Treasure Valley Municipal Parks Planting Project
Project Design Document – Year 4

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INSTRUCTIONS

Project Operators must complete and submit this Project Design Document (PDD) to request credits after the third anniversary of the Credit Commencement Date. City Forest Credits then reviews this PDD as part of the validation process along with all other required project documents. An approved third-party verifier then does an independent check of all documents and compliance with the Protocol, known as verification. An updated PDD will need to be submitted for future verification at Year 6 and After Year 25.

Project Operators should enter data and supporting attachments starting on page 3 under Project Overview where you find "[Enter text here]" as thoroughly as possible and provide numbered attachments for maps and other documentation (ex: 1 – Regional Map). Keep all instructions in the document.

Below is a list of documents that are needed to complete a successful Year 4 Project Design Document:

<u>For the Single Tree Planting Design:</u>

- Carbon Quantification Year 4 Credit tool
- Tree Sampling Data
- Geocoded photos
- Project geospatial data, if there have been changes (KML file or shapefile)

<u>For the Cluster Planting Design</u>

- Project Area imaging from any telemetry, imaging, or remote sensing service
- i-Tree Canopy report
- i-Tree Canopy source data
- Project geospatial data, if there have been changes (KML file or shapefile)
- Carbon Quantification Year 4 Credit tool

<u>For the Area Reforestation Planting Design (previously Canopy Design)</u>:

- Either:
    - Project Area imaging from any telemetry, imaging, or remote sensing service
    - i-Tree Canopy report
    - i-Tree Canopy source data
- Or:
    - Tree plot sampling data
- Project geospatial data, if there have been changes (KML file or shapefile)
- Carbon Quantification Year 4 Credit tool
- Summary of approach to quantifying the local CO_2 index

PROJECT OVERVIEW

Project Name: Treasure Valley Municipal Parks Planting
Project Number: 4
Project Type: Planting Project (under the Planting Protocol – version 9, dated February 7, 2021)
Project Start Date: June 9, 2021
Project Location: Boise, ID

Project Operator Name: Treasure Valley Canopy Network
Project Operator Contact Information: Lance Davisson, 208-994-1135, director@tvcanopy.net

PROJECT AND PLANTING DESIGN UPDATES

Include information on changes to the project including tree survival, ownership, or other relevant updates.

The Treasure Valley Municipal Parks Planting Project is a partnership between the City of Boise and the Treasure Valley Canopy Network. This project planted 454 trees in 9 municipal parks throughout the Treasure Valley. This project used the single tree planting design.

There were no changes in ownership to the Project Site. The Project Site has been maintained and monitored by the City of Boise since the trees were planted.

Of the 167 trees sampled, trees a e died and a e not een epla ed and of these trees were replaced with the same species as originally planted.

CARBON QUANTIFICATION DOCUMENTATION (Section 12 and Appendix B)

Describe and summarize the planting design, sampling, and appropriate quantification/measurement method for the project – Single Tree, Clustered, or Area Reforestation. Include the project's climate zone and method of data collection. Outline the estimated total number of credits to be issued to the project over 25 years as well as the amount to be issued upon successful validation and verification in Year 4. Attach the quantification tool and appropriate sampling tool.

List of quantification Tools by planting method (CFC to provide guidance and resources):

1) *Single Tree - single tree quantification tool*
2) *Clustered - cluster quantification tool*
3) *Area Reforestation - quantification with CO_2 calculated per acre*

To ensure performance of the credits, Project Operators must commit to the following at Year 4, with additional requirements at Year 6 and after Year 25 based on the appropriate quantification method.

1) *Single Tree*
    a. *<u>Year 4:</u> Project Operators must generate a random sample of project tree sites using the Single Tree Quantification Tool. Project Operators must visit those sampled tree sites and collect data on whether the sample contains a live tree, standing dead tree, or no tree.*

Provide geocoded photos or imaging of a minimum sample of 20% of the trees. The tracking file includes a column where each tree is assigned a unique serial number to help with tracking each coordinate and tree picture or image.

   i. *Based on this data, the number and species of project trees is adjusted and a new CO_2 projected amount by after Year 25 is generated.*

2) *Clustered*
   a. *Year 4: Project Operators provide images of the Project Area from any telemetry, imaging, remote sensing, i-Tree Canopy, or UAV service, such as Google Earth and estimate the area in tree canopy cover (acres). Imaging from Google Earth with leaf-on may be used. Project Operators will calculate the percent of canopy cover from the Google Earth imaging. Projects can use i-Tree Canopy and point sampling to calculate canopy cover. Using i-Tree Canopy, continue adding points until the standard error of the estimate for both the tree and non-tree cover is less than 5%. i-Tree Canopy will supply you with the standard errors. If tree canopy cover is determined using another approach, such as image classification, a short description of the approach should be provided, as well as the QA/QC measures that were used. A tree cover classification accuracy assessment should be conducted, as with randomly placed points, and the percentage tree cover classification accuracy reported.*
      i. *If the canopy coverage equals or exceeds 2.8% (400 trees per acre with an average canopy area of 3.14 square feet per tree (2-foot diameter of canopy) is 2.8% of an acre), then the credits projected in the Clustered Quantification Tool may be issued. If canopy coverage is below 2.8%, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 2.8%.*

3) *Area Reforestation (formerly Canopy planting design)*
   a. *Year 4: Project Operators must either conduct a physical tree count using plots or use imaging to determine canopy coverage at Year 4.*
      i. *If the canopy coverage equals or exceeds 2.8% (400 trees per acre with an average canopy area of 3.14 square feet per tree (2-foot diameter of canopy) is 2.8% of an acre), then the credits projected in the Quantification Tool may be issued. If canopy coverage is below 2.8%, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 2.8%.*

Overview

The Project Operator planted 454 trees as part of this carbon project. The most common species include honeylocust, crabapple, and littleleaf linden. The Project Operator used the single tree planting method in the original design and quantification.

Data Collection

The City of Boise Forestry department collected survivorship data on the 167 randomly selected trees. CFC staff randomly selected the trees and City staff visited each tree, taking a geotagged photo and noting if the tree is alive, dead, missing, or replaced. Of the 167 trees sampled, 4 trees were dead and

have not been replaced. Three additional trees did die and have since been replaced. The overall tree mortality based on the sampling data is 2.4%. This is well below the 10% mortality deduction built into the original planting project.

