

FiniteCarbon

Offset Project Data Report

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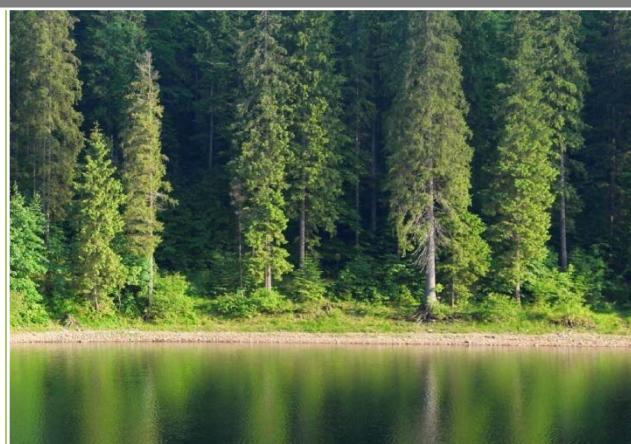
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FORESTRY
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FINANCE

Finite Carbon – The Forestland Group Champion Property IFM (CAR1088/CAFR5089)

CA EPA Air Resources Board Compliance Offset Protocol
U.S. Forests Projects: Improved Forest Management

Adopted: October 20, 2011

Initial/Annual OPDR for Reporting Period: 1/1/2013 – 08/31/2014



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1. Introduction

California’s Cap and Trade Regulation (“Regulation”) took effect on January 1, 2012, with amendments to the Regulation effective September 1, 2012. The enforceable compliance obligation began on January 1, 2013. The Air Resources Board (ARB) has developed and implemented a compliance offset program as part of Cap and Trade Program. Covered entities may use a limited number of ARB offset credits to fulfill up to 8% of their compliance obligation. Offset credits are tradable compliance instruments that represent verified greenhouse gas (GHG) emission reductions or removal enhancements made in sectors and sources not covered by the Cap and Trade Program.

The ARB U.S. Forest Projects Compliance Offset Protocol adopted on October 20, 2011 (“Forest Offset Protocol”; “Protocol”; COP; or FOP) provides requirements and methods for quantifying the net climate benefits of activities that sequester carbon on forestland. The protocol provides offset project eligibility rules; methods to calculate an offset project’s net effects on GHG emissions and removals of CO₂ from the atmosphere (removals); procedures for assessing the risk that carbon sequestered by a project may be reversed (i.e. released back to the atmosphere); and approaches for long term project monitoring and reporting. The goal of this protocol is to ensure that the net GHG reductions and GHG removal enhancements caused by an offset project are accounted for in a complete, consistent, transparent, accurate, and conservative manner and may therefore be reported as the basis for issuing ARB or registry offset credits. The protocol is built off of The Climate Action Reserve’s Forest Project Protocol Version 3.2.

Finite Carbon is a forest carbon project developer specializing in the creation and monetization of forest carbon offsets. Combining unparalleled project development experience with extensive carbon market knowledge, Finite Carbon offers the most comprehensive forest carbon project development and commercialization service in the United States. With an in-house team of forest carbon experts, Finite Carbon provides all the expertise and resources for successful implementation of forest carbon inventories, project design, verification management and monetization of carbon offset.

This document is the Offset Project Data Report (OPDR) for *Finite Carbon – The Forestland Group Champion Property IFM* (“Champion Carbon”), assigned by the Climate Action Reserve, which is an ARB approved Offset Project Registry (OPR), as Project ID: CAR1088. The OPDR and all other project documentation and reports that reference carbon stocks has been prepared and submitted by Tim McAbee, SAF Certified Forester (No. 3789) and satisfies the professional forester¹ requirements outlined in the FOP, section 9.1. In addition, certain appendices referenced throughout the OPDR have been made proprietary and are removed for purposes of protecting private information. These appendices serve as supplemental documentation for verification purposes. The appendices that have been removed are F, H, J and M and are also designated in the Table of Contents under the List of Appendices with the word “Proprietary” and the end of the file name and/or document title. The geodatabase of the project area is also not included as it is in an electronic GIS format.

Champion Carbon is an Improved Forest Management (IFM) project (the “Project”) developed and implemented using the ARB FOP. The project is located in the Adirondack Region of New York State (Figure 1).

¹ The project is located in a jurisdiction (State of NY) without a Professional Forester law or regulation; accordingly oversight by a SAF Certified Forester has been employed to maintain professional standards and project quality.

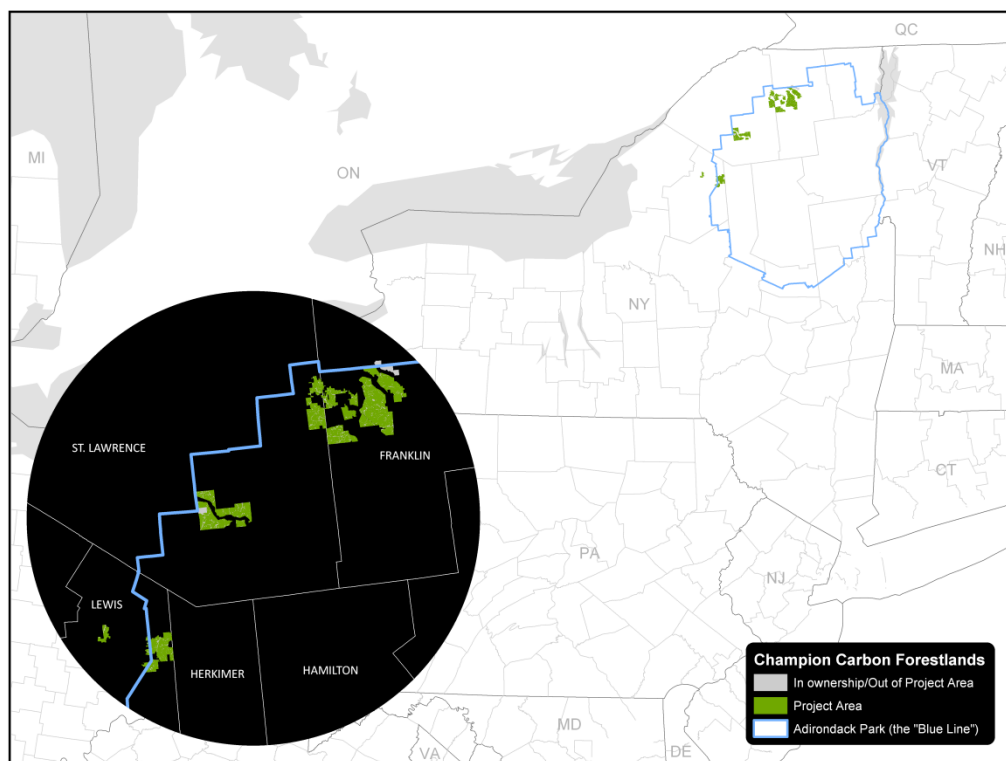


Figure 1. Project Location

The primary goal of the project is to generate carbon offset credits fashioned by the investment objectives of the forest owners (see 2.2 Forest Owner). The forest owners' strategy is to maintain and increase additional forest carbon stock by integrating carbon budget analyses into their short and long term silvicultural activity planning. The Offset Project Operator (OPO) information is listed below in Table 1. The project was initiated in April of 2009 when the OPO made a commitment to employ practices and technologies that will maintain or increase net carbon stocks. The OPO has engaged Finite Carbon as the project developer consultant and Authorized Project Designee (APD).

Table 1. Offset Project Operator Summary

Offset Project Name/OPR Project ID:	Finite Carbon – The Forestland Group Champion Property IFM/CAR1088
ARB Project ID:	CAFR5089
Offset Project Commencement Date:	04/22/2009
First Reporting Period Start Date:	01/01/2013
First Reporting Period End Date:	08/31/2014
OPO Contact Person Name and Person Completing Report:	Kaarsten Turner Dalby

OPO Name & Mailing Address:	Heartwood Forestland Fund, III P.O. Box 9162 Chapel Hill, NC 27515
OPO Contact Email Address:	kaarsten@forestlandgroup.com
OPO Contact Phone Number:	919-929-2497
OPO's CITSS ID#:	CA1520
APD Contact Person Name:	Sean Carney
APD Name & Mailing Address:	Finite Carbon Corporation 435 Devon Park Drive, 700 Building Wayne, PA 19087
APD Contact Email Address:	scarney@finitecarbon.com
APD Phone Number:	484-949-3080
APD's CITSS ID#:	CA1530
Original Submittal Date of OPDR:	24 November 2014
Date of Last Full (On-Site) Verification:	December 2014

There is an Authorized Project Designee for this project. This report is being submitted for a verification year which is also its initial reporting year for an Improved Forest Management project.

1.1 Project Area Description

The project area is located in New York with a majority of it falling within the Adirondack Park Preserve. The project area is not contiguous, but rather grouped into three tracts: Santa Clara, Tooley Pond and Croghan (as labeled in Figure 2). The Town of St. Regis Falls is most close to the Santa Clara tract. The Tooley Pond tract lies between the towns of Fine and Cranberry Lake, north of Route 3. The Croghan tract is situated near the Town of Croghan, north of Route 26 (also known as Number Four Road). Major towns and roads are shown in a map as Appendix A. Map_TownsRoads.pdf.

The property spans across several different drainage basins including the St. Lawrence River (Santa Clara and Tooley Pond tracts) and the Black River (Croghan tract). Major watercourses on the Santa Clara tract are the East Branch of the St. Regis River and the East Branch of Deer River. The South Branch of the Grasse River flows through the Tooley Pond tract. The major natural channels on the Croghan tract are Beaver River and Indian River. All of the tracts have a network of tributaries that feed into the major watercourses. These streams along with areas of wetlands, bogs, and ponds strengthen the hydrologic connectivity of the property, which is also representative of the Adirondack region. A map of the major watercourses is provided as Appendix B. Map_Watercourses.pdf.

The topography is typical of the Adirondack region. The land consists of a region of rolling terrain and low to moderate mountains. The terrain features are generally not severe with only a number of small mountains and ridge tops found scattered across the property ranging in elevation from 1,900 to 2,300 feet. Overall, topography plays a minimal role in limiting forest operations. In some areas, there are broad wetlands that impair cross country travel but due to excellent roads that were designed to allow for access between the ridges and wetlands, nearly the entire property is readily accessible for management. A map showing topography across the project area is provided as Appendix C. Map_Topography.pdf.

Due to its location, the project is not in an area that is part of the Public Land Survey System. However, a map of the surrounding counties and townships are provided in a map as Appendix D. Map_CountyTwnshp.pdf.

