a follow-up visit in the spring of 2009. Further identification of the iris and lilac species could be accomplished by a simple visit corresponding to their

period of bloom. The exact identity of the apple variety on site would require more extensive work including collaboration with heritage growers and could include sending tissue samples to an appropriate research facility. However such action would only be useful if this apple has previously been recognized. There are hundreds of varieties of heritage apples recognized worldwide that have their parentage in the *Malus* Mill. group with many more varieties that have never been catalogued. Suffice it to say the apples at Arrowhead are a heritage variety due to their being planted at the time of settlement.

Ensure the persistence and recognition of significant non-native horticulture plants.

On-site Management

Landscaping – The area of horticultural interest at Arrowhead comprises some 8 acres with the concentration of heritage plants being restricted to blocks 7 & 8. These sections could have minimal landscaping done to bring out and highlight the areas with significant plant species. Areas of thick regeneration may be cleared and overgrowth of certain plants may be cut back. There is the potential there are more horticultural plants to be found that are overgrown by and currently shaded out by the extensive in growth of species like Thimbleberry.

Control plants with invasive characteristics – There are some plants that are being threatened by overgrowth of other plants. In these areas, invasive plants could be removed to allow access to adequate resources to the plants being threatened. Plants that may need to be controlled are: Black Locust trees, fruit tree saplings, Perennial Pea, Himalayan blackberry, and roses.

Monitor – We recommend that the plants on site should be monitored in regards to the threats we identified above. Currently we view the biggest threat as being the increased overgrowth of the site by plants with invasive characteristics.

Off-site Management

Cultivation –Many of the significant species can be cultivated and/or propagated through cuttings, rhizomes or from seed. Specimens could be grown and presented at other heritage locations. For example, rose cuttings,

daylily rhizomes or others could be taken and grown on at the Revelstoke Museum heritage garden to promote the recognition of Arrowhead.

Access Roads and Trails

Currently one privately maintained road accesses the Arrowhead town site and is gated to prevent unauthorized access. We recommend the ACS to establish a protocol on the road access through private properties. The future ownership of these properties could change and either access denied or opened to uncontrolled use, of which neither would be in the best interest of the townsite or the heritage plants. In the future, resource development may result in unmanaged access into the site. In general, access should be regulated through the ACS and the private property owners which may help to protect the site over the long term from impacts cause by adjacent crown land development.

Most of the streets and avenues throughout the town site have become overgrown and unrecognizable (see Figure 33 & 34). One route has been roughly maintained throughout the town site providing access to the shoreline. This route should be maintained and possibly signed to direct visitors to explore the horticultural plants and cultural artefacts on site. The maintenance of a trail throughout the town site may prevent the wandering of people throughout the town site and prevent the trampling of significant plants such as the perennials found on site.

Figure 33. Looking west down Kilpatrick Street from the corners of Kilpatrick and 6th Street.

Figure 34. Looking eastward down overgrown Lonsdale Avenue leading down to the shoreline.

Educate with Signage at Site

Uninformed decisions by the public could lead to the exploitation of the horticultural heritage of the site. Limited signage on site could provide information about the significance of the plants on site, how to limit disturbance and how they connect us with the early settlers of Arrowhead. People who visit the site will then be informed about the etiquette of how to treat the heritage resources on site.

Attraction to Site for Tourism

If this heritage site is intended to be a destination for tourists, its significant heritage resources may be promoted. In our view the main attraction to the Arrowhead town site is the diversity of horticultural species encountered in its remote setting. There are many ways in which recognition may be achieved. There are many websites that hold information on all historic and heritage sites across Canada (http://www.historicplaces.ca).

Long Term Goals

The long term goals of the site should be established. This can further direct and define management actions for the site.

Funding Potential
Heritage Legacy Fund of British Columbia Society
1-877-522-0150 or email bc150-heritagelegacyfund@shaw.ca
http://www.heritagelegacyfund.ca/

References

[1] Susan Page & Margaret Olds (eds.) (1998). *Botanica*. Vancouver, BC: Raincoast Books.

[2] Government of Alberta, "*Municipal Heritage Partnership Program*" (n.d.) [Online]. Available: http://www.mhpp.ab.ca/glossary.html. [Accessed: Dec 14, 2008].