Attachments: 2 TCVN Year 4_Quantification and data collection
3 TCVN Year 4 Geotagged Photos

Carbon Quantification

Total number of trees planted	454
Project area (acres), if applicable	NA
Total number of trees per acre, if applicable	NA
Credits attributed to the project (tCO2e)	664
Credits after mortality deduction (10% or insert observed mortality, if greater)	598
Contribution to Registry Reversal Pool Account (5%) (tCO2e)	30
Total credits to be issued to the Project Operator (tCO2e)	568
Total credits requested to be issued at Year 4	227

GHG Assertion:
Project Operator asserts that the Project results in GHG emissions mitigation of 568 tons CO_2e over the 25-year Project Duration. Project Operator asserts that, per Protocol guidelines, 40% of the Project GHG emissions mitigation is issued at Year 4, or 227 tons CO_2e.

The updated Projected CO_2 stored and credit issuance over 26 years is outlined below:

Single Tree Plantings	Projection at Initial Crediting	Updated Projection at Year 4
Total credits issued at Initial Crediting (10% CO2 (t))	57	57
Total credits to be issued at Year 4 (40% CO2 (t))	227	227
Total credits to be issued at Year 6 (30% CO2 (t))	170	170
Total credits to be issued at Year 26 (20% CO2 (t))	114	114
Total credits to be issued (tCO2e)	**568**	**568**

Attachment: 2 TCVN Year 4_Quantification and data collection

CO-BENEFITS QUANTIFICATION DOCUMENTATION (Section 12 and Appendix A)

Summarize co-benefit quantification and provide supporting documentation. If necessary, update the CFC-provided Co-Benefits Quantification spreadsheet to calculate updated rainfall interception, reduction of certain air compounds, and energy savings.

Ecosystem Services	*Resource Units*	*Value*
Rainfall Interception (m3/yr)	2,523.31	$5,199.38
Air Quality (t/yr)	0.0600	$1,445.61
Cooling – Electricity (kWh/yr)	84,571.85	$9,861.08
Heating – Natural Gas (kBtu/yr)	390,109.87	$4,854.67
Grand Total ($/yr)		**$21,360.74**

Attachment: 2 TCVN Year 4_Quantification and data collection

ADDITIONALITY (Section 4)

Complete and attach the Attestation of Additionality.

Additionality is demonstrated by Project Operators per the Protocol in the following ways and in the Attestation of Additionality. The Attestation of Additionality was not required to be signed in the Tree Planting Protocol Version 9, however Project Operator met the requirements and is submitting the Attestation with this Project Design Document update.

- Project trees are not required by law or ordinance to be planted (Protocol Section 2.2). See Attestation of Planting.
- The Project did not plant trees on sites that were forested and then cleared of trees within the prior ten years
- Project trees are additional based on a project specific baseline or the Performance Standard Baseline attached to this PDD.
- Project Operator has signed a Project Implementation Agreement with City Forest Credits for 25 years.
- The 25-year Project Duration commitment is additional to and longer than any commitment the Project Operator makes to non-carbon project tree plantings.
- Project Operator has signed the Attestation of Additionality.

Attachment: 4 TCVN Year 4_CFC Planting Attestation of Additionality

ADDITIONAL INFORMATION

Include additional information on changes to monitoring and reporting plans since the Initial Credit Planting Design Document was submitted.

No changes.

SIGNATURE

Signed on March 11th in 202 , by Lance Davisson, for Treasure Valley Canopy Network.

Lance Davisson
_____
Signature

_Lance Davisson_____
Printed Name

___208-994-1135____
Phone

___director@tvcanopy.net_____
Email

ATTACHMENTS

For the Single Tree Planting Design:

1 - Carbon Quantification Year 4 Credit tool
2 - Tree Sampling Data
3 - Geocoded photos
4 - Project geospatial data (KML file or shapefile)

For the Cluster Planting Design

1 - Project Area imaging from any telemetry, imaging, or remote sensing service
2 - i-Tree Canopy report
3 - i-Tree Canopy source data
4 - Project geospatial data (KML file or shapefile)
5 - Carbon Quantification Year 4 Credit tool

For the Area Reforestation Planting Design (previously Canopy Design):

- Either:
    1 - Project Area imaging from any telemetry, imaging, or remote sensing service
    2 - i-Tree Canopy report
    3 - i-Tree Canopy source data
- Or:
    1 - Tree plot sampling data

2 - Project geospatial data (KML file or shapefile)
3 - Carbon Quantification Year 4 Credit tool
4 - Summary of approach to quantifying the local CO_2 index

Attachments

Single Tree

Carbon Quantification Year 4 Credit Tool – Single Tree & Sampling Data

Planting Attestation of Additionality

Geocoded Photos

Carbon Quantification Year 4 Credit Tool & Sampling Data – Single Tree

Directions

1) In Table 1 record the number of sites planted for each tree species.
2) If species are not listed, add them to the bottom of Table 1.

