

Appendix D - Project Site Summaries



Cascade Park – November 2008



Cascade Park – July 2011

SITE DESCRIPTION

Cascade Park is a recreational property owned by the Church of Jesus Christ of Latter Day Saints (LDS) along a gentle bend in the South Fork Stillaguamish River. The project site encompasses 3.5 acres along the entire 0.34 mile river front of the property. The flexible buffer accommodates for recreational facilities averaging 78' wide across the site. The existing canopy consists of a line of mature big-leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), and black cottonwood (*Populus balsamifera*) with some Douglas-fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*) along the immediate banks. A few younger red alder are interspersed along the western portion of the site. The sparse understory is dominated by snowberry (*Symphycarpos albus*) where it exists. Maintained grass fields border the edge of the planting area and some of the grassy area was given up for tree plantings.

WORK SUMMARY

Cascade Park required virtually no site preparation with little invasive presence beyond a few scattered Himalayan blackberry (*Rubus bifrons*) and a small patch of Bohemian knotweed (*Polygonum x bohemicum*). 433 trees were planted across the site mostly red cedar as well as western hemlock, shore pine (*Pinus contorta*), Sitka spruce (*Picea sitchensis*), and grand fir (*Abies grandis*). Both larger balled in burlap (B/B) as well as 5 gallon potted stock was used. Planting was initiated in November 2008 with supplemental planting in December 2009, January 2010 and April 2011. The January 2009 installation of the bulk of the plantings was completed by volunteers from local LDS congregations. They were so eager to plant that they had planted over $\frac{3}{4}$ of the trees before the agreed upon start time with the Washington Conservation Corps crew and County staff!

CHALLENGES & INNOVATIONS

Cascade Park was the first South Fork Stillaguamish Big Trees project site where the effects of seasonal flooding on the plantings was experienced. During the November 2008 flood event the newly installed trees were partially washed out and laid down. A heroic effort was made on the part of the WCC crews to save the trees while the water was still high and stake them in place (see photographs below). While only a few trees were lost and the saved trees recovered completely this event altered our implementation strategy in several ways:

- (1) More careful consideration was given to the species and stock size closer to the vegetated edge of the river bank. Red cedar and Sitka spruce of smaller (3'-4') stock size are more likely to tolerate being flooded and partially buried in sediment.
- (2) Staking larger stock (4'+) for at least the first flood season allows the trees to establish solid roots that help them survive seasonal flooding.
- (3) Using jute matting on the soil surface around the larger B/B tree stock prevents sandy soils from washing out around the roots. Cascade Park was the only site this technique needed to be employed.





Site A – July 2009



Site A – July 2011

SITE DESCRIPTION

Site A is private property inside a 90 bend from due north to due west in the South Fork Stillaguamish River. The project site encompasses 7.9 acres along the entire 0.67 mile river front of the property. The buffer extends for a full 100' across the site. The existing canopy consists of a diverse mosaic of age classes and species from young red alder (*Alnus rubra*), and black cottonwood (*Populus balsamifera*) at the western portions of the site with big-leaf maple (*Acer macrophyllum*) and an increasing conifer component moving eastward and southward including grand fir (*Abies grandis*), Douglas-fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), Sitka spruce (*Picea sitchensis*), and western hemlock (*Tsuga heterophylla*) in various age classes. The dense, diverse understory consists of snowberry (*Symphycarpos albus*), salmonberry (*Rubus spectabilis*), thimbleberry (*Rubus parviflorus*), red-twig dogwood (*Cornus sericea*), Pacific ninebark (*Physocarpus captiatus*), twinberry (*Lonicera involucrata*), vine maple (*Acer circinatum*), clustered rose (*Rosa pisocarpa*) and beaked hazelnut (*Corylus cornuta*). The project site was largely an un-vegetated point bar since as late as 1933 according to aerial photographs and has only been developing floodplain forest with no history of timber harvesting or agriculture. On-going bank loss from undercutting during seasonal flooding since 1998 has resulted in the loss of over 2 acres of forest including some Big Trees plantings and parts of a two monitoring plots along the western river bank in the last flood season.