1.2 Land Cover and Land Use: Past and Present

This project area has a long history of forest management and commercial ownership in its current composition. The St. Regis Paper Company acquired the bulk of the lands in 1927 as a fiber supply source for the St. Regis paper

mill in Deferriet, New York. An interesting historical foot note is that much of the land in New York, along with more than 300,000 acres in Vermont and New Hampshire, was purchased as part of an agreement with the Montgomery Ward company. Montgomery Ward contracted with St. Regis to produce their catalog and wanted assurances that St. Regis would have a sufficient timber base to make the paper needed for the then very popular Ward's catalog. The Champion Paper Company, Incorporated purchased the St. Regis Paper Company in 1984. Champion acquired 144,000 acres in New York along with acreage in Vermont, New Hampshire and Maine. At its highest point, Champion's total assets in the region were in excess of one million acres of timberland, two pulp mills (in NY and ME) and a stud mill in Costigan, Maine. In 1998-99 Champion (CIC) disposed of the Deferriet pulp mill and the majority of its New York, Vermont and New Hampshire lands. The acquisition of 114,000 acres in New York State by HFF III was a joint effort with New York State DEC as brokered by The Conservation Fund of Arlington, Virginia.

The forests of the former Champion lands have been managed under an even-aged and industrial scheme for nearly 70 years. Historically, diameter limit harvests were the norm, with reduced stocking of crop trees often the outcome. The lack of consistent hardwood pulp markets limited silviculture in the majority of the past harvests. In addition, the need to supply softwood to the Deferriet pulp mill (associated with these lands since 1927) strongly impacted management schemes and objectives.

While some of the CIC lands are well stocked and comprised of desirable growing stock, there is plenty of room for improvement due to past practices (diameter limit harvests, selective cutting for softwood, and commercial clear cutting on softwood sites).

Like much of the Adirondack Region of New York there has been insignificant agricultural use of these lands (primarily adjacent to village areas). The one exception is the former village of Clifton that was centered around an iron ore operation along the Tooley Pond Road and the Grasse River that in the 1860's was a significant community (now encompassed in NYS DEC fee lands). The remainder of the land has been owned and utilized as commercial forestland for more than 200 years. The use history begins in the later part of the 19th century as timber barons began acquiring land from the original land grants. The first harvests, in the late 1800's were generally for "first cut" Red spruce and White pine, followed quickly by "veneering" mostly for yellow birch. As the rail lines were put in shortly after the turn of the century, heavy cutting ensued. That round of cutting, abetted by the great fires of 1905-1915, (usually started by sparks from the engines), laid waste to much of the Adirondack forest and spawned both the Adirondack Park, and the current generation of trees on this forest. Black cherry, which is renowned throughout the northeast, is a by-product of large fires that swept this region in the early 1900's.

As time passed, the lands were put under management by St. Regis; which by all accounts did a reasonably good job of managing the softwoods and had a relatively light (albeit extractive) hand in the hardwoods. When Champion acquired St. Regis in the mid-80's harvesting levels were stepped up (due in part to the longer reach for hardwood pulp by Domtar and Finch), and much of the ground was covered with a combination of shelterwood harvesting, diameter limit thinnings, and even-aged management in Spruce-fir (which sometimes took the form of commercial "so-called Adirondack" clearcuts).

Other influences that continue to have an impact on the forests of these lands are the hunt club leases and the club's influence on deer management. In some areas, deer play a large and very often detrimental, role in forest regeneration. The feeding programs, in conjunction with the bucks only hunting philosophy, promoted and supported by the clubs, has led to populations of deer that exceed sustainable carrying capacities. Subsequent negative impacts on desirable advanced hardwood regeneration are common due to selective browsing, i.e., deer have preference for sugar maple and black cherry and tend to bypass beech and spruce. Consequently long-term stand dynamics are negatively altered. Too often, stands are treated and either deer have removed regeneration that has become established from past management or their browsing soon removes newly developed regeneration. This has led to stands that are either understocked or stocked with a poor species composition in the understory. Beech and/or noncommercial grasses and shrubs typically dominate understories where deer populations are excessive.

Finally, all project lands within the Adirondack Park are subject to the regulations, zoning laws and land-use permitting process of the Adirondack Park Agency (APA). The APA is a New York State government agency, consisting of approximately 54 staff and an eleven-member board. In 1971 the APA was created by the State Legislature to develop long-range land use plans for both public and private lands within the Park. The APA's role relative to this project are reviewed in detail in Section 3 and 6 of this OPDR.

1.3 Forest Types, Flora and Fauna

From a regional perspective, the project area is located in the Northern Forest Region of the Eastern United States. Accordingly, forest types that exist in the project area include Spruce-fir; Pine and hemlock; Northern hardwoods; and Other Northern types. The most common forest type in the Project Area is Northern hardwoods. Species composition associated with this forest type include sugar maple, American beech, yellow birch, basswood, red maple, eastern hemlock, butternut, northern white-cedar, white ash, black cherry, sweet birch, northern red oak, white pine, yellow-poplar, balsam fir, American elm, rock elm, red spruce, white spruce and eastern hophornbeam. Some of the young stands and other patches in early succession may exhibit paper birch, pin cherry, and quaking and bigtooth aspen.

The project area supports a diverse and varied set of plant and animal species, which are common throughout the Adirondacks. The flora and fauna associated with the project area is best understood with a discussion of the four major ecotypes found on the property.

Spruce-fir flats: This eco-type is found on the lower elevation flats, adjacent to wetlands and bogs. Quite often they contain pure Spruce-fir types, e.g., red spruce and balsam fir that grow on shallow and poorly drained soils. Pockets of sphagnum and other mosses are scattered among an otherwise empty forest floor.

Low & Mid-Slope Types: As the forest moves up the slope from the softwood flats mixedwood and hardwood types dominated by red maple, yellow birch, and red spruce begin to prevail. These are variable stand-types, locally termed "R-Types" for their prevalent red maple component. On the low-rolling topography where these types are located there is often impeded drainage, limiting the ability of sugar maple and ash to compete. In many cases these would be mixedwood types, but the spruce has been selectively removed. At its best this type produces nice pockets of yellow birch and red spruce in the low-lying areas and red maple/black cherry on the knolls. The vegetation in the understory is typically comprised of honey suckle, American beech, witch-hobble, striped maple, woodsorrel, bunchberry, and ferns and mosses.

Upland Mid-Slope Hardwood Types: These are the most productive and valuable sites in the Adirondack Region. The over story of this type is predominately sugar maple, American beech, and yellow birch, but often black cherry and red maple are abundant depending on the age of the stand. These mesic sites produce high quality timber, and have the best long-term potential for increasing stand value through silviculture. They are found on well drained lower slopes and reach their best development on mid-slopes. Vegetation associated with the understory is likely to include seedlings of from overstory species, striped maple, witch-hobble, witch-hazel, viburnums and serviceberry seedlings, hay-scented fern, and bracken.

Upper Slope Mixedwood: The limited acreage of this ecotype found on the Project Area is on inferior hardwood sites (generally shallow to bedrock) and are dominated by American beech, sugar maple, yellow birch, red spruce. Red maple and black cherry are usually only minor components. This ecotype represents a transition zone between the northern hardwood and the mountain conifer communities.

Mammals commonly found on the property include opossums, shrews, moles, rabbits, bats, coyotes, fox, skunks, raccoons, black bear, beavers, mice, voles, porcupines, squirrels, and white-tailed deer. A variety of amphibians and reptiles also occur on the property including salamanders, newts, frogs, toads, turtles, and snakes. Many species of birds are evident in and close to the property as well, including the American woodcock, hairy woodpecker, pileated woodpecker, yellow-bellied sapsucker, winter wren, ruby-crowned kinglet, wood thrush, veery, red-eyed vireo, black-throated green warbler, ovenbird, rose-breasted grosbeak, scarlet tanager, dark-eyed junco, white throated sparrow, song sparrow, chipping sparrow, eastern wood-peewee, pine siskin, common loon,

great horned owl, barred owl, northern saw-whet owl, American robin, eastern bluebird, alder flycatcher, and black capped chickadee.

2. Project Definition and Requirements

2.1 Project Type

Champion Carbon is an *Improved Forest Management* project type and the forest owner declares:

1. The project area takes place on forestland that has greater than 10 percent tree canopy cover. In 2009, the project area was estimated to have 69 percent tree canopy cover. In 2014, canopy cover increased to 72.9 percent. Percent Canopy Cover (PCC) is the percentage of the ground area that is directly covered with tree crowns and was computed from inventory data for each stratum². See the Worksheet Calculations file and Appendix O. Canopy Cover RP1 v1.0.pdf for verification purposes.
2. The project employs natural forest management practices as defined in Section 3 of the FOP and demonstrated by its ongoing forest certification under the Forest Stewardship Council (FSC) program administered by Rainforest Alliance – SmartWood (Certificate Registration Code: RA-FM/COC-000092).
3. The project does not employ broadcast fertilization.
4. Previously Listed and/or Registered Forest Offset Project Details:
 - a. ☒ (N/A if not checked): The offset project is an early action offset project transitioning to the FOP according to the provisions of the Regulation and the FOP.
 - i. Early Action OPR: Climate Action Reserve
 - ii. Early Action OPR Project ID: CAR645
 - iii. Early Action ARB Project ID: CAFR0080
 - iv. Reporting Periods: 04/22/2009 – 12/31/2012
 - v. Vintages: 2009-2012
 - vi. Total number of Early Action Offset Project ARBOCs Issued: 166,918

ARB Project ID # by Reporting Period	Vintage Year	ARB Offset Credits Issued/ Vintage Year	ARB Offset Credits in Forest Buffer Account	Date of ARB Issuance	Invalidation Timeframe	Start of Invalidation Timeframe
CAFR0080-A	2009	27,073	5,208	11/12/2014	8 years	11/12/2014
CAFR0080-B	2010	43,826	8,430	11/12/2014	8 years	11/12/2014
CAFR0080-C	2011	47,632	9,163	11/12/2014	8 years	11/12/2014
CAFR0080-D	2012	48,387	9,308	11/12/2014	8 years	11/12/2014
Total		166,918	32,109			

- vii. The offset project can demonstrate it has met all legal and contractual requirements to allow it to terminate its project relationship with the voluntary offset program and be listed using this compliance offset protocol.
 - b. ☐ (N/A if not checked): No GHG reductions or GHG removal enhancements associated with the Project lands have ever been listed or registered with, or otherwise claimed by, another registry or program, or sold to a third party prior to listing, including;
 - i. No lands within the Project Area have ever been listed or registered with an offset project registry or program in the past.
 - ii. No greenhouse gas emission reductions or removal enhancements associated with Project lands within the Project area have been credited or claimed for the purpose of greenhouse gas mitigation or reduction goals, whether in a voluntary or regulatory context.
5. The project takes place on private lands.