Table 1. Planting List

Scientific Name	Common Name	Tree-Type Abbreviation	No. Sites Planted	
Tilia americana	American basswood	BDL		
Tilia americana	American basswood	BDL		
Castanea dentata	American chestnut	BDL		
Ulmus americana	American elm	BDL		
Ulmus americana	American elm	BDL		
Ilex opaca	American holly	BES		
Carpinus caroliniana	American hornbeam	BDM	1	
Sorbus americana	American mountain ash	BDS		
Cotinus obovatus	American smoketree	BDS		
Platanus occidentalis	American sycamore	BDL		
Phellodendron amurense	Amur corktree	BDM		
Maackia amurensis	Amur maackia	BDM		
Acer ginnala	Amur maple	BDS		
Prunus armeniaca	apricot	BDS		
Fraxinus species	ash	BDL		
Cedrus atlantica	Atlas cedar	CEL		
Pinus nigra	Austrian pine	CEL	32	
Taxodium distichum	bald cypress	BDL		
Taxodium distichum	bald cypress	BDL		
Populus balsamifera	balsam poplar	BDL		
Rosa banksiae	banksian rose; Lady Bank's rose	BDS		
Tilia species	basswood	BDL		
Fagus species	beech	BDL		
Populus grandidentata	bigtooth aspen	BDL		
Acer grandidentatum	bigtooth maple	BDM		
Betula species	birch	BDM		
Fraxinus nigra	black ash	BDL		
Populus trichocarpa	black cottonwood	BDL		
Robinia pseudoacacia	black locust	BDL		
Robinia pseudoacacia	black locust	BDL		
Acer nigrum	black maple	BDL		
Quercus velutina	black oak	BDL		
Quercus velutina	black oak	BDL		
Populus nigra	black poplar	BDL		
Picea mariana	black spruce	CEL	3	For black hills-densata spruce
Juglans nigra	black walnut	BDL		
Salix nigra	black willow	BDM		
Salix nigra	black willow	BDM		
Viburnum prunifolium	blackhaw	BDS		
Quercus marilandica	blackjack oak	BDM		
Prunus blireiana	Blierana plum	BDS		
Fraxinus quadrangulata	blue ash	BDL		
Picea pungens	blue spruce	CEL	28	
Acer negundo	boxelder	BDL		
Broadleaf Deciduous Large Other	broadleaf deciduous large	BDL		
Broadleaf Deciduous Medium Other	broadleaf deciduous medium	BDM		
Broadleaf Deciduous Small Other	broadleaf deciduous small	BDS		
Rhamnus species	buckthorn	BDS		
Quercus macrocarpa	bur oak	BDL	2	
Quercus macrocarpa	bur oak	BDL		
Sabal palmetto	cabbage palmetto	PEM		
Quercus kelloggii	California black oak	BDL		
Washingtonia filifera	California palm	PES		
Pyrus calleryana	Callery pear	BDM	2	
Populus x canadensis	Carolina poplar	BDL		
Gleditsia caspica	Caspian locust	BDM		
Fraxinus oxycarpa	Caucasian ash	BDM		
Cedrus species	cedar	CEL		
Vitex agnus-castus	chaste tree	BDS		
Prunus cerasifera	cherry plum	BDS		
Ulmus parvifolia	Chinese elm	BDL		
Ulmus parvifolia	Chinese elm	BDL		
Picea asperata	Chinese spruce	CEL		
Quercus muehlenbergii	chinkapin oak	BDL		
Quercus muehlenbergii	chinkapin oak	BDL		
Prunus virginiana	common chokecherry	BDS	30	For common chokecherry and common-canada red chokecherry
Ptelea trifoliata	common hoptree	BDS		
Pyrus communis	common pear	BDM		
Diospyros virginiana	common persimmon	BDM		
Conifer Evergreen Large Other	conifer evergreen large other	CEL		
Conifer Evergreen Medium Other	conifer evergreen medium other	CEM		
Conifer Evergreen Small Other	conifer evergreen small other	CES		
Salix matsudana	corkscrew willow	BDS		
Salix matsudana	corkscrew willow	BDS		
Populus species	cottonwood	BDL		
Pinus coulteri	Coulter pine	CEL		
Malus species	crabapple	BDS	54	For crabapply, tschonoskii crabapple, and crabapple-spring snow
Magnolia acuminata	cucumber tree	BDL		
Cupressus species	cypress	CEL		
Cedrus deodara	deodar cedar	CEL		
Cornus species	dogwood	BDS		
Pseudotsuga menziesii	Douglas fir	CEL		
Amelanchier arborea	downy serviceberry	BDM	3	For serviceberry
Populus deltoides	eastern cottonwood	BDL		
Tsuga canadensis	eastern hemlock	CEL		
Tsuga canadensis	eastern hemlock	CEL		
Juniperus virginiana	eastern red cedar	CEM		
Cercis canadensis	eastern redbud	BDS	1	
Pinus strobus	eastern white pine	CEL		
Ulmus species	elm	BDL	2	For elm-prospector
Ulmus species	elm	BDL		
Picea engelmannii	Engelmann spruce	CEL		
Ulmus procera	English elm	BDL		
Quercus robur	English oak	BDL		

Table 2. Summary of Planting Sites

Tree-Type	Tree-Type Abbreviation	No. Sites Planted
Brdlf Decid Large (>50 ft)	**BDL**	184
Brdlf Decid Med (30-50 ft)	**BDM**	59
Brdlf Decid Small (<30 ft)	**BDS**	90
Brdlf Evgrn Large (>50 ft)	**BEL**	0
Brdlf Evgrn Med (30-50 ft)	**BEM**	0
Brdlf Evgrn Small (<30 ft)	**BES**	0
Conif Evgrn Large (>50 ft)	**CEL**	105
Conif Evgrn Med (30-50 ft)	**CEM**	16
Conif Evgrn Small (<30 ft)	**CES**	0
	Total Sites Planted	454