WORK SUMMARY

Site A required a season of intensive site preparation to control several dense Himalayan blackberry (*Rubus bifrons*) patches and scattered patches of Japanese knotweed (*Polygonum cuspidatum*). 870 trees were planted across the site to supplement the areas without conifers as well as add a younger cohort and diversity to the areas with conifers with red cedar, western hemlock, Douglas-fir, shore pine (*Pinus contorta*), western white pine (*Pinus monticola*), Sitka spruce, and grand fir. Larger balled in burlap (B/B) as well as 5 and 7 gallon potted stock was used. Planting was initiated in October 2010 with supplemental planting in March 2011.

CHALLENGES & INNOVATIONS

The first major challenge in implementing the project at Site A was in gaining access. Himalayan blackberry lay many yards thick and at least a dozen feet high along the transitional edge between the largely undisturbed and diverse floodplain forest and the pastures of the farm. After attempting to create access through brush cutting proved exasperating and inefficient a brush mower from the Snohomish County Roads Maintenance crew was hired to clear a 6' wide path to the river. Once that access was gained a 6' wide

'back line' access path was cut by the Washington Conservation Corps (WCC) crew along the entire riverfront 100' back for full site access. Faced with a diverse native canopy and understory with a significant conifer presence in portions it was realized that increasing conifer stocking not only meant in areas completely lacking conifers but also supplementing the diversity in species and age classes to areas with an existing conifer component. Actively eroding riverbanks while a natural process of dynamic health river systems that are crucial for creating in-stream habitat and maintaining overall ecosystem diversity pose challenges when managing for re-forestation within a narrow 100' buffer. Such losses cannot be controlled and should not prevent attempts at re-forestation since the degree and location of bank loss are difficult to predict. Fortunately at Site A very few installed trees have been lost.



Site A access road through Himalayan blackberry



Country Charm - September 2008



Country Charm – July 2011

SITE DESCRIPTION

The project site was a long time dairy known as Country Charm was acquired by the City of Arlington as a recreational and conservation area in 2009. It occupies the inside of the first large bend in the South Fork just east of the confluence with the North Fork. The project site encompasses 6 acres along 0.56 miles of the western river front of the property between the river bank and a hay field. The buffer extends for a full 100' across the site. The long 80+ year history as a farm has reduced the existing canopy to scattered remnant mature red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*) and big-leaf maple (*Acer macrophyllum*). The understory consists of mostly snowberry (*Symphycarpos albus*) of along the river-ward edge of the project site with some salmonberry (*Rubus spectabilis*), thimbleberry (*Rubus parviflorus*), red-twig dogwood (*Cornus sericea*), red elderberry (*Sambucus racemosa*) and Pacific ninebark (*Physocarpus captiatus*).

WORK SUMMARY

Typical of most long time farms along the river Country Charm had a dense, deep monotypic 4 acre continuous band of Himalayan blackberry (*Rubus bifrons*) at the transition from the fields to the river bank that existed for at least 30 years according to historical aerial photographs. In preparation for planting Snohomish County Roads Maintenance was hired to cut the blackberry to the ground with a brush mower in September 2008 (see photographs below). The re-growth was sprayed with a triclopyr/aminopyralid based herbicide the following summer 2009 resulting in a very effective near 95% suppression. The near complete suppression of the blackberry left nearly 4 acres of bare soil which was seeded with a native grass mixture in fall 2009 and spring 2010 following herbicide treatment consisting of meadow barley (*Hordeum brachyantherum*), blue wildrye (*Elymus glaucus*), and Roemer's fescue (*Festuca roemerii*) and Chewing's fescue (*Festuca rubra ssp. fallax*). 1410 trees were planted across the site in almost completely unforested areas formerly dominated with blackberry. The full suite of available conifer species were planted; Douglas-fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), shore pine (*Pinus contorta*), western white pine (*Pinus monticola*), Sitka spruce (*Picea sitchensis*), grand fir (*Abies grandis*). Larger balled in burlap (B/B) as well as 5 and 7 gallon potted stock was used. Planting was initiated in November and December 2009 with supplemental planting January and February 2010 and November and December 2011. Two utility right-of-ways run through the property, natural gas and power, both small areas of the ROWs that run through the project area were planted with native shrubs since trees cannot be allowed to grow within the ROWs.