² Dixon 2002 and Crookston and Stage 1999

2.2 Forest Owner

For the initial reporting period (01/01/2013 – 08/31/2014, the subject reporting period being verified under this OPDR) there was one forest owner, Heartwood Forestland Fund III, LP (“HFFIII”). HFFIII was also the sole owner in fee of the project area forestlands (see evidence of ownership submitted with the Listing Application, *CAR1088 List Attachment A.pdf*). In November 2014, the project area forestlands were purchased in fee from HFFIII by Jackson Timberland Opportunities-Champion, LLC (“JTO”) (see evidence of ownership submitted for verification purposes, *CAR1088 Supplemental Ownership Evidence v1.0.zip*). However, HFFIII retained a deeded interest in the real property, namely the rights, privileges and easements to establish, verify and sell carbon offset credits generated (but not necessarily issued) from the property before January 1, 2014. Furthermore, HFFIII has the right to be the OPO and project owner for this initial reporting period. HFFIII’s rights to all offsets generated before January 1, 2014 expire 8 years after the issuance of their reserved offset credits. Evidence of ownership of these interests has been provided for verification purposes (see *CAR1088 Supplemental Ownership Evidence v1.0.zip*). While both forest owners hold interests in the real property involved in this forest project, the OPO for the initial reporting period has been identified as HFFIII (see Table 1) and as such is responsible for undertaking, listing, and verifying this Project.

No other entity besides the forest owners stated above has control over the forest or management beyond that prescribed in the conservation easement held by the State of New York. The fee forest owner and the easement holder convene once a year to discuss the forest owner’s activity plans and ensure they are consistent with the terms as outlined in the easement. All information submitted to ARB or an Offset Project Registry shall reference the Offset Project Operator and all Forest Owner(s) who are ultimately responsible for the accuracy and completeness of the information submitted.

3. Eligibility Rules and Other Requirements

3.1 Additionality

The Project yields surplus GHG emission reductions or removal enhancements that exceed any GHG reductions or removals otherwise required by law or regulation, or any GHG reduction or removal that would otherwise occur in a conservative Business-As-Usual Scenario and according to ARB's legal requirement and performance tests. The project is not being implemented and conducted as the result of any law, statute, regulation, court order, or other legally binding mandate.

3.1.1 Legal Requirement Test

The project only asserts claims on emission reductions and removals that are above and beyond all laws, regulations and legally binding mandates for purposes of additionality. Table 2 list all rules and regulations that were reviewed and considered as part of quantifying GHG removals and reductions and ensuring legal additionality.

Table 2. Evaluation of Rules and Regulations subject to the Project Area

Rule/Regulation	Description	Notes
Conservation Easement	The easement is considered a "working forest conservation easement", with the primary goal of perpetuating the property as a sustainable working forest.	Not all lands in project area are subject to the conservation easement. In 2012, New York State and Heartwood Forestland Fund III, LP, amended the conservation easement agreement to allow the landowner to continue leasing recreational camps on the former Champion lands in Franklin, Herkimer, Lewis and St. Lawrence Counties. These conservation easement lands include the Croghan Tract, the Santa Clara Tract and the Tooley Pond Tract. In exchange, Heartwood Forestland will transfer 2,797 acres (actual GIS acres transferred: 2,814) of valuable wildlife habitat in the Deer River corridor to the state. http://www.dec.ny.gov/lands/81388.html
Adirondack Park Agency Act Rules and APA Rules and Regulations	This also includes the Freshwater Wetlands Act (Environmental Conservation Law, article 24) within the Adirondack Park and, for private lands within the Adirondack Park, the state's Wild, Scenic and Recreational Rivers System Act (Environmental Conservation Law, article 15, title 27).	Only lands within the Blue Line are subject to APA rules and regulations. www.apa.state.ny.us/
New York State Department of Environmental Conservation (NYSDEC) Timber Harvesting Guidelines	These guidelines deal with problems caused by soil erosion, siltation and inattention to aesthetics. They include all the best management practices recommended for timber harvesting in New York State, plus additional aesthetic practices.	These otherwise voluntary guidelines are a requirement of the conservation easement. www.dec.ny.gov/lands/5240.html
National Wild & Scenic Rivers Act	The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with	There are no nationally designated wild and scenic rivers in or around the project area.

	outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.	www.rivers.gov/
NYS Wild Scenic and Recreational Rivers Act	The state's Wild Scenic and Recreational Rivers Act protects those rivers of the state, <i>excluding those on private lands in the Adirondack Park</i> , that possess outstanding scenic, ecological, recreational, historic, and scientific values. These attributes may include value derived from fish and wildlife and botanical resources, aesthetic quality, archaeological significance and other cultural and historic features.	There are no state designated wild and scenic rivers in or around the project area situated outside of the Adirondack Park. www.dec.ny.gov/lands/32739.html
NYS Freshwater Wetlands Act	The Act protects those wetlands larger than 12.4 acres (5 hectares) in size, and certain smaller wetlands of unusual local importance. In the Adirondack Park, the Adirondack Park Agency (APA) regulates wetlands, including wetlands above one acre in size, or smaller wetlands if they have free interchange of flow with any surface water. The law requires DEC and APA to map those wetlands that are protected by the Act. In addition, the law requires DEC and APA to classify wetlands. Inside the Adirondack Park, wetlands are classified according to their vegetation cover type. Outside the Park, DEC classifies wetlands according to 6NYCRR Part 664, Wetlands Mapping and Classification Regulations from Class 1, which provide the most benefits, to Class IV, which provide the fewest benefits. Around every regulated wetland is a regulated adjacent area of 100 feet, which serves as a buffer area for the wetland.	This applies to project area lands outside of the Adirondack Park. Selective cutting of trees and harvesting of fuel wood (not clear-cutting) do not require a permit. www.dec.ny.gov/lands/5133.html www.dec.ny.gov/permits/6279.html
Endangered Species Act (ESA)	The Endangered Species Act (ESA) provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing ESA are the U.S. Fish and Wildlife Service (FWS) and the U.S. National Oceanic and Atmospheric Administration (NOAA) Fisheries Service. The FWS maintains a worldwide list of endangered species. Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees.	Forest management impacts on endangered plant and animal habitat are considered in the conservation easement and APA rules and regulations. Otherwise, the ESA does not affect additionality of project GHG reductions and removals. www.epa.gov/lawsregs/laws/esa.html
Local Ordinances	n/a	There are no local ordinances or regulations in the towns or counties of the project area that affect timber harvesting, only APA and general state and federal regulations.

The two legal requirements that affect the project most are:

1. Conservation Easement (executed in 1999 at acquisition)
2. Adirondack Park Agency Regulations

The project must comply with these legal requirements which are further described below before it voluntarily yields surplus emission reductions.

Conservation Easement

The People of the State of New York, acting by and through the Department of Environmental Conservation (DEC) hold a conservation easement on the majority of the project area. All lands subject to the easement are situated inside the Adirondack Park (Figure 2).

The easement is considered a “working forest conservation easement” with the primary goal of perpetuating the property as a sustainable working forest. This includes encouraging the long-term, professional management of forest resources and facilitating the biologically and economically sustainable production of forest resources while minimizing the impacts on water quality, scenic benefits, wildlife habitat, recreational and other conservation values.

The easement provides limited public access and use rights for forest recreation purposes. Types of recreation include hiking/backpacking, orienteering, mountain biking, snow-shoeing, cross-country skiing, bird watching and horseback riding. Access by canoe and other waterborne travel on streams or bodies of water crossing or situated on the property is also permitted. The use of motor vehicles, snow mobiles, and all-terrain vehicles are allowed in designated Motorized Access Corridors which are marked by signs. There is also camping in designated camping sites. The DEC, as the easement holder and administrator, has the right to construct and maintain new trails for foot, bicycle, or horseback travel, to construct and maintain new parking lots, and to construct and maintain new Motorized Access Corridors in addition to those which may already exist, so as long as these do not interfere with TFG’s Reserved Right of Forest Management. To ensure that part of the property is always open for recreationists, no more than 10 percent of the protected area is allowed to be closed for logging operations at any one time.



Figure 2. Constraints relative to Project Area

The easement impacts the trees and standing timber by implying the following minimum regeneration standards and harvest restrictions:

- Regeneration standards – stand density shall not be reduced below the C-line of the appropriate silvicultural guides for the forest type being treated unless one of the following conditions is met: (i) sufficient regeneration is present or (ii) insufficient regeneration and site conditions warrant a regeneration harvest.
- Harvesting restrictions – the following restrictions are designed to create a sustained yield of forest products and prevent liquidation harvest practices: (i) no clear cut will exceed 25 acres in area (size); (ii) any clear cut must be in compliance with Adirondack Park Agency laws and any other applicable laws; (iii) for the first 20 years of the Conservation Easement, harvest levels are restricted to a volume that does not exceed 70 percent of the periodic annual growth – defined as the total volume of wood produced by all

growing stock trees (all trees of commercial species found in seedling, sapling, pole timber, and saw timber size classes) in the forest net the losses attributable to mortality; and (iv) after the initial 20-year period, harvest levels shall only be restricted to periodic annual growth on growing stock trees.

These restrictions were designed to prevent large-scale liquidation harvest practices and impose a minimum performance level on regeneration and timber harvest activities.

Additionally, the public is allowed to utilize dead or downed trees (only) for purposes of onsite cooking, and warming of smudge. Emission effects from this provision are deemed insignificant for this project and not accounted for. Finally, the easement requires the forest owner to develop and follow a written management plan developed by a professional forester to ensure the property's other natural resources are minimally impacted. Overall, the project baseline meets or exceeds the legal terms of the easement and only carbon stocks above the baseline are additional. The terms and conditions of the easement are more fully described in the modeling characterizations in Section 6.

Adirondack Park Agency Rules & Regulations

Almost the entire property ownership is within the Adirondack Park boundary (95 percent). The Adirondack Park was created in 1892 by the State of New York amid concerns for the water and timber resources of the region. It is the largest publicly protected area in the contiguous United States. The boundary of the Park (commonly referred to as the "Blue Line") encompasses approximately six million acres, 48 percent of which belongs to all the people of New York State and is constitutionally protected to remain "forever wild" forest preserve. The remaining 52 percent is private land which includes settlements, farms, timber lands, businesses, homes and camps.

The Adirondack Park Agency (APA) administers the Adirondack Park Agency Act (Executive Law, article 27), the Freshwater Wetlands Act (Environmental Conservation Law, article 24) within the Adirondack Park and, for private lands within the Adirondack Park, the state's Wild, Scenic and Recreational Rivers System Act (Environmental Conservation Law, article 15, title 27).

One role of the APA is to issue land use and subdivision permits for qualified projects. Prior to undertaking any forest management activities which require APA approval pursuant to the Adirondack Park Agency Act, the Freshwater Wetlands Act or the NYS Wild, Scenic and Recreational Rivers Act, the landowner must first obtain a permit (e.g., road construction in or affecting wetlands, vegetative cutting within 100 feet of a Designated River, or clearcutting more than 25 upland acres or 3 acres in wetlands, see 9 NYCRR 573.7, 577.6, and 578.3).