Quercus robur	English oak	BDL		
Juglans regia	English walnut	BDL		
Alnus glutinosa	European alder	BDL		
Fraxinus excelsior	European ash	BDL		
Fagus sylvatica	European beech	BDL		
Carpinus betulus	European hornbeam	BDM	6	
Larix decidua	European larch	BDL		
Sorbus aucuparia	European mountain ash	BDM		
Sorbus aucuparia	European mountain ash	BDM		
Betula pendula	European white birch	BDM		
Abies species	fir	CEL		
Torreya taxifolia	Florida torreya	CES		
Fraxinus ornus	flowering ash	BDM		
Cornus florida	flowering dogwood	BDS		
Prunus triloba	flowering plum	BDS		
Sequoiadendron giganteum	giant sequoia	CEL	10	For dawn redwood
Ginkgo biloba	ginkgo	BDL		
Laburnum x watereri	golden chain tree	BDS		
Koelreuteria paniculata	goldenrain tree	BDM		
Fraxinus pennsylvanica	green ash	BDL		
Crataegus viridis	green hawthorn	BDM		
Eucommia ulmoides	hardy rubber tree	BDL		
Crataegus species	hawthorn	BDS	5	For crusader-cruzam hawthorn and suksdorf's hawthorn
Corylus species	hazelnut	BDS		
Acer campestre	hedge maple	BDM		
Carya species	hickory	BDL		
Pinus wallichiana	Himalayan pine	CEM		
Gleditsia triacanthos	honeylocust	BDL	54	For honeylocust and shademaster honeylocust
Aesculus hippocastanum	horsechestnut	BDL		
Alnus cordata	Italian alder	BDM		
Abies homolepis	Japanese fir	CEL		
Sophora japonica	Japanese pagoda tree	BDM	9	
Sophora japonica	Japanese pagoda tree	BDM		
Styrax japonicus	Japanese snowbell	BDS		
Syringa reticulata	Japanese tree lilac	BDM		
Syringa reticulata	Japanese tree lilac	BDS		
Zelkova serrata	Japanese zelkova	BDL		
Juniperus species	juniper	CEM		
Cercidiphyllum japonicum	katsura tree	BDM		
Gymnocladus dioicus	Kentucky coffeetree	BDL	4	
Pinus attenuata	knobcone pine	CEL		
Quercus glandulifera	Konara oak	BDM		
Pyrus fauriei	Korean sun pear	BDS		
Prunus serrulata	Kwanzan cherry	BDS		
Quercus laurifolia	laurel oak	BDL		
x Cupressocyparis leylandii	Leyland cypress	CEL		
Syringa species	lilac	BDS		
Pterostyrax corymbosa	little Epaulette tree	BDS		
Tilia cordata	littleleaf linden	BDM	35	For american linden, american-redmond linden, littleleaf linden, and littleleaf-greenspire linden
Tilia cordata	littleleaf linden	BDM		
Quercus virginiana	live oak	BDL		
Quercus virginiana	live oak	BEL		
Platanus acerifolia	London planetree	BDL	10	For london planetree and london-bloodgood planetree
Magnolia species	magnolia	BDM		
Fraxinus mandshurica	Manchurian ash	BDL		
Abies holophylla	Manchurian fir	CEL		
Acer species	maple	BDL	21	For maple, crimson sunset maple, and pacific sunset maple
Washingtonia robusta	Mexican fan palm	PEM		
Albizia julibrissin	mimosa	BDM		
Catalpa speciosa	northern catalpa	BDL		
Celtis occidentalis	northern hackberry	BDL	3	For hackberry
Quercus rubra	northern red oak	BDL		
Quercus rubra	northern red oak	BDL	21	
Thuja occidentalis	northern white cedar	CEL		
Thuja occidentalis	northern white cedar	CEL		
Acer platanoides	Norway maple	BDM	3	For Norway-crimson king maple and norwegian sunset maple
Picea abies	Norway spruce	CEL	3	
Quercus species	oak	BDL		
Aesculus glabra	Ohio buckeye	BDL		
Crataegus monogyna	oneseed hawthorn	BDS		
Picea orientalis	Oriental spruce	CEL		
Quercus aliena	Oriental white oak	BDL		
Other species	other species	BDM		
Betula papyrifera	paper birch	BDL		
Acer griseum	paperbark maple	BDS		
Malus pumila	paradise apple	BDM		
Prunus persica	peach	BDS		
Quercus palustris	pin oak	BDL		
Quercus palustris	pin oak	BDL		
Pinus species	pine	CEL	5	For bosnian pine and limber pine
Pinus edulis	pinyon pine	CES		
Prunus species	plum	BDS		
Pinus serotina	pond pine	CEL		
Pinus ponderosa	ponderosa pine	CEL		
Quercus stellata	post oak	BDL		
Malus ioensis	prairie crabapple	BDS		
Acer truncatum	purpleblow maple	BDS		
Populus tremuloides	quaking aspen	BDL		
Acer rubrum	red maple	BDL	2	
Morus rubra	red mulberry	BDL		
Betula nigra	river birch	BDL	13	For heritage river-cully birch clump
Juniperus scopulorum	Rocky Mountain juniper	CEM		
Salix gracilistyla	rosegold pussy willow	BDS		
Elaeagnus angustifolia	Russian olive	BDS		
Prunus sargentii	Sargent cherry	BDM		
Sassafras albidum	sassafras	BDL		
Serenoa repens	saw palmetto	PES		
Quercus acutissima	sawtooth oak	BDM		
Quercus coccinea	scarlet oak	BDL		
Pinus sylvestris	Scotch pine	CEM	13	
Picea omorika	Serbian spruce	CEM		
Quercus shumardii	Shumard oak	BDL		
Ulmus pumila	Siberian elm	BDL		
Ulmus pumila	Siberian elm	BDL		
Abies alba	silver fir	CEL		

Tilia tomentosa	silver linden	BDM		
Acer saccharinum	silver maple	BDL		
Ulmus rubra	slippery elm	BDL		
Cotinus coggygria	smoke tree	BDS		
Crataegus laevigata	smooth hawthorn	BDS		
Catalpa bignonioides	southern catalpa	BDM		
Quercus falcata	southern red oak	BDL		
Picea species	spruce	CEL	1	
Pinus glabra	spruce pine	CEL		
Rhus typhina	staghorn sumac	BDS		
Acer saccharum	sugar maple	BDL	3	
Rhus species	sumac	BDS		
Rhus species	sumac	BDS		
Quercus michauxii	swamp chestnut oak	BDL		
Quercus bicolor	swamp white oak	BDL	5	
Pinus mugo	sweet mountain pine	CES		
Liquidambar styraciflua	sweetgum	BDL	7	
Pinus cembra	Swiss stone pine	CEL		
Acer pseudoplatanus	sycamore maple	BDL		
Sapium sebiferum	tallowtree	BDM		
Ailanthus altissima	tree of heaven	BDM		
Liriodendron tulipifera	tulip tree	BDL	24	
Nyssa sylvatica	Tupelo tree	BDM		
Corylus colurna	Turkish hazelnut	BDL		
Sciadopitys verticillata	umbrella pine	CEM		
Shrub	unknown shrub	BDS		
Unknown	unknown tree	BDM		
Viburnum species	viburnum	BDS		
Crataegus phaenopyrum	Washington hawthorn	BDM		
Quercus nigra	water oak	BEL		
Thuja plicata	western red cedar	CEL		
Thuja plicata	western red cedar	CEL		
Pinus monticola	western white pine	CEL		
Fraxinus americana	white ash	BDL	5	For white ash and white-autumn purple ash
Abies concolor	white fir	CEL		
Morus alba	white mulberry	BDM		
Quercus alba	white oak	BDL		
Populus alba	white poplar	BDL		
Picea glauca	white spruce	CEL	23	
Salix species	willow	BDL	8	For willow, weeping willow, and weeping or peking-pendula willow
Salix species	willow	BDL		
Quercus phellos	willow oak	BDL		
Quercus phellos	willow oak	BDL		
Ulmus alata	winged elm	BDL		
Salix x pendulina Wenderoth	Wisconsin weeping willow	BDL		
Ulmus glabra	Wych elm	BDL		
Cladrastis lutea	yellowwood	BDM		
Yucca species	yucca	PES		
Pinus flexilis 'Vanderwolf's'	Vanderwolf Pine	CEM	3	For Limber-Vanderwolfs Pyramid Pine