CHALLENGES & INNOVATIONS

Initially the predominance of Himalayan seemed to pose a daunting challenge, however realizing that the blackberry had long excluded any native vegetation it was decided that the most efficient and effective approach required using heavy equipment. Since there was virtually no native vegetation in the blackberry zone it was decided to use a stronger, more effective herbicide to prevent the need for repeat applications to achieve suppression. The large expanse of bare soil left after blackberry suppression posed a risk for erosion. Seeding with native grasses not only helped control erosion but also limited establishment of nonnative pasture grasses and forbs from the adjacent hay field. An additional 50' was added to the 100' buffer along the northern portion of site in a collaborative planting with Sound Salmon Solutions (formerly Stilly-Snohomish Fisheries Enhancement Task Force) and the city of Arlington.



Blackberry 'erasing' at Country Charm - September 2008



Country Charm post-herbicide treatment blackberry – July 2009



Site B – December 2009



Site B – July 2011

SITE DESCRIPTION

The Site B project site occupies the entire riverfront of a private property where livestock are raised and the farm is managed using predominantly work horses and horse powered machinery (see photograph below). The project site encompasses 6.1 acres along 0.61 miles of river front of the property. The buffer averages 82' across the site including a large intact red alder (*Alnus rubra*)/skunk cabbage (*Lysichiton americanum*)/ salmonberry (*Rubus spectabilis*) wetland and lies entirely behind exclusion fencing installed for this project. The long 80+ year history as a farm has reduced the existing canopy to the steep slopes at the river's edge with remnant mature red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*) and big-leaf maple (*Acer macrophyllum*). The understory consists of mostly snowberry (*Symphycarpos albus*) and salmonberry (*Rubus spectabilis*) with thimbleberry (*Rubus parviflorus*), red-twig dogwood (*Cornus sericea*), red elderberry (*Sambucus racemosa*), Indian plum (*Oemleria cerasiformis*), vine maple (*Acer circinatum*), clustered rose (*Rosa pisocarpa*), beaked hazelnut (*Corylus cornuta*) and Pacific ninebark (*Physocarpus capitatus*).

WORK SUMMARY

Site B also had significant but not continuous patches of Himalayan blackberry (*Rubus bifrons*) and evergreen blackberry (*Rubus lacinatus*) at the transition from the fields to the river bank especially upslope of the wetland area in addition to a small patch of Japanese knotweed (*Polygonum cuspidatum*) at the terminus of a drainage. The blackberry was brush cut beginning in February 2009 to clear the way for fence construction and continued for the rest of the spring and summer. Glyphosate was applied later that same summer and subsequently in the following summers. Snohomish County Noxious Weed Control sprayed the knotweed in September 2009 and 2010. Prior to tree installation 3445' or 0.65 miles of 5 strand barbed wire fence was installed from property line to property line to protect the river bank from grazing and adding on average 25' of former pasture to the buffer. Access gates were installed at the ends of each pasture for property owner and maintenance access. 883 trees were planted across the site along the pasture edge of the canopy, under the canopy and along the edges of the wetland beginning in February and March 2009 and then again in November 2009. Douglas-fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), shore pine (*Pinus contorta*), Sitka spruce (*Picea sitchensis*) and grand fir (*Abies grandis*) were planted along the canopy edges and the understory along with western hemlock (*Tsuga heterophylla*). Larger balled in burlap (B/B) as well as 5 and 7 gallon potted stock was used.

CHALLENGES & INNOVATIONS

Site B was the first fencing project for the South Fork Big Trees project. Working directly with the land manager the fence was installed according to his placement and specifications contingent on meeting the minimum average 50' buffer requirement and budget constraints. The agreement to fence off a large forested wetland rather than run the fence through the wetland added significantly to the buffer area as well as to improving water quality by keeping manure out of the wetland. Fencing off the river bank has allowed native shrubs to grow into the former pasture.