Generally, there are no requirements for the harvesting of trees on non-shoreline parcels unless the landowner plans to clear-cut more than 25 upland acres or 3 wetland acres, or the property is located in a Designated River Area, in which cases a permit must be obtained. Along shorelines, cutting is limited to the following: (i) within six feet of the mean high water mark, not more than 30 percent of the shoreline may be cleared of vegetation (brushes and trees) on any one lot and (ii) within 35 feet of the mean high water mark, not more than 30 percent of trees in excess of six inches in diameter at 4.5 feet above the ground may be cut over a 10-year period. These limitations do not prevent the removal of diseased vegetation, or of rotten or damaged trees or of other vegetation presenting safety or health hazards. Variances from the mandatory shoreline restrictions may be allowed by request under certain circumstances.

These legal constraints are reflected in the project's modeled baseline carbon stocks, as required in section 6.2 of the FOP. The Forest Owner has also initialed and signed all of the attestations in Part XI of the *Application For Listing An Improved Forest Management U.S. Forest Offset Project*, indicating the project is in compliance with all laws and has been voluntarily implemented. The Forest Project and associated Project lands have met and been in compliance with all local, state, and federal regulatory requirements during all reporting periods to date.

3.1.2 Performance Test

Since the project is an Improved Forest Management project, it automatically satisfies the performance test.

3.2 Project Commencement Date

An Improved Forest Management project's offset project commencement date must be linked to a discrete, verifiable action that delineates a change in practice relative to the Forest Project's baseline. Any one of the following actions denotes an Improved Forest Management project's offset project commencement date:

- Recordation of a conservation easement on the Project Area. The date the easement was recorded is the Forest Project's offset project commencement date.
- Transferring of property ownership (to a public or private entity). The offset project commencement date is the date of property transfer.
- Submitting the offset project listing information specified in Section 9.1.1. Offset project commencement is the date of submittal of listing information, provided that the offset project completes verification within 30 months of being submitted. If the offset project does not meet this deadline, the listing information must be resubmitted under the latest version of the protocol.

Adequate documentation denoting the offset project commencement date must include where applicable, deeds of trust, title reports, conservation easement documentation, dated forest management plans, and/or other relevant contracts or agreements.

The project commencement date is April 22, 2009. This project is a pre-existing Early Action project submitted to the Climate Action Reserve by the April 30, 2010 deadline. The forest owner has submitted documentation denoting the start date action as engaging in consulting services for the purposes of implementing a forest carbon project (see *Errata_and_Clarfication_FPP_v3_1_06-08-10.pdf* as published on the CAR website). Accordingly, the date reflects an initiation of a commitment to employ practices and technologies that will maintain or increase net carbon stocks for the duration of the FOP's commitment period. The OPO has uploaded verifiable evidence to the OPR project account (see CAR1088 Project Start Date Documentation Proprietary) for verification purposes demonstrating the commencement date.

3.3 Crediting Period

The crediting period for offset projects using the FOP is 25 years. This means that after a successful initial verification, a Forest Project will be eligible to receive Offset Credits for GHG reductions and/or removals quantified using this protocol, and verified by ARB-approved verification bodies, for a period of 25 years following the offset project's commencement date (or 25 years following the start of the initial reporting period, whichever is most recent). A project may be renewed for subsequent crediting periods, subject to approval at that time and use of the quantification methods in the most recent approved version of the Forest Offset Protocol at the time of renewal. The baseline for any Forest Project under this version of the Forest Offset Protocol is valid for the duration of the Project Life following a successful initial verification where the offset project receives a Positive Verification Statement.

The crediting period for the project starts January 1, 2013 and ends no later than December 31, 2037, a period equal to 25 years.

3.4 Project Life and Minimum Time Commitment

The project will monitor and verify forest carbon stocks for a period of 100 years following the last year of the issuance of any ARB Offset Credits (ARBOCs) or Registry Offset Credits (ROCs).

3.5 Use of Qualified Conservation Easement

- ☒ The Project does not employ a qualified conservation easement at this time as defined in the FOP.
☐ The Project does employ a qualified conservation easement at this time as defined in the FOP.

3.6 Project Location

The project is located in the United States of America on privately held land.

Furthermore, the offset project ☐ does / ☒ does not occur on any of the following categories of land:

- a. Land that is owned by, or subject to an ownership or possessory interest of a Tribe;
- b. Land that is “Indian lands” of a Tribe, as defined by 25 U.S.C. §81(a)(1); or
- c. Land that is owned by any person, entity, or Tribe, within the external borders of such Indian lands.

Specifically, it is situated in the counties of Franklin, St. Lawrence, and Lewis, in the State of New York (see Appendix D. Map_CountyTwnshp.pdf). The approximate geometric center of the project area is 44.3000° latitude, -75.0000° longitude.

3.7 Regulatory Compliance

The forest owner attests that the project is in material compliance with all applicable laws relevant to the project activity and as described in section 3.1.1 Legal Requirement Test.

Additionally, the property was recently enrolled in the 480a Forest Tax Law, 2014 being the first year of enrollment. Because the property was enrolled after the project commencement date, it does not have to be considered in the baseline legal constraints. The project is in compliance with the 480a program. Documentation showing evidence that regulations were reviewed and followed include the forest management plan that was previously submitted to the verifier (CAR1088 Forest Management Plan 2014 10 Yr.pdf), as well as taxation documentation that has been submitted for verification purposes.

3.8 Sustainable Harvesting and Natural Forest Management Practices

This project employs both sustainable harvesting practices and natural forest management practices over time as described below.

3.8.1 Sustainable Harvesting Practices

Commercial harvesting is planned in the project area at both a strategic and operational level. The forest owner elects to demonstrate sustainable long-term harvesting practices and harvest levels which can be permanently sustained over time on all of its forest landholdings, including the project area, using the forest certification option. All of the forest owner’s landholdings, including the project area, are certified under the Forest Stewardship Council (FSC) program, administered through the Rainforest Alliance’s sustainable forestry program. The Certification Registration Code is: RA-FM/COC-000092. The current certificate was issued on April 26, 2010 and is valid until April 25, 2015. The license can be validated on the FSC Public Certificate Search website (<https://us.fsc.org/fsc-certificate-database.311.htm>). A copy of this certificate in the database has been made available to the verifier (see CAR1088_FSC Certificate 2010-2015.pdf). The original certificate was issued on April 26, 2005.

Furthermore, since the project commencement date, the forest owner has not acquired new forest landholdings within their entity during this reporting period. The forest owner confirms that any new landholdings acquired in the future will be incorporated under their current forest certification license within one year of the acquisition date.

3.8.2 Natural Forest Management

The evaluation worksheet provided in Table 3.2 of the FOP was used to determine that the project fully meets the criteria and requirements for the establishment and maintenance of native species and natural forest management. The test results are summarized in Table 3 below.

Table 3. Evaluation Criteria for Native Species and Natural Forest Management

<i>Criteria</i>	<i>Response</i>
Native Species	
Project consists of at least 95% native species based on the sum of carbon in the standing live pool. The assessment shall be conducted using estimates of stems per acre for Reforestation Projects and basal area per acre for Improved Forest Management and Avoided Conversion Projects.	Basal area per acre by species (standing live) was calculated for all strata using inventory data and then weighted by area (project area only). Native tree species constituted 100 percent of standing live carbon (Table 4).
Composition of Native Species	
Improved Forest Management and Avoided Conversion Projects Where the Project Area naturally consists of a mixed species distribution, no single species' prevalence, measured as the percent of the basal area of all live trees in the Project Area, exceeds the percentage value of standing live carbon shown under the heading 'Composition of Native Species' in the Assessment Area Data File maintained on the ARB's website.	The Assessment Area Data File (part of FOP Appendix F and published on the ARB website) requires that no single species in the Northern Hardwoods Assessment Area of the Adirondacks and Green Mountains or St. Lawrence and Mohawk Valley Supersections constitute more than 65 percent of prevalence (percent BA of all live trees in the Project Area). In this case, no species constitutes over 25 percent of basal area, considerably less than 65 percent (Table 5). The Assessment Area Data File (part of FOP Appendix F and published on the ARB website) also requires that no single species in the Northeast Conifers Assessment Area of the Adirondacks and Green Mountains or St. Lawrence and Mohawk Valley Supersections constitute more than 65 percent of prevalence (percent BA of all live trees in the Project Area). In this case, no species constitutes over 25 percent of basal area, considerably less than 65 percent (Table 6).
Distribution of Age Classes/Sustainable Management	
All forest landholdings owned or controlled by the Forest Owner are currently under one of the following: 1. Third party certification under the Forest Stewardship Council, Sustainable Forestry Initiative, or Tree Farm System, whose certification standards require adherence to and verification of harvest levels which can be permanently sustained over time, or 2. Operating under a renewable long-term management plan that demonstrates harvest levels which can be permanently sustained over time and that is sanctioned and monitored by a state or federal agency, or 3. The Forest Owner must employ uneven-aged silvicultural practices and canopy retention averaging at least 40 percent across the forest, as measured on any 20 acres within the entire forestland owned by the Forest Owner, including land within and outside of the Project	The project elects option 1. The Forestland Group has long been engaged with Forest Stewardship Council (FSC) certification. This entire property has been FSC certified since April 26, 2005 (Certificate Registration Code: RA-FM/COC-000092). The current certificate was issued on April 26, 2010 and is valid until April 25, 2015. The license can be validated on the FSC Public Certificate Search website (https://us.fsc.org/fsc-certificate-database.311.htm). A copy of this certificate in the database has been made available to the verifier (see CAR1088_FSC Certificate 2010-2015.pdf). The original certificate was issued on April 26, 2005.