Table 3. Sample Size Calculator

Description		Value
1)	Margin of Error (15% required)	15%
2)	Confidence level (95% required)	95%
3)	Total number of project sites	454
4)	Mean stored CO_2 per tree (kg)	765
5)	Standard deviation of stored CO_2 (kg)	725
6)	Expected proportion of tree survival (75% required)	75%
	Calculated sample size	167

Use the Sample Size Calculator that we provide to determine the number of sites to sample. We use the term "site" instead of "tree" because some planted trees may no longer be present in the sites where they were planted.

Directions
1) Margin of error, the default value of 15% is used.
2) Confidence level, the default value of 95% is used.
3) The total number of original sites is automatically filled in from the Planting List tab.
4) Mean stored CO_2 for all tree types 25 years after planting is automatically filled in from Table 4 below.
5) Standard deviation of the average CO_2 stored for all tree types 25 years after planting is automatically filled in from the Table 4.
6) Expected proportion of tree survival – for sampling purposes we conservatively estimate that 75% of the planted trees are expected to survive. This value is used as the default in the Sample Size Calculator.

Table 4. Stored CO_2 (kg) by tree type for years after planting in Temperate Interior West climate zone.

Age	BDL	BDM	BDS	BEL	BEM	BES	CEL	CEM	CES	Avg.	Std. Dev.
5	22	70	20	148	50	13	1	11	15		
10	331	203	99	505	169	60	15	53	33		
15	939	432	239	1,200	396	150	76	133	60		
20	1,725	769	429	2,336	765	288	219	256	98		
25	**2,587**	**1,224**	**659**	**3,985**	**1,318**	**478**	**472**	**422**	**148**	**765**	**725**
30	3,452	1,797	913	6,178	2,099	725	857	629	211		
35	4,275	2,481	1,177	8,893	3,160	1,031	1,390	876	288		
40	5,037	3,260	1,437	12,051	4,555	1,400	2,083	1,157	380		

Directions

At the time of data collection soon after planting, record the following information:

-Date of data collection.

-Names of the crew that collected that data.

At the time of data collection soon after planting record the following information on each tree:

-Date planted

-Tree Id#, the unique number that coincides with each tree that was planted at the site. When each tree has just been planted, and there are not any dead or missing trees, the tree id#s will all be the same as the site#s. As trees get replaced, the list of tree id#s will increase. In the example below, site# 1 has a replacement tree planted in it, therefore what was originally tree #1 is now tree #4. If tree #4 is the next one at the project that gets replaced, that new tree will then be tree #5.

-Site Id#, a unique number assigned to each spot a tree is planted at.

-Species name (botanical name)

-Latitude and Longitude (or x and y coordinates) of where each tree is located. These data are used to accurately locate the site for remeasurement.

-Image#1, the unique number for the first image of this site.

-Image#2, the unique number for the second image of this site taken at 90 degrees to the first.

To request Forward Credits, draw a random sample and record these additional data on each tree site sampled.

-If the tree is alive, record if it is the original one planted (original) or a replacement (replace#1, replace#2).

-Record if the tree is dead (standing) or missing (vacant site).

-Date removed, the date when the tree was removed.

-Date replaced, the date when the replacement tree was planted.

-Notes, information concerning tree status, health, etc.

During subsequent field sampling sessions you may find it helpful to take a copy of your original data sheets along for reference when attempting to locate each tree.

Data Collection Dates: Crew:

Tree ID #	Species	Image #1	Image #2	Live (Orig/Replace #1/Replace #2)	Standing Dead or Vacant Site	Date Removed	Date Replaced	Notes
FRAN-TR-P-80139	Chokecherry, Common	X		Live				
FRAN-TR-P-80144	Oak, Northern Red	X		Live				
FRAN-TR-P-80147	Chokecherry, Common	X		Live				
FRAN-TR-P-80152	Maple, Crimson Sunset	X		Live				
FRAN-TR-P-80155	Crabapple-Spring Snow	X		Live				
FRAN-TR-P-80156	Crabapple-Spring Snow	X		Live				
FRAN-TR-P-80157	Maple, Red	X		Live				
FRAN-TR-P-80161	Pear, Callery or Flowering	X		Live				
FRAN-TR-P-80162	Maple, Crimson Sunset	X		Live				
FRAN-TR-P-80163	Crabapple-Spring Snow	X		Live				
FRAN-TR-P-80164	Maple, Crimson Sunset	X		Live				
MARI-TR-P-81254	Linden, American-Redmond	X		Replaced #1 - same species				
MARI-TR-P-81255	Linden, American-Redmond	X		Live				
PIGR-TR-P-82057	Maple, Pacific Sunset	X		Live				
PIGR-TR-P-82058	Linden, Littleleaf	X		Live				
PIGR-TR-P-82059	Linden, Littleleaf	X		Live				
PIGR-TR-P-82063	Honeylocust	X		Live				
PIGR-TR-P-82064	Linden, Littleleaf	X		Live				
PIGR-TR-P-82068	Honeylocust	X			dead			
PIGR-TR-P-82071	Honeylocust	X		Live				
PIGR-TR-P-82073	Honeylocust	X		Live				
PIGR-TR-P-82074	Honeylocust	X		Live				
PIGR-TR-P-82081	Spruce, Colorado or Blue	X		Live				
PIGR-TR-P-82092	Chokecherry, Common-Canada	X		Live				
PIGR-TR-P-82093	Chokecherry, Common-Canada	X		Live				
PIGR-TR-P-82097	Chokecherry, Common-Canada	X		Live				
PIGR-TR-P-82100	Honeylocust	X		Live				
BEQU-TR-P-82106	Oak, Northern Red	X		Live				
BEQU-TR-P-82107	Oak, Northern Red	X		Live				
BEQU-TR-P-82108	Oak, Northern Red	X		Live				
BEQU-TR-P-82112	Serviceberry	X		Live				
BEQU-TR-P-82114	Hawthorn, Suksdorf's	X		Live				
BEQU-TR-P-82118	Hawthorn, Crusader-Cruzam	X		Live				
BEQU-TR-P-82119	Willow, Weeping or Peking-Pe	X		Live				
BEQU-TR-P-82121	Planetree, London-Bloodgood	X		Live				
BEQU-TR-P-82125	Honeylocust, Shademaster	X		Live				
BEQU-TR-P-82126	Honeylocust, Shademaster	X		Live				
BEQU-TR-P-82127	Honeylocust, Shademaster	X		Live				
BEQU-TR-P-82128	Honeylocust, Shademaster	X		Live				
BEQU-TR-P-82130	Honeylocust, Shademaster	X		Live				
BEQU-TR-P-82133	Pagodatree, Japanese	X		Live				
BEQU-TR-P-82136	Pagodatree, Japanese	X		Live				
BEQU-TR-P-82142	Tuliptree	X		Live				
BEQU-TR-P-82147	Birch Clump, Heritage River-C	X		Live				
BEQU-TR-P-82148	Birch Clump, Heritage River-C	X		Live				
MAGN-TR-P-82246	Crabapple	X		Live				
MAGN-TR-P-82247	Crabapple	X		Live				
MAGN-TR-P-82248	Crabapple	X		Live				
MAGN-TR-P-82251	Crabapple	X		Live				
MAGN-TR-P-82252	Crabapple	X		Live				