Site B – hay harvesting & storage - the old fashioned way



Site C – July 2011

SITE DESCRIPTION

The Site C project site occupies the entire riverfront of a private property. The project site encompasses 1 acre along 0.2 miles of river front of the property. Fields leased for hay and green chop lie between the main residential property and the riverbank. The buffer averages 50' across the site encompassing a partially armored bank. No canopy exists beyond a couple of red alder (*Alnus rubra*) and big-leaf maple (*Acer macrophyllum*) and some Pacific willow (*Salix lucida*) at the far eastern edge of the property. The very sparse understory in the vicinity of the remnant trees consists of mostly snowberry (*Symphycarpos albus*), clustered rose (*Rosa pisocarpa*), Pacific ninebark (*Physocarpus captiatus*) and Sitka willow (*Salix sitchensis*). Over 2/3rds of the project site lies beneath power line right-of-ways (ROWs) which restricted tree planting.

WORK SUMMARY

Site C had a significant, continuous band of Himalayan blackberry (*Rubus bifrons*) along the entire transition from the field to the river that was regularly cut back by the property owner

but never treated with herbicide. The blackberry was brush cut in June 2010 and allowed to re-grow to be sprayed with glyphosate in July/August 2010. As with the Graafstra project site the effective suppression of the blackberry resulted in soil exposure and was also seeded in the fall 2010 and spring 2011 with meadow barley (*Hordeum brachyantherum*), blue wildrye (*Elymus glaucus*), Roemer's fescue (*Festuca roemerii*) and Chewing's fescue (*Festuca rubra* ssp. *fallax*). 64 trees were planted in two discrete locations outside the power line ROWs with 300 shrubs installed beneath the ROWs in January and February 2010. The tree species installed were western red cedar (*Thuja plicata*), Sitka spruce (*Picea sitchensis*) and grand fir (*Abies grandis*). Larger balled in burlap (B/B) as well as 5 and 7 gallon potted stock were used. The shrub species installed included Sitka willow (*Salix sitchensis*), red-twig dogwood (*Cornus sericea*), Pacific ninebark (*Physocarpus capitatus*), and twinberry (*Lonicera involucrata*) as 2 gallon potted stock.

CHALLENGES & INNOVATIONS

The primary challenge at Site C was in working around the power line ROWs. While the whole site could not be reforested there is definitely a benefit to taking advantage of what was available. The trees installed will be eventually a seed source for the aggrading bar at the east end of the property and into adjacent areas. Sadly Bob Site C, who warmly embraced the Big Trees project, passed away from lung cancer in July 2010.



River Meadows – January 2008



River Meadows – July 2011

SITE DESCRIPTION

River Meadows County Park project site lies on the inside of a wide prominent meander encompassing 16.7 acres along the whole 1.34 miles of river and constitutes the largest continuous site of the South Fork Stillaguamish Big Trees Project (SFSBTP). The buffer runs the full 100' except along a very short portion of actively eroding bank near the recreational facilities. The existing canopy consists of a mosaic of mature black cottonwood (*Populus balsamifera*) gallery, mixed conifer/deciduous consisting red alder (*Alnus rubra*), big-leaf maple (*Acer macrophyllum*), western hemlock (*Tsuga heterophylla*), western red cedar (*Thuja plicata*) and Sitka spruce (*Picea sitchensis*). The dense, diverse understory consists predominantly of snowberry (*Symphycarpos albus*) and salmonberry (*Rubus spectabilis*) with thimbleberry (*Rubus parviflorus*), red-twig dogwood (*Cornus sericea*), Pacific ninebark (*Physocarpus captiatus*), twinberry (*Lonicera involucrata*), vine maple (*Acer circinatum*), clustered rose (*Rosa pisocarpa*), Indian plum (*Oemlaria cerasiformis*) and beaked hazelnut (*Corylus cornuta*). A ~1000' section of unforested section adjacent to the recreational facilities has been rapidly eroding since 2006 in successive seasonal flood events. The bank undercutting has resulted in the loss of 2+ acres of forest downstream of the open eroding area including previous Big Trees plantings and monitoring plots.

WORK SUMMARY

Himalayan blackberry (*Rubus bifrons*) at River Meadows was restricted to discrete patches along the river in canopy gaps. The blackberry was brush cut September 2008 and allowed to re-grow to be sprayed with glyphosate the following summer 2009. The dense native understory beneath the black cottonwood gallery required having 6' wide 'planting alleys' mowed with a brush mower at 15' intervals to allow access into the understory for planting. This was done by Snohomish County Parks in September 2008. Other areas of the Park did not require this treatment. A total of 2240 trees were planted throughout the entire buffer area. The tree species installed were western red cedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), shore pine (*Pinus contorta*), western hemlock (*Tsuga heterophylla*), Sitka spruce (*Picea sitchensis*) and grand fir (*Abies grandis*). Larger balled in burlap (B/B) as well as 5 and 7 gallon potted stock were used. The very first SFSBTP planting occurred at River Meadows in January 2008 using 6+' western red cedar (see photograph below). The rest of the project site was planted in phases next in February 2010 and then the final planting in January/February 2011.