[3] Ministry of Tourism, Arts and Culture, Heritage Branch. *Heritage Conservation: A Community Guide.* Available: http://www.tca.gov.bc.ca/heritage/docs/pdf/HC_guide.pdf [Accessed: Dec 15th, 2009].

[4] Ministry of Tourism, Culture and the Arts. "*Heritage*," (2008). Available: http://www.tca.gov.bc.ca/heritage/. [Accessed: Jan 6th, 2009].

[5] Brickell, C., & Cole, T. (eds.) (2004). A-Z encyclopedia of Garden Plants, Canadian Edition. Toronto, ON: Dorling Kindersley.

[6] Massachusetts Invasive Plant Advisory Group. (2005). "*Final Report: The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts*," Available: http://www.massnrc.org/MIPAG/docs/MIPAG_FINDINGS_FINAL_042005.pdf. [Accessed: Dec 14th, 2008].

[7] United States Department of Agriculture, "*Plants Database Hemerocallis fulva,"* (n.d.). Available: http://plants.usda.gov/java/profile?symbol=HEFU. [Accessed: Dec 10th, 2008].

[8] Brian Klinkenberg (Editor), *"E-Flora BC: Electronic Atlas of the Plants of British Columbia [eflora.bc.ca],"* Lab for Advanced Spatial Analysis, Department of Geography, 2008, University of British Columbia, Vancouver. Available: http://www.eflora.bc.ca/, [Accessed: Jan 9th, 2009].

[9] Hoffman, D. *The Herbal Handbook: A User's Guide to Medical Herbalism. (*1988*)* Rochester, VT: Healing Arts Press.

[10] Anderson, P., Crossley, J. *Malus Mill.* (1997). Retrieved October 15, 2008. http://www.nsl.fs.fed.us/wpsm/

[11] Dominion Forest Service Canada 4th edition. (1949). Native Trees of Canada. Ottawa, ON: Kings Printer and Controller of Stationary.

12] Brickell, C., & Joyce, D. (1996). "*Pruning & Training."* Toronto, ON: Dorling Kindersley Ltd.

[13] Useful Plants Nursery, (2008). "*Mazzard or Blackheart Cherry (Prunus avium)*." Available: http://www.usefulplants.org/index.html. [Accessed: Jan 6th, 2009].

[14] Burke, Chris. (2008). *A Heritage Resource Assessment for the Historic Arrowhead Townsite and Cemetery'*. Chris Burk 2008, Horizon Heritage Consulting, Vancouver, BC.

[15] D.D. Paterson & L. J. Colbay. (1989). *Heritage Landscapes in British Columbia: A Guide to Their Identification, Documentation and Preservation*. Vancouver: University of British Columbia Landscapes Architecture Program.

[16] Canada's Historic Places. (2007) "*Explore Historic Places. Avenue of Trees.*" Available: http://www.historicplaces.ca/historicplaces/visit-visite/com-ful_e.aspx?id=1920. [Accessed: Jan 6th, 2009].

[17] Canada's Historic Places. (2007). "*Red Wood Trees. Explore Historic Places.*" Available: http://www.historicplaces.ca/historicplaces/visit-visite/com-ful_e.aspx?id=1863. [Accessed: Jan 6th, 2009].

[18] Canada's Historic Places. (2007). "*Sugar Maple Trees, Explore Historic Place.,*" Available: http://www.historicplaces.ca/historicplaces/visit-visite/com-ful_e.aspx?id=1873. [Accessed: Jan 6th, 2009].

[19] Canada's Historic Places. (2007). "*Explore Historic Places. Blair Sugar Maple,*" Available:

http://www.historicplaces.ca/historicplaces/visit-visite/com-ful_e.aspx?id=6041. [Accessed: Jan 6th, 2009].

[20] Invasive Plant Council of BC. (n.d.). "*Himalayan blackberry (Rubus discolor)*." Available: http://www.invasiveplantcouncilbc.ca/invasive-plants-bc/invasive-plant-watch/himalayan-blackberry. [Accessed: Jan 4th, 2009].

[21] University of Victoria: Restoration of Natural Systems Graduate Projects and Profiles. Retrieved January 6th, 2008. http://web2.uvcs.uvic.ca/courses/activity/rns/er390_profiles.aspx