MAGN-TR-P-82254	Maple, Red	X		Live				
MAGN-TR-P-82258	Spruce, White	X		Live				
MAGN-TR-P-82259	Sweetgum	X		Live				
MAGN-TR-P-82270	Spruce, White	X		Live				
MAGN-TR-P-82271	Planetree, London	X		Live				
MAGN-TR-P-82279	Maple, Crimson Sunset	X		Live				
MAGN-TR-P-82280	Maple, Crimson Sunset	X		Live				
MAGN-TR-P-82281	Maple, Crimson Sunset	X		Live				
MAGN-TR-P-82282	Pine, Scotch or Scots	X		Live				
MAGN-TR-P-82288	Sweetgum	X		Live				
MAGN-TR-P-82292	Linden, Littleleaf	X		Replaced #1 - same species				
MAGN-TR-P-82294	Oak, Northern Red	X		Live				
MAGN-TR-P-82295	Spruce, White	X		Live				
MAGN-TR-P-82298	Birch Clump, Heritage River-C	X		Live				
MAGN-TR-P-82301	Birch Clump, Heritage River-C	X		Live				
MAGN-TR-P-82303	Pine, Austrian	X		Live				
MAGN-TR-P-82306	Pine, Austrian	X		Live				
MAGN-TR-P-82307	Pine, Austrian	X		Live				
MAGN-TR-P-82310	Spruce, Norway	X		Live				
MAGN-TR-P-82314	Oak, Northern Red	X		Live				
MAGN-TR-P-82315	Pagodatree, Japanese	X		Live				
MAGN-TR-P-82317	Chokecherry, Common-Canad	X		Live				
MAGN-TR-P-82320	Linden, Littleleaf	X		Live				
MAGN-TR-P-82325	Tuliptree	X		Live				
MAGN-TR-P-82327	Pine, Austrian	X		Live				
MAGN-TR-P-82330	Chokecherry, Common-Canad	X		Live				
MAGN-TR-P-82335	Crabapple	X		Live				
MAGN-TR-P-82337	Oak, Northern Red	X		Live				
MAGN-TR-P-82338	Redwood, Dawn	X		Live				
MAGN-TR-P-82339	Linden, Littleleaf	X		Live				
MAGN-TR-P-82343	Spruce, White	X		Live				
MAGN-TR-P-82345	Sweetgum	X		Live				
MAGN-TR-P-82358	Linden, Littleleaf	X		Live				
MAGN-TR-P-82360	Ash, White-Autumn Purple	X		Live				
MAGN-TR-P-82361	Ash, White-Autumn Purple				vacant			
MAGN-TR-P-82364	Pagodatree, Japanese	X		Live				
MAGN-TR-P-82366	Spruce, White	X		Live				
MAGN-TR-P-82370	Crabapple	X		Live				
MAGN-TR-P-82371	Crabapple	X		Live				
HYHI-TR-P-82480	Honeylocust	X		Live				
HYHI-TR-P-82481	Honeylocust	X		Live				
HYHI-TR-P-82483	Linden, Littleleaf	X		Live				
HYHI-TR-P-82484	Linden, Littleleaf	X		Live				
HYHI-TR-P-82489	Linden, Littleleaf	X		Live				
HYHI-TR-P-82490	Linden, Littleleaf	X		Live				
HYHI-TR-P-82491	Honeylocust	X		Live				
HYHI-TR-P-82492	Honeylocust	X		Live				
HIHO-TR-P-82972	Hackberry	X		Live				
HIHO-TR-P-82976	Honeylocust, Shademaster	X		Live				
HIHO-TR-P-82978	Honeylocust, Shademaster	X		Live				
HIHO-TR-P-82979	Linden, Littleleaf-Greenspire				vacant			
HIHO-TR-P-82980	Linden, Littleleaf-Greenspire	X		Live				
MARI-TR-P-82984	Spruce, Colorado or Blue	X		Live				
MARI-TR-P-82990	Pine, Austrian	X		Live				
MARI-TR-P-82991	Spruce, White	X		Live				
MARI-TR-P-82997	Pine, Austrian	X		Live				
MARI-TR-P-83004	Maple, Sugar	X		Live				
MARI-TR-P-83005	Maple, Sugar	X		Live				
MARI-TR-P-83007	Oak, Northern Red	X		Live				
MARI-TR-P-83008	Maple, Norway-Crimson King	X		Live				
MARI-TR-P-83009	Pine, Austrian	X		Live				
MARI-TR-P-83010	Pine, Austrian	X		Live				
MARI-TR-P-83011	Spruce, White	X		Live				
MARI-TR-P-83016	Crabapple	X		Live				
MARI-TR-P-83018	Crabapple	X		Live				
MARI-TR-P-83023	Redwood, Dawn	X		Live				
MARI-TR-P-83026	Oak, Swamp White	X		Live				
MARI-TR-P-83049	Willow, Weeping	X		Live				
MARI-TR-P-83050	Pine, Scotch or Scots	X		Live				
MARI-TR-P-83058	Willow, Weeping	X		Live				
MARI-TR-P-83062	Pine, Austrian	X		Live				
MARI-TR-P-83063	Pine, Austrian	X		Live				
MARI-TR-P-83106	Linden, Littleleaf	X		Live				
MARI-TR-P-83108	Linden, Littleleaf	X		Live				
MARI-TR-P-83112	Pine, Limber	X		Live				
MARI-TR-P-83117	Birch Clump, Heritage River-C	X		Live				
MARI-TR-P-83118	Planetree, London	X		Live				
MARI-TR-P-83120	Spruce, Colorado or Blue	X		Live				
MARI-TR-P-83123	Pine, Limber	X		Live				
MARI-TR-P-83125	Chokecherry, Common-Canad	X		Live				
MARI-TR-P-83126	Willow, Weeping	X		Live				
MARI-TR-P-83128	Spruce, White	X		Live				
MARI-TR-P-83129	Spruce, White	X		Live				
MARI-TR-P-83131	Sweetgum	X		Live				
MARI-TR-P-83132	Sweetgum	X		Live				
MARI-TR-P-83134	Pine, Scotch or Scots	X		Live				
MARI-TR-P-83136	Birch Clump, Heritage River-C	X		Live				
MARI-TR-P-83139	Birch Clump, Heritage River-C	X		Live				