CHALLENGES & INNOVATIONS

The first innovation in response to a challenge with the SFSBTP occurred at River Meadows with the creation of planting alleys through the dense understory of the black cottonwood

gallery (see photograph below). There was concern that mowing these alleys may leave long lasting openings in the understory that would allow invasives to encroach and people to make short cut trails. Neither concern has been realized and the native shrubs have recovered and mostly filled in the alleys. This technique has been employed at other Big Trees project sites with dense native understories. River Meadows also experienced accelerated bank erosion in the past few years like some other Big Trees sites. Actively eroding riverbanks while a natural process of dynamic health river systems that are crucial for creating in-stream habitat and maintaining overall ecosystem diversity pose challenges when managing for re-forestation within a narrow 100' buffer. Such losses cannot be controlled and should not prevent attempts at re-forestation since the degree and location of bank loss are difficult to predict. Fortunately at River Meadows very few installed trees have been lost.



River Meadows – B/B western red cedar being staged to be planted – January 2008



River Meadows – same trees installed January 2008



River Meadows – newly mowed planting alley September 2008



Twin Rivers – March 2011



Twin Rivers – July 2011

SITE DESCRIPTION

Twin Rivers County Park project site lies at the confluence of the North and South Forks of the Stillaguamish. The project site falls along 0.9 miles of river front along the South Fork encompassing 5.6 acres from the SR 530 bridge westward to the intersection with the main stem Stillaguamish. The buffer runs the full 100' along the entire length. The existing canopy predominantly consists of mature black cottonwood (*Populus balsamifera*) gallery with some red alder (*Alnus rubra*), big-leaf maple (*Acer macrophyllum*), and western red cedar (*Thuja plicata*). The moderately dense understory consists predominantly of snowberry (*Symphycarpos albus*), beaked hazelnut (*Corylus cornuta*), Indian plum (*Oemlaria cerasiformis*) and salmonberry (*Rubus spectabilis*) with thimbleberry (*Rubus parviflorus*), red-twig dogwood (*Cornus sericea*), Pacific ninebark (*Physocarpus captiatus*), vine maple (*Acer circinatum*) and clustered rose (*Rosa pisocarpa*). Unique of all South Fork Stillaguamish Big Trees Project (SFSBTP) sites a disc gold course runs through the entirety of the project site.

WORK SUMMARY

Himalayan blackberry (*Rubus bifrons*) at Twin Rivers was restricted to discrete patches along the river in canopy gaps. The blackberry was brush cut March 2010 and allowed to re-grow to be sprayed with glyphosate the following June. The moderately dense native understory beneath the black cottonwood gallery did not require any clearing for tree installation. A total of 803 trees were planted throughout the entire buffer area. The tree species installed were western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), Sitka spruce (*Picea sitchensis*) and grand fir (*Abies grandis*). Larger balled in burlap (B/B) as well as 5 and 7 gallon potted stock were used. Trees were strategically placed around the disc golf course to define approved fairways and to block illicit paths.

CHALLENGES & INNOVATIONS

The major challenge at Twin Rivers was accommodating for the disc golf course that winds its way through the entire understory of the site. It is a popular attraction and receives daily use. Several frequent disc golfers expressed support for the project and a desire to protect the trees that have been planted. However vegetation clearing and disturbance from disc golfers trying to find lost discs and creating more open fairways has suppressed understory growth and denuded portions of the understory as well as incurring damage to existing trees (see photograph below). The SFSBTP trees were installed to provide visual cues to disc golfers to stay on official trails and fairways and to dissuade them from using illicit short cuts. The city of Arlington which maintains the park has indicated it will monitor disturbance from the disc golfers.



Twin Rivers – golf disc damage on a black cottonwood; denuded area in background March 2011