Area. (Areas impacted by Significant Disturbance may be excluded from this test.)	
On a watershed scale up to 10,000 acres (or the project area, whichever is smaller), all projects must maintain, or make progress toward maintaining, no more than 40 percent of their forested acres in ages less than 20 years. (Areas impacted by Significant Disturbance may be excluded from this test.)	Overall, the Project Area holds approximately 4.2 percent of its forested acres in ages less than 20 years. See Calculation Worksheet for verification purposes. The Project Area was divided by watershed sub-basin and Lot ID to comply with the 10,000 acre threshold in the FOP. One lot in the St. Regis sub-basin, S4, held slightly more than 40 percent of its forested acres in ages less than 20 years; however, it is excluded from this test as it was impacted by significant disturbance (Figure 3): In 1998 there was a region-wide (Northeast Region) ice storm that swept directly over the region causing major damage and mortality to the stands in this area. This storm was well documented as much of the NE was without power for weeks and millions of acres of forest in the northeastern US and Canada were affected. For the first 5 years salvage was focused on the obvious more widespread damage (broken tops, bent, leaning trees, etc.). In the next 5 years significant “secondary” damage to those trees and stands that were passed by in the first salvage effort was prevalent. These stands were showing significant decline as the delayed effects of broken branches, bole scarring and later insect & scale attacks culminated to put the entire overstory in a major declining state. These salvaged stands are nearly all very well regenerated and have passed both FSC and NYS regulatory auditing and review since then.
Structural Elements (Standing and Lying Dead Wood)	
Forest Owners must ensure that lying dead wood is retained in sufficient quantities, as described below. For portions of the Project Area that have not recently undergone salvage harvesting: If a verifier determines that the quantity of lying dead wood is commensurate with recruitment from standing dead trees (i.e. there is no evidence that lying dead wood has been actively removed), the Forest Owner must maintain (or demonstrate ongoing progress toward) an average of at least: • one (1) metric ton of carbon (C) per acre; or • 1% of standing live carbon stocks, in <i>standing</i> dead wood, whichever is higher. If a verifier determines that the quantity of lying dead wood is not commensurate with recruitment from standing dead trees (i.e. it appears lying dead wood has been actively removed), the Forest Owner must maintain (or demonstrate ongoing progress toward) an average of at least: • two (2) metric tons of carbon (C) per acre; or • 1% of standing live carbon stocks, in <i>standing</i> dead wood, whichever is higher, Standing dead wood may be evenly or unevenly distributed throughout the portion of the Project Area unaffected by salvage harvesting, as long as the appropriate minimum average tonnage per	At the end of reporting period 1 (8/31/2014), the actual onsite carbon for standing dead wood in the entire project area was 0.88 metric tons of carbon (equivalent to 3.62% of standing live carbon). See Calculation Worksheet for verification purposes. While these areas may not currently meet the requirement of at least one (1) metric ton of carbon (C) per acre in standing dead wood, it has specific components in its management plans to demonstrate progress towards maintaining and increasing structural elements in standing dead wood. While some sanitation cutting of green trees exhibiting signs of eminent mortality occurred, there was no salvaged harvesting. Structural elements in all areas are likely to increase because the forest owner does not have policies or implement timber harvesting treatments which actively remove standing or lying dead wood. In addition, the forest owner maintains a commitment and demonstrates ongoing progress toward adequately recruiting snags, and subsequently down dead wood, through a commitment and implementation of their FSC Forest Management Plan. FSC also requires the forest owner to provide adequate habitat for species associated with large and/or decaying trees and dead wood. Some stands may take extensive time to develop these structural elements. Evidence of ongoing progress includes measurable goals (e.g., annual activity reviews and planning for the Conservation Easement, as well as application of silviculture systems and harvesting practices that develop and maintain these structures over time). Long-term passive approaches are also used to develop snags and coarse down and dead woody material by allowing retention trees (e.g., large live decay trees) to die naturally, rather than girdling and/or felling trees

acre requirement is met. For portions of the Project Area that have undergone salvage harvesting within the previous year:* If a verifier determines that the quantity of lying dead wood following salvage harvest is commensurate with recruitment from standing dead trees, the project must maintain (or demonstrate ongoing progress toward) an average of at least two (2) metric tons of carbon (C) per acre in standing dead wood, If a verifier determines that the quantity of lying dead wood following harvest is not commensurate with recruitment from standing dead trees, the project must maintain (or demonstrate ongoing progress toward) an average of at least four (4) metric tons of carbon (C) per acre in standing dead wood, Standing dead wood may be evenly or unevenly distributed throughout the portion of the Project Area subject to salvage harvesting, as long as the appropriate minimum average tonnage per acre requirement is met. This requirement must be met for a period of 30 years following the salvage harvest. After 30 years, the portion of the Project Area subject to salvage harvesting must meet the requirements for portions that have not recently undergone salvage harvesting (described above).	specifically for that purpose. Trees with decay or declining health include but are not limited to cavity trees. While species selected for retention should be generally representative of the species found on the site, flexibility in the proportions of species retained may be based on ecological and financial objectives.
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Table 4. Standing live basal area and percentage by species (RP1)

Species ID	Common Name	Scientific Name	BA (sqft/ac)	Percent
12	Balsam Fir	<i>Abies balsamea (L.) Mill.</i>	6.84	6.86%
71	Tamarack	<i>Larix laricina (Du Roi) K. Koch</i>	0.11	0.11%
91	Norway Spruce	<i>Picea abies (L.) Karst.</i>	0.76	0.76%
94	White Spruce	<i>Picea glauca (Moench) Voss</i>	0.07	0.07%
95	Black Spruce	<i>Picea mariana (Mill.) Britton, Sterns & Poggenb.</i>	0.99	0.99%
97	Red Spruce	<i>Picea rubens Sarg.</i>	10.14	10.17%
125	Red Pine	<i>Pinus resinosa Aiton</i>	0.09	0.09%
129	Eastern White Pine	<i>Pinus strobus L.</i>	0.74	0.74%
241	Northern White-Cedar	<i>Thuja occidentalis L.</i>	0.34	0.34%
261	Eastern Hemlock	<i>Tsuga canadensis (L.) Carrière</i>	2.42	2.43%
298	Other Softwood	<i>Other softwood</i>	0.32	0.32%
315	Striped Maple	<i>Acer pensylvanicum L.</i>	1.22	1.22%
316	Red Maple	<i>Acer rubrum L.</i>	22.78	22.84%
318	Sugar Maple	<i>Acer saccharum Marsh.</i>	15.76	15.80%
371	Yellow Birch	<i>Betula alleghaniensis Britton</i>	10.33	10.36%
375	Paper Birch	<i>Betula papyrifera Marsh.</i>	0.25	0.25%
531	American Beech	<i>Fagus grandifolia Ehrh.</i>	15.76	15.80%
541	White Ash	<i>Fraxinus americana L.</i>	0.93	0.93%
543	Black Ash	<i>Fraxinus nigra Marsh.</i>	0.28	0.28%
743	Bigtooth Aspen	<i>Populus grandidentata Michx.</i>	0.96	0.96%
761	Pin Cherry	<i>Prunus pensylvanica L. f.</i>	0.36	0.36%
762	Black Cherry	<i>Prunus serotina Ehrh.</i>	7.31	7.33%
951	American Basswood	<i>Tilia americana L.</i>	0.21	0.21%
998	Other Live/Dead Hardwood	<i>Other hardwood</i>	0.78	0.78%
Total Native			99.75	100.00%
Total			99.75	100.00%

Table 5. Composition of Native Species – Northern Hardwoods (RP1)**Assessment Area: Northern Hardwoods (SDI: 65 percent)**

Species ID	Common Name	Scientific Name	BA (sqft/ac)	Percent
012	Balsam Fir	<i>Abies balsamea</i> (L.) Mill.	3.06	3.17%
071	Tamarack	<i>Larix laricina</i> (Du Roi) K. Koch	0.02	0.02%
091	Norway Spruce	<i>Picea abies</i> (L.) Karst.	0.49	0.51%
094	White Spruce	<i>Picea glauca</i> (Moench) Voss	0.09	0.09%
095	Black Spruce	<i>Picea mariana</i> (Mill.) Britton, Sterns & Poggenb.	0.08	0.08%
097	Red Spruce	<i>Picea rubens</i> Sarg.	7.06	7.32%
125	Red Pine	<i>Pinus resinosa</i> Aiton	0.02	0.02%
129	Eastern White Pine	<i>Pinus strobus</i> L.	0.45	0.47%
241	Northern White-Cedar	<i>Thuja occidentalis</i> L.	0.12	0.12%
261	Eastern Hemlock	<i>Tsuga canadensis</i> (L.) Carrière	2.02	2.10%
298	Other Softwood	<i>Other softwood</i>	0.02	0.02%
315	Striped Maple	<i>Acer pensylvanicum</i> L.	1.42	1.47%
316	Red Maple	<i>Acer rubrum</i> L.	22.85	23.69%
318	Sugar Maple	<i>Acer saccharum</i> Marsh.	18.18	18.85%
371	Yellow Birch	<i>Betula alleghaniensis</i> Britton	10.65	11.04%
375	Paper Birch	<i>Betula papyrifera</i> Marsh.	0.24	0.25%
531	American Beech	<i>Fagus grandifolia</i> Ehrh.	18.05	18.71%
541	White Ash	<i>Fraxinus americana</i> L.	1.06	1.10%
543	Black Ash	<i>Fraxinus nigra</i> Marsh.	0.18	0.19%
743	Bigtooth Aspen	<i>Populus grandidentata</i> Michx.	1.12	1.16%
761	Pin Cherry	<i>Prunus pensylvanica</i> L. f.	0.41	0.42%
762	Black Cherry	<i>Prunus serotina</i> Ehrh.	7.89	8.18%
951	American Basswood	<i>Tilia americana</i> L.	0.14	0.15%
998	Other Live/Dead Hardwood	<i>Other hardwood</i>	0.84	0.88%
Total			96.46	100.00%

Table 6. Composition of Native Species – Northeast Conifers (RP1)**Assessment Area: Northeast Conifers (SDI: 65 percent)**

Species ID	Common Name	Scientific Name	BA (sqft/ac)	Percent
012	Balsam Fir	<i>Abies balsamea</i> (L.) Mill.	26.59	22.74%
071	Tamarack	<i>Larix laricina</i> (Du Roi) K. Koch	0.59	0.50%
091	Norway Spruce	<i>Picea abies</i> (L.) Karst.	2.21	1.89%
095	Black Spruce	<i>Picea mariana</i> (Mill.) Britton, Sterns & Poggenb.	5.76	4.93%
097	Red Spruce	<i>Picea rubens</i> Sarg.	26.23	22.43%
125	Red Pine	<i>Pinus resinosa</i> Aiton	0.44	0.38%
129	Eastern White Pine	<i>Pinus strobus</i> L.	2.24	1.92%
241	Northern White-Cedar	<i>Thuja occidentalis</i> L.	1.47	1.25%
261	Eastern Hemlock	<i>Tsuga canadensis</i> (L.) Carrière	4.48	3.83%
298	Other Softwood	<i>Other softwood</i>	1.89	1.62%
315	Striped Maple	<i>Acer pensylvanicum</i> L.	0.18	0.15%
316	Red Maple	<i>Acer rubrum</i> L.	22.44	19.19%
318	Sugar Maple	<i>Acer saccharum</i> Marsh.	3.08	2.63%
371	Yellow Birch	<i>Betula alleghaniensis</i> Britton	8.68	7.42%
375	Paper Birch	<i>Betula papyrifera</i> Marsh.	0.33	0.28%
531	American Beech	<i>Fagus grandifolia</i> Ehrh.	3.78	3.23%
541	White Ash	<i>Fraxinus americana</i> L.	0.24	0.20%
543	Black Ash	<i>Fraxinus nigra</i> Marsh.	0.81	0.70%
743	Bigtooth Aspen	<i>Populus grandidentata</i> Michx.	0.16	0.13%
761	Pin Cherry	<i>Prunus pensylvanica</i> L. f.	0.12	0.10%
762	Black Cherry	<i>Prunus serotina</i> Ehrh.	4.27	3.65%
951	American Basswood	<i>Tilia americana</i> L.	0.54	0.46%
998	Other Live/Dead Hardwood	<i>Other hardwood</i>	0.42	0.36%
Total			116.94	100.00%

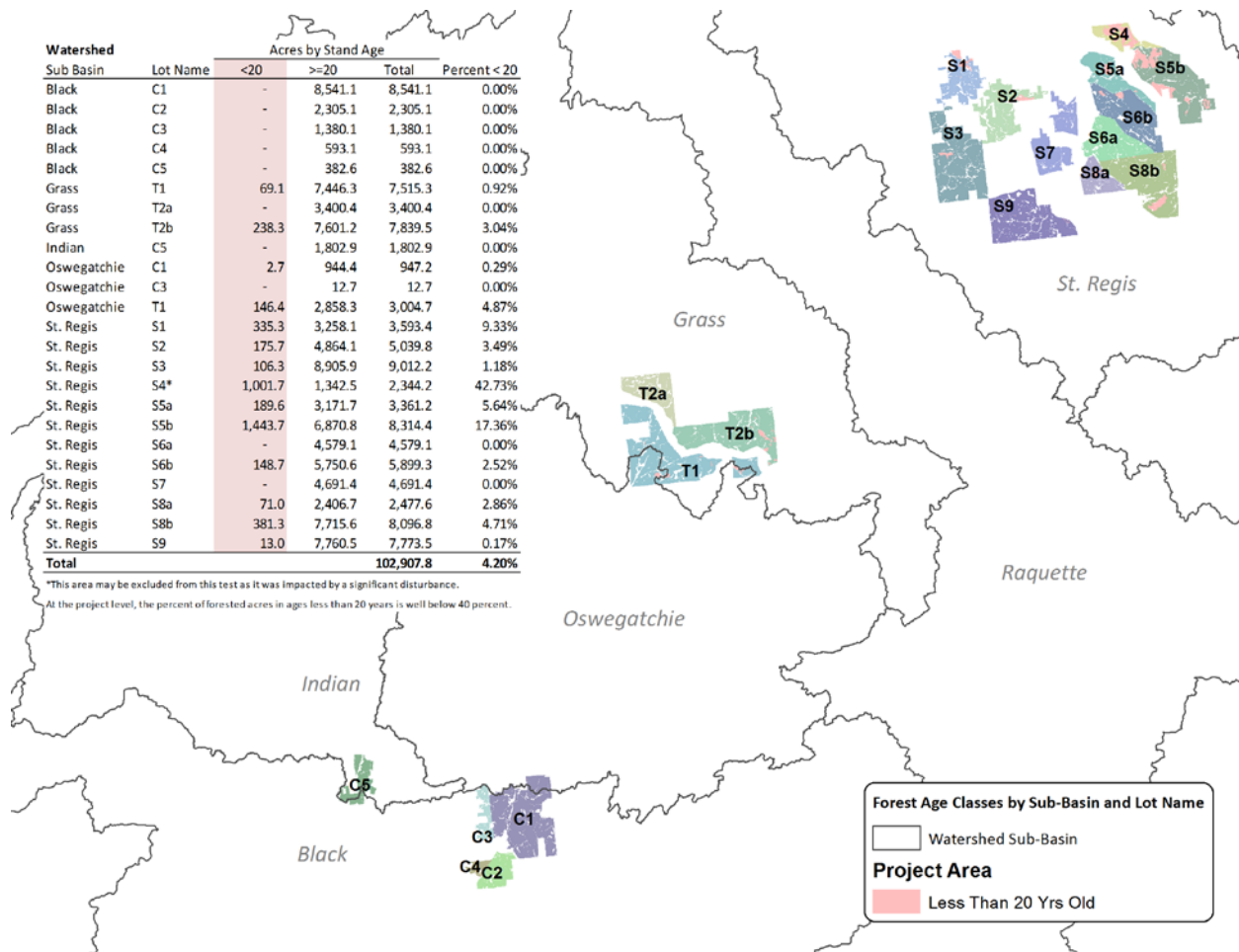


Figure 3. Project Area Age Classes relative to Watersheds

3.8.3 Promotion of the Onsite Standing Live Carbon Stocks

Since the project start date, the Project's monitoring reports do not indicate a decrease in the standing live carbon stocks over any 10 year consecutive period.

3.8.4 Balancing Age and Habitat Classes

A variety of silvicultural practices may be employed in the Project Area during the course of a Forest Project though the protocol does not endorse any particular practice. To ensure environmental integrity, Forest Projects must meet a minimum set of standards in the use of any such practices. For projects that employ even-aged management practices, harvesting must be limited to stands no greater than 40 acres. Stands adjacent to recently harvested stands must not be harvested using an even-aged harvest until the average age of the adjacent stand is at least 5-years old, or the average height in the adjacent stand is at least 5 feet. On a watershed scale up to 10,000 acres, all projects must maintain, or make progress toward maintaining, no more than 40 percent of their forested acres in ages less than 20 years. Areas impacted by a Significant Disturbance are exempt from this test until 20 years after reforestation of such areas.

Since the project commencement date, no harvesting has occurred in stands that qualify as “even-aged management” to the extent where the residual stand was less than 5 years old and less than 5 feet in height. Additionally, all harvest units from reporting period 1 are adjacent to stands that are at least 5 years old or 5 feet in height.

All harvesting in this initial reporting period is quantified and described in the Verified Mill Report by year, size and harvest type as well as a map titled, “Map Showing Location of Timber Harvests for Reporting Period 1” (all provided to the verifier under separate cover for verification purposes: CAR1088 Verified Mill Report RP1 v1.0.xlsx and CAR1088 Verified Mill Report RP1 MAP v1.0.pdf). Harvested stands from reporting period 1 which qualify as “even-age management” are all less than 40 acres. Based on the harvest types used since the project commencement date and because the residual stands in all cases were greater than 5 years old or 5 feet in height, the project is in compliance with the stand size threshold for even-aged management practices and the age and height adjacency requirements as described above. Furthermore, as shown in Figure 3, no more than 40 percent of the project acres by watershed (up to 10,000 acres) are in age classes less than 20 years old (except one area exempt for natural disturbance as noted in Table 3).

The project’s commitment and environmental integrity to management practices with respect to balancing age classes and habitat structure is also strengthened through its enrollment in third-party forest certification (i.e. adherence to Forest Stewardship Council Principles and Criteria). In addition, the entire property is subject to a “working forest conservation easement” held by the State of New York which is monitored on a continual basis and the Adirondack Park Agency regulations (obligations further described in Baseline Legal Constraints).

4. Identifying the Project Area

The methodology used to determine the project area boundaries and area (calculated GIS acres) is described by Equation 1 below. The equation was applied using the following steps:

1. The equation to determine the Project area is:

$$PROJAREA = GR SOWNAREA - \sum_{h=1}^L EXCLAREA_h \quad (1)$$

Where: PROJAREA = Total acres in project area

GR SOWNAREA = Total acres in gross ownership area (includes fee simple lands and non-fee lands with ownership of timber rights)

L = Number of exclusion areas

$EXCLAREA_h$ = Size of area in exclusion area h

2. Determine Gross Ownership Area (GR SOWNAREA)

- a. In 2009, LandVest provided a shapefile called 'STANDS'; this shapefile maps the authoritative, managerial and operational boundaries under HFFIII – Champion land and timber right holdings. The shapefile was imported into the project geodatabase as a feature class and renamed 'Stands_baseline'; the data was reviewed and summarized to determine the values in Equation 1.
- b. A new field was created in 'Stands_baseline' titled 'Carbon_Area.' It is validated by the domain 'PA_Code' or project area code. 'Carbon_Area' will identify all polygons in the Champion landholdings as part of the project area or excluded; if it is excluded, a reason is indicated in the code value. The code values are:

0	Project Area
1	Non-forest/Ineligible
2	Non fee simple lands
3	Future transfer to NYS (or Retained)
4	Positive boundary discrepancy
- c. GR SOWNAREA = 115,155.49 acres (2009)
- d. GR SOWNAREA = 112,441.40 acres (2014- Post Final Transfer to NYS)

3. Determine Non-forest and Ineligible land-uses ($EXCLAREA_1$)

- a. LandVest maintains a land-use field for each polygon in 'STANDS'; this field is titled 'SUPER_TYPE'; the land-use classes are summarized in Table 7.

Table 7. Gross Ownership Area by Land-Use

SUPER TYPE	Description	Total Acres
AL	Alder	772.31
BG	Bog	372.44
CL	Landing	152.33
FL	Flowage	3,823.68
GP	Gravel Pit	25.26
HS	Hardwood/Softwood	10,649.74
HW	Hardwood	76,323.85
LG	Ledge/Steep	5.71
NP	Non-Productive	300.55
RD	Road	1,806.35
SH	Softwood/Hardwood	7,244.67
SW	Softwood	9,795.69
WA	Water	1,168.81
Total		112,441.40

- b. Non-forest and ineligible land-use classes were identified as: Alder, Bog, Landing, Flowage, Gravel Pit, Ledge/Steep, Non-Productive, Road and Water.
 - c. There are 8,427.46 acres for non-forest/ineligible areas within the gross ownership area.
 - d. Also throughout the gross ownership area are hunt camps; they are part of the forest owner's hunt leasing program. These camps are typically one story sheds or small cabins. The structures lie in small gaps in the woods, but their legal "envelope" is one acre in size. As of August 10, 2010 there were 208 existing camps. Forty-one camps lie in ineligible areas or other excluded areas. The remaining hunt camps (167) are situated in the forest. Buffer zones have been drawn around these camps and the forest area has been excluded from the project area (these polygons are identified where OS_MODIFIER field = 'RLU' in the Stands_baseline layer).
 - e. So there is not double counting of non-forest and ineligible areas with the other exclusion areas, EXCLAREA₁ must only sum non-forest/ineligible polygons outside of the other exclusion areas (i.e. summarize only non-forest/ineligible SUPER_TYPES which are not classified as Non-fee simple lands (EXCLAREA₂), Future transfer to NYS lands (or retained after the transfer, EXCLAREA₃), or lands in the Positive Boundary Discrepancy (EXCLAREA₄).
 - f. After accounting for Non-fee simple lands, Transferred/Retained Lands from Future transfer to NYS lands the EXCLAREA₁ = 8,356.30 acres. These lands are colored orange in Figure 4.
4. Determine Non-Fee Simple acres (EXCLAREA₂)
- a. In addition to the fee simple lands purchased in the Champion transaction, the forest owner also acquired the timber rights of certain lands by quit claim deed from The Conservation Fund. These lands are referred to as the "NY Timber Reservation." Because interest in the timber is not perpetual (i.e. rights expire in 2041), these lands will not be included in the Project Area.
 - b. These lands are identified in 'STANDS' as those polygons labeled 'T3' (in the field 'C_LOT_NAME'), i.e., "subdivision T3 on the Tooley Pond tract."

- c. $EXCLAREA_2 = 1,041.81$ acres. These lands are colored red in Figure 4.
5. Determine lands scheduled to be transferred to NYS through Forestland's Request for Modifications to Conservation Easement ($EXCLAREA_3$)
 - a. These lands are located at the very northeast part of the Santa Clara tract.
 - b. At the time this project was developed as an Early Action project (2009), the forest owner was in negotiations with the State of New York (i.e. conservation easement holder) to make modifications to the easement. The forest owner would receive continued rights to leasing recreational camps and, in exchange, transfer lands of equal value to New York State (see details posted by NYSDEC here: <http://www.dec.ny.gov/lands/9162.html>). The forest owner referred to the lands that would be given to New York as the "Marshall Lot." However, after market valuations not all of the Marshall Lot was given to the State. Part of the Marshall Lot was retained by Forest Owner, but this area's location had not been finalized during the development of the Early Action project. All of the Marshall Lot was excluded from the project originally for this reason. Lands that were retained from the Marshall Lot after finalization of Forestland's Request for Modifications to Conservation Easement are now part of this exclusion area ($EXCLAREA_3$)
 - c. $EXCLAREA_3 = 2,887.39$ acres (2009). These lands are colored gray in Figure 4.
 - d. $EXCLAREA_3 = 73.02$ acres (2014)
6. Exclude lands determined in 2014 to be a Positive Boundary Discrepancy ($EXCLAREA_4$)
 - a. A positive boundary discrepancy was determined based on review of legal descriptions in the deeds and physical inspection of evidence located on the ground. Part of this boundary discrepancy resulted in minor modifications to the original project boundary and added approximately 7.8 acres to the project area. The other effect of the boundary discrepancy resulted in the gain of a non-contiguous tract separate from the original project boundary. This tract has been excluded and is colored purple in Figure 4. Because this is the initial reporting period under the compliance protocol, the baseline has been corrected to reflect this area amendment and ensure the integrity of all GHG reductions and enhancements since the project commencement date.
 - b. $EXCLAREA_4 = 62.50$ acres
7. Using Equation 1, the project area is 102,907.78 acres. These lands are colored green in Figure 4.

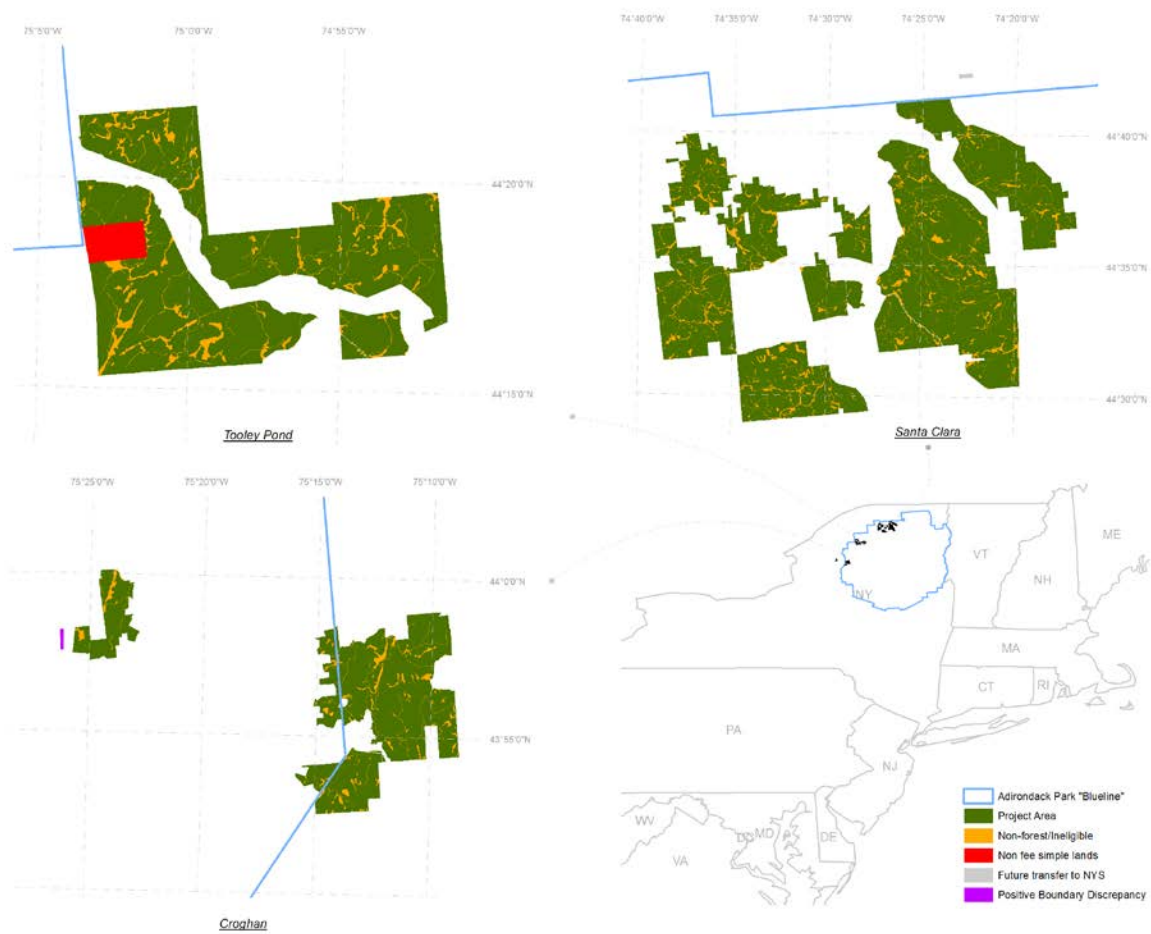


Figure 4. Exclusion Areas relative to Project Area

5. Defining the Project's GHG Assessment Boundary

Table 8 was adapted from the FOP, Table 5.2 and describes the project's GHG assessment boundary.

Table 8. Sources, Sinks, and Reservoirs

SSR	Description	Type	Gas	Quantification Method	Justification/Explanation
Primary Effect Sources, Sinks, and Reservoirs					
IFM-1	Standing live carbon (carbon in all portions of living trees)	Reservoir / Pool	CO2	Baseline: Modeled based on initial field inventory measurements Project: Measured by field measurements and updating forest carbon inventory	Increases in standing live carbon stocks are likely to be the largest primary effect of Improved Forest Management Projects.
IFM-3	Standing dead carbon (carbon in all portions of dead, standing trees)	Reservoir / Pool	CO2	Baseline: Modeled based on initial field inventory measurements Project: Measured by updating forest carbon inventory	Improved Forest Management Projects may significantly increase standing dead carbon stocks over time.
IFM-6	Soil Carbon	Reservoir / Pool	CO2	*Included/ Excluded Soil carbon must be included in the Offset Project Boundary, if any of the following activities occur: ☐ Site preparation activities involve deep ripping, furrowing, or plowing where soil disturbance exceeds (or is expected to exceed from the baseline characterization and modeling) 25 percent of the Project Area over the Project Life, or ☐ Mechanical site preparation activities are not conducted on contours.	Excluded because the conditions in the FOP Table 5.2 that would require inclusion of this pool (deep ripping, furrowing, or plowing where soil disturbance exceeds 25% of the Project Area, or mechanical site preparation that is not conducted on contours) are not planned.
IFM-7	Carbon in in-use forest products	Reservoir / Pool	CO2	Baseline: Estimated from modeled harvesting volumes Project: Estimated from measured harvesting volumes	Included because many Improved Forest Management Projects may significantly change carbon storage in in-use forest products relative to baseline levels. Treated as a "source/sink" because forest product carbon is quantified according to the change in harvesting volumes, relative to baseline levels, in each year. Of this change (increase or decrease), only the average amount of carbon expected to remain stored for 100 years is included in the final quantification of annual net GHG removals/emissions. This approach accounts for CO2 emissions from decomposition or disposal of wood products (see SSR #IFM-17).
IFM-8	Forest product carbon in landfills	Reservoir / Pool	CO2	Baseline: Estimated from modeled harvesting volumes Project: Estimated from measured harvesting volumes	Because of significant uncertainties associated with forecasting the quantity of forest product carbon that will remain stored in landfills, landfill carbon is excluded from quantification in years

					when project harvesting volumes exceed baseline volumes. Landfill carbon is included, however, in years when project harvesting volumes are below baseline levels. This case-dependent exclusion or inclusion is necessary to ensure that total GHG reductions and removals caused by the Forest Project are not overestimated.
Secondary Effect Sources, Sinks, and Reservoirs					
IFM-9	Biological emissions from site preparation activities	Source	CO2	Baseline: N/A Project: Quantified based on measured carbon stock changes in included reservoirs (SSR #IFM-6, where applicable)	Biological emissions from site preparation are not quantified separately, but rather are captured by measuring changes in included carbon reservoirs (soil carbon, where applicable). For other carbon reservoirs, changes are unlikely to have a significant effect on total quantified GHG reductions/removals.
IFM-14	Biological emissions/removals from changes in harvesting on forestland outside the Project Area	Source / Sink	CO2	Baseline: N/A Project: Estimated using a default 20% “leakage” factor applied to the difference in harvest volume relative to baseline	Improved Forest Management Projects may either increase or decrease harvesting relative to baseline levels. If harvesting is reduced in the Project Area, harvesting on other lands may increase to compensate for the lost production. This “leakage” effect is included in the GHG Assessment Boundary. If harvesting is increased in the Project Area, harvesting on other lands may decrease in response to the increased production. The reduction in harvesting may lead to increased carbon stocks on other lands. Carbon stock increases on other lands are excluded from the GHG Assessment Boundary, however, because it is not possible to ensure their permanence.
IFM-17	Biological emissions from decomposition of forest products	Source	CO2	Baseline: Quantified as a component of calculating carbon stored for 100 years in wood products (SSR #IFM-7) and landfills (SSR #IFM-8) Project: Quantified as a component of calculating carbon stored for 100 years in wood products (SSR #IFM-7) and landfills (SSR #IFM-8)	CO2 emissions from the decomposition of forest products are built into calculations of how much forest product carbon will remain in in-use wood products and in landfills, averaged over 100 years.

6. Quantifying Net GHG Reductions and Removals

6.1 Forest Inventory & Modeling Plan

6.1.1 Inventory Plan & Design

The baseline inventory was planned and implemented by the landowner's forestry consultant, LandVest, and completed in August, 2009. LandVest has been managing the property since 1999. A remeasurement of the project area onsite carbon stocks was conducted by LandVest at the end of 2013. The primary land use for the region is forestry. Review of air photos and satellite images reveal a forest dominated landscape with minor agricultural uses in some areas. The forest project lies entirely in the 3b and 4a climate zones as shown on USDA FS mapping for the region. (Source: <http://planthardiness.ars.usda.gov/PHZMWeb/#>). The forest inventory will serve to directly estimate the IFM-1 and IFM-3 carbon pools described in Section 5. Defining the Project's GHG Assessment Boundary as well as indirectly estimate the remaining carbon pools required by the FOP for an IFM project.

The stratification used in the project was based on forest cover types using the species and vegetation community descriptions found in *Forest Cover Types of the United States and Canada* (Eyre, 1980). These forest cover types were subsequently mapped to the appropriate FOP Assessment Areas (i.e. forest vegetative communities) listed in the Assessment Area Data File for the project's Supersection. The tree species found in any particular stratum in the project area were also consistent with the species listed in the Assessment Area Data File. Forest cover type designations were estimated based on existing forest inventory data and geographic information systems (GIS), and validated in the field during the forest inventory conducted for the project. Final determination of the strata was based on species composition and current stocking according to the guidelines in the *Forest Cover Types of the United States and Canada* (Eyre, 1980) and the species listed in the Assessment Area Data File. The strata then ends up being a combination of the SAF forest cover type and FOP assessment area. The strata in the project area inventory are listed in Table 9.

As activities occur in the project, the strata will be updated using the stratification process described above. See Appendix H. Project Inventory Specifications Proprietary v1.0.pdf for a more detailed description of the onsite forest carbon inventory methodology as well as Appendix F. Data Management & Analytical Systems Proprietary v1.0.pdf and Appendix J. Full Monitoring Plan Proprietary v1.0.pdf as it relates to each of the requirements in Appendix A, A.3, of the FOP.

The number of plots in each stratum, i.e. sampling intensity, was formulated based on precision targets of historical measures of variance of the property. The target statistical error was ± 5 percent for onsite forest carbon at a 90 percent confidence interval. The sampling intensity was determined as 966 plots. Plots were allocated along a randomly placed grid within stratum delineations (i.e. polygons), with grid lines generally running along one of two perpendicular azimuths, north/south or east/west. All plots were assigned GPS coordinates and stored in the project geodatabase. The plot locations are shown in Figure 5.



Figure 5. Cruise lines and plots for baseline inventory

6.1.2 Field Data Collection

All cruisers were provided with GIS developed base maps for the cruise. Each plot center was located using 3 to 5 meter accuracy GPS (WAAS enabled) units. Plot centers were permanently monumented with steel pipe, pins or rebar and paint. Cruisers also used GPS to locate or update base map features as well as ground-truth forest types and stand lines.

Tree data was then systematically collected using point sampling (i.e. variable radius plots) with a 15 Basal Area Factor prism for all stems 4.51 inches dbh and larger. A nested plot of 1/100th acre for trees below 4.5 inches dbh and greater than or equal to 0.5 inches dbh was also collected at the same plot center. Note that trees measured between 0.5 and 0.9 inches dbh were not used to calculate onsite carbon stocks. All borderline trees were measured to the geometric center of the base of the tree using approved devices, including slope adjustments for slopes of 10% and greater in accordance with the USFS procedures laid out in the forest management field book 2008 edition.

The following data was collected for all standing live or dead trees in the plot starting with the first “in” tree immediately east of magnetic north from plot center:

- tree species;

- product code;
- diameter at breast height;
- height of each stem;
- soundness deduction; and
- snag decomposition class.

In order to verify the quality of the data collection, the contractor performed an internal audit of the data. This audit consisted of a minimum of 5% of the samples collected. Initially, audits addressed all cruisers equally. If however, individual cruisers were found to be consistently out of compliance, the auditor or audit team then focused on individuals in order to verify compliance with the specifications.

Audit reports were generated weekly throughout the inventory project and were submitted with per cruiser audit totals and results. The final audit results were provided to Finite Carbon at the completion of the project and included audit dates, number of audited samples per cruiser including sample location identifiers, total audited samples vs. total samples as a percent, corrective actions per cruiser, any plots re-done due to non-compliance, and overall auditor's comments.

Corrective actions: Re-training non-compliant cruisers, correcting erroneous samples, and gathering missing data were the minimum corrective actions implemented. Based on the results of audits, if a cruiser repeatedly did not meet the quality standards for allowable error, all points for that cruiser were re-done by a new cruiser that met the quality thresholds.

6.1.3 Inventory Plot Statistics

A statistical analysis of the 2013 inventory of onsite carbon stock was conducted. The onsite carbon stock for each plot was determined using the ARB published cubic foot volume and biomass equations for projects in the states outside of California, Washington, and Oregon as referenced by species in Table 13. The mean, standard error and 90 percent confidence interval for onsite carbon stock were then calculated for each stratum from their respective plot carbon stocks. The confidence interval was determined as the product of the standard error and 1.645. Percent error by stratum was determined by dividing half of the width of the confidence interval by the mean. The percent error for tCO₂e per acre for all actual onsite carbon stocks combined was calculated by strata at a 90 percent confidence level (Table 9). The total project uncertainty (sampling error) was 3.14 percent.

Table 9. Summary of Percent Error by Strata and Project Total (RP1 tCO₂e/acre, all portions)

IFM1 & IFM3		
Strata	per Acre	Percent Error (PE)
HS	95.31	9.07%
HW	92.10	3.80%
SH	95.04	8.24%
SW	75.77	10.11%
Project Total	91.16	3.14%

6.1.4 Growth & Yield Model

Forest inventory field data was transferred to the project developer in a database, along with all relevant GIS files. A project geodatabase serves as the central data repository for spatial data. The inventory data was then reformatted for input to the Forest Vegetation Simulator (Crookston 2003). The Forest Vegetation Simulator (FVS) is a family of forest growth simulation models supported and maintained by a special unit of the USDA Forest Service (www.fs.fed.us/fmesc/fvs/). Since its initial development in 1973, it has become a system of highly integrated analytical tools. These tools are based upon a body of scientific knowledge developed from decades of natural resources research. The FVS growth model is an approved ARB growth model (FOP 3.2, Appendix B, Section B.1).

The FVS is an individual-tree, distance-independent growth and yield model (Dixon 2002). It has been calibrated for specific geographic areas (variants) of the United States. FVS can simulate a wide range of silvicultural treatments for most major forest tree species, forest types, and stand conditions. The Northeastern (NE) Variant (Keyser 2008) has been used for the Champion Carbon project.

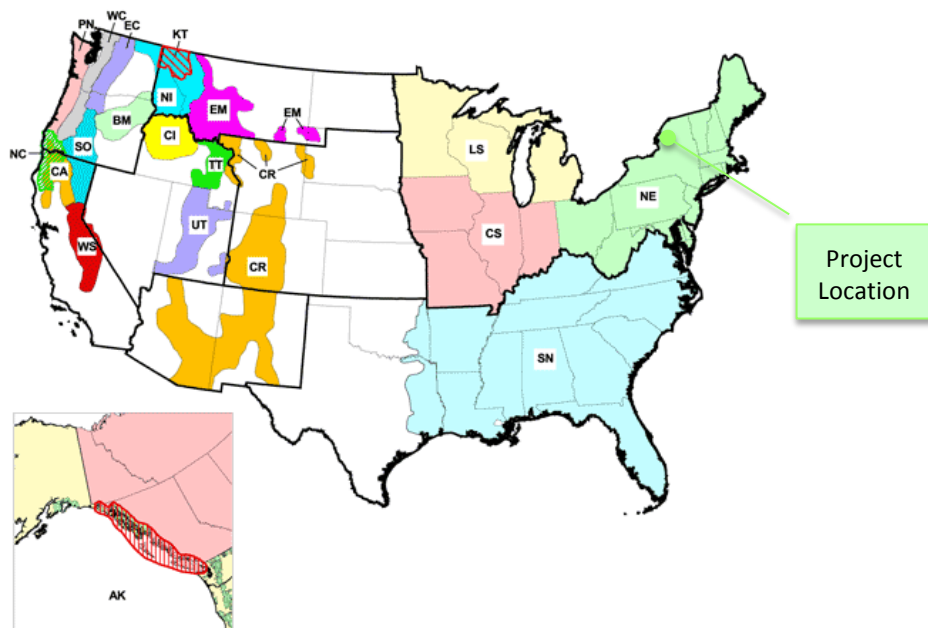


Figure 6. FVS Variants Map

Tree data is entered directly into the model with the inventory sampling design in order to grow the stands and perform simulated management activities in both the baseline and project scenario. FVS outputs a tree list with tree level attributes which are used to apply the appropriate cubic foot volume and biomass equations by species for the respective ARB Supersections for projects located outside of California, Washington or Oregon as published on the ARB's website. The calculated results, in both wood volume and forest carbon, were summarized at the

strata level to create yield tables based on just growth or harvest treatment type. A full description of the data management and analytical systems is provided in Appendix F. Data Management & Analytical Systems Proprietary v1.0.pdf.

Model Calibrations

The variant (“NE”) and project location code (indicating the closest National Forest – in this case, Green Mountains/Finger Lakes) were input to the model along with the inventory design parameters for proper calibration. The FVS default site index was used (sugar maple = 56’ total height at base age 50). The site index for other species is adjusted using a transformation methodology based on species-specific factors (Keyser 2008). FVS default site index values were used based on the lack of site index information collected in the forest inventory. Soil data characteristics (NRCS 2012) for the region indicate an average site index value for sugar maple of 61’ at base age 50; this substantiates the use of FVS default values for the project area. Consultation with the forest owner’s professional forester at LandVest (Richard Carbonetti, ACF, CF) confirmed the FVS default site index values were appropriate for the project area as well. The full list of site index values used by species is found in the FVS output files provided under separate cover for verification purposes.

Model Plan

A description of all the silviculture methods modeled in the baseline can be found under “Baseline Activities” in Section 6.2.1 Estimating Baseline Onsite Carbon Stocks – Private Lands including a description of trees harvested/retained, harvest frequency and regeneration assumptions. A description of how legal constraints affect forest management and the silviculture methods used to ensure the constraint is respected can be found under “Baseline Legal Constraints” in Section 6.2.1 Estimating Baseline Onsite Carbon Stocks – Private Lands. A description of the site indices used for each species and an explanation of the source of the site index values used can be found in the FVS output files provided under separate cover for verification purposes. Modeling outputs are shown in Appendix K. Baseline Inventory, Growth and Harvest by Year v1.0.pdf and Figure 10.

The following section numbers reference those of section 6.2 in the FOP for Improved Forest Management projects.

6.2.1 Estimating Baseline Onsite Carbon Stocks – Private Lands

Step 1 – Determine the Common Practice Carbon Stocks for the Project’s Assessment Area

Over 99 percent of the project area is situated in the *Adirondacks & Green Mountains* ARB Supersection with the balance extending into the *St. Lawrence & Mohawk Valley* Supersection (Figure 7 and Appendix E. Map_Assessment Areas.pdf).