MARI-TR-P-83140	Pine, Scotch or Scots	X		Live				
MARI-TR-P-83141	Willow, Weeping	X		Live				
MARI-TR-P-83142	Oak, Swamp White	X		Live				
MARI-TR-P-83143	Redwood, Dawn	X		Live				
CHBW-TR-P-83555	Crabapple-Spring Snow	X		Live				
CHBW-TR-P-83556	Crabapple-Spring Snow	X		Live				
CHBW-TR-P-83557	Crabapple-Spring Snow	X		Live				
CHBW-TR-P-83559	Crabapple-Spring Snow	X		Live				
CHBW-TR-P-83560	Crabapple-Spring Snow	X		Live				
CHBW-TR-P-83566	Crabapple-Spring Snow	X		Live				
CHBW-TR-P-83572	Crabapple-Spring Snow	X		Live				
CHBW-TR-P-83576	Crabapple-Spring Snow	X		Live				
CHBW-TR-P-83582	Tuliptree	X		Live				
CHBW-TR-P-83583	Tuliptree	X		Live				
CHBW-TR-P-83586	Tuliptree	X		Live				
BOWL-TR-P-83595	Honeylocust, Shademaster	X		Live				
BOWL-TR-P-83598	Hornbeam, European	X		Live				
BOWL-TR-P-83599	Hornbeam, European	X		Live				
BOWL-TR-P-83601	Honeylocust, Shademaster	X		Replaced 1-same species				
BOWL-TR-P-83605	Hornbeam, European	X		Live				
BOWL-TR-P-83606	Crabapple-Spring Snow	X		Live				
BOWL-TR-P-83608	Chokecherry, Common-Canada	X		Live				
BOWL-TR-P-83612	Pine, Scotch or Scots	X		Live				
BOWL-TR-P-83614	Linden, American	X		Live				
BOWL-TR-P-83615	Linden, American	X		Live				
BOWL-TR-P-83616	Linden, American	X		Live				
BOWL-TR-P-83617	Oak, Northern Red	X		Live				
BOWL-TR-P-83628	Oak, Northern Red				vacant			
BOWL-TR-P-83629	Spruce, Colorado or Blue	X		Live				

Directions

Using the information you provide and background data, the tool calculates the amount of Credits that could be issued at years 1 (10%), 3 (40%), and 5 (30%) after planting. A mortality deductions (% loss) is applied to account for anticipated tree losses (Cell D6). A 5% buffer pool deduction is applied that will go into a program-wide pool to insure against catastrophic loss of trees. This tool is used to determine credits issued after planting (Intial Crediting). A different tool is used for credit issuance in Years 4 and 6. The tool in those years requires calculation of a sample and collection of data on tree status in the sample sites.

Mortality Deduction (%):	10%

Table 3. Credits are based on 10%, 40%, and 30% at Years 1, 3, and 5 after planting, respectively, of the projected CO_2 stored by live trees 25-years after planting. These values account for anticipated tree losses and the 5% buffer pool deduction.

						10%	40%	30%	20%	
	No. Sites Planted	**No. Live Trees**	**Mortality Deduction (%)**	**25-yr CO_2 stored (kg/tree)**	**Tot. 25-yr CO_2 stored w/ losses and 5% deduction (t)**	**10% CO_2 (t)**	**40% CO_2 (t)**	**30% CO_2 (t)**	**20% CO_2 (t)**	
BDL	184	166	0.10	2,587.18	407.0	40.70	162.81	122.10	81.40	
BDM	59	53	0.10	1,224.19	61.8	6.18	24.70	18.53	12.35	
BDS	90	81	0.10	658.91	50.7	5.07	20.28	15.21	10.14	
BEL	0	0	0.10	0.00	0.0	0.00	0.00	0.00	0.00	
BEM	0	0	0.10	0.00	0.0	0.00	0.00	0.00	0.00	
BES	0	0	0.10	0.00	0.0	0.00	0.00	0.00	0.00	
CEL	105	95	0.10	472.49	42.4	4.24	16.97	12.73	8.48	
CEM	16	14	0.10	421.75	5.8	0.58	2.31	1.73	1.15	
CES	0	0	0.10	0.00	0.0	0.00	0.00	0.00	0.00	
	454	409	0.10		567.7	56.77	227.06	170.30	113.53	
										sumcheck
				Credits issued	568	57	227	170	114	568

In Table 4 the tool infers the amount of CO_2 stored after 25 years from the sample to the population of live trees. Values in column H account for anticipated tree losses and the 5% buffer pool deduction.

Table 4. Grand Total CO_2 Stored after 25 years (all live trees, includes tree losses and buffer pool deduction)

Tree-Type	No. Sites Planted	Mortality Deduction (%)	Total Live Trees After Mortality	25-yr CO_2 stored (kg/tree)	CO_2 Tot. - No Deductions (t)	Grand Total CO_2 w/ Deductions (t)
Brdlf Decid Large (>50 ft)	184	0.10	166	2,587.18	476.0	407.0
Brdlf Decid Med (30-50 ft)	59	0.10	53	1,224.19	72.2	61.8
Brdlf Decid Small (<30 ft)	90	0.10	81	658.91	59.3	50.7
Brdlf Evgrn Large (>50 ft)	0	0.10	0	0.00	0.0	0.0
Brdlf Evgrn Med (30-50 ft)	0	0.10	0	0.00	0.0	0.0
Brdlf Evgrn Small (<30 ft)	0	0.10	0	0.00	0.0	0.0
Conif Evgrn Large (>50 ft)	105	0.10	95	472.49	49.6	42.4
Conif Evgrn Med (30-50 ft)	16	0.10	14	421.75	6.7	5.8
Conif Evgrn Small (<30 ft)	0	0.10	0	0.00	0.0	0.0
	454		409		663.9	567.7

Directions

In Table 5, enter the low and high price of CO_2 in $ per tonne (t).

This table incorporates error estimates of ±15% to the high and low estimates of the total CO_2 (t) stored by the live tree population after 25 years. For planning purposes only, it calculates dollar values.

Table 5. CO_2 value

	CO_2 $ per tonne
Low	$19.00
High	$34.00

Table 6. Summary of CO_2 stored after 25 years (all live trees, includes tree losses)

Tree-Type	Total CO_2 (t) at 25 years	Low $ value	High $ value
Brdlf Decid	519.5	$9,870.00	$17,662.10
Brdlf Evgrn	0.0	$0.00	$0.00
Conif Evgrn	48.2	$915.56	$1,638.37
Total	567.7	$10,785.55	$19,300.47
	CO_2 (t)	**Total $**	**Total $**
Grand Total CO_2 (t) at 25 years:	567.7	$10,785.55	$19,300.47
High Est. with Error:	652.8	$12,403.39	$22,195.54
Low Est. with Error:	482.5	$9,167.72	$9,167.72
± 15% error = ± 10% formulaic ± 3% sampling ± 2% measurement			

Using the information you provide and background data, the tool provides estimates of co-benefits after 25 years in Resource Units per year and $ per year.

Table 7. Co-Benefits PER YEAR after 25 years (all live trees, includes tree losses)

Ecosystem Services	Resource Units Totals	Resource Unit/site	Total $	$/site
Rainfall Interception (m3/yr)	2,523.31	5.56	$5,199.38	$11.452
CO_2 Avoided (t, $20/t/yr)	2.43	0.01	$48.57	$0.107
Air Quality (t/yr)				
O3	0.1172	0.0003	$1,293.28	$2.849
NOx	0.0126	0.0000	$353.95	$0.780
PM10	0.0500	0.0001	$1,037.52	$2.285
Net VOCs	-0.1198	-0.0003	-$1,239.13	-$2.729
Air Quality Total	0.0600	0.0001	$1,445.61	$3.18
Energy (kWh/yr & kBtu/yr)				
Cooling - Electricity	84,571.85	186.28	$9,861.08	$21.72
Heating - Natural Gas	390,109.87	859.27	$4,854.67	$10.69
Energy Total ($/yr)			$14,715.75	$32.41
Grand Total ($/yr)			$21,409.31	$47.16

$535,232.87

Planting Attestation of Additionality

Treasure Valley Municipal Parks Planting Project
Attestation of Additionality

I am the Executive Director of the Treasure Valley Canopy Network and make this attestation regarding additionality from this tree planting project, Treasure Valley Municipal Parks Planting Project.

- Project Description
    - The Project that is the subject of this attestation is described more fully in both our Application and our Project Design Document (PDD), both of which are incorporated into this attestation.
- Legal Requirements Test (Protocol Section 1.8)
    - Project trees are not required by law or ordinance to be planted (except for replacement trees planted in place of removed trees for specific reasons).
- The Project did not plant trees on sites that were converted out of a forest use or that were cleared of healthy, non-invasive trees and then planted with project trees (Protocol Section 1.9)
- Project-Specific Baseline or Performance Standard Baseline
    - Project trees are additional based on a project specific baseline. See PDD; or
- Project Implementation Agreement for Project Duration
    - Treasure Valley Canopy Network has signed a Project Implementation Agreement with City Forest Credits for 26 years.
- The 26-year Project Duration commitment is additional to and longer than any commitment Treasure Valley Canopy Network makes to non-carbon project tree plantings.
- Financial Additionality
    - A successful afforestation carbon project goes beyond tree planting to ensure survival of the trees to a healthy maturity at 26 years after the Project start date. These Project Trees are at risk during all stages of this project. The Project Operator has no guaranteed source of long-term maintenance funding outside of the carbon revenues.
    - The revenue from the sale of carbon credits will play a material role in the successful and durable storage of Project Trees' carbon stock by providing funding that will help ensure the establishment and long-term health of Project Trees.
- Prior Consideration: Treasure Valley Canopy Network investigated the opportunity to partner with City Forest Credits (CFC) in 2017/2018 following completion of the Treasure Valley Carbon Assessment in partnership with The Nature Conservancy in Idaho. As an early adopter in the CFC Program, we have learned a lot and there have been plenty of changes, but several years ago when our project was verified and we sold credits through the national sale, our investment finally paid off! We see this project with the City of Boise as a pilot to continue to learn and investigate the feasibility of growing this program throughout our service area in Idaho.

- In addition, many of the activities undertaken as part of the carbon project are beyond the Project Operator's common practice, including:
    - Project design (species and planting selection) to maximize carbon storage
    - Care through establishment phase (up to/through Year 3)
    - Long-term maintenance
    - Long-term monitoring and growth assessment
    - Acceptance of reversal obligations
    - Long-term legal commitment to the project

Signed on March 11th in 2025, by Lance Davisson, for Treasure Valley Canopy Network.

Lance Davisson
Signature

Lance Davisson
Printed Name

208-994-1135
Phone

director@tvcanopy.net
Email

Geocoded Photos

Can be provided in a zipped file by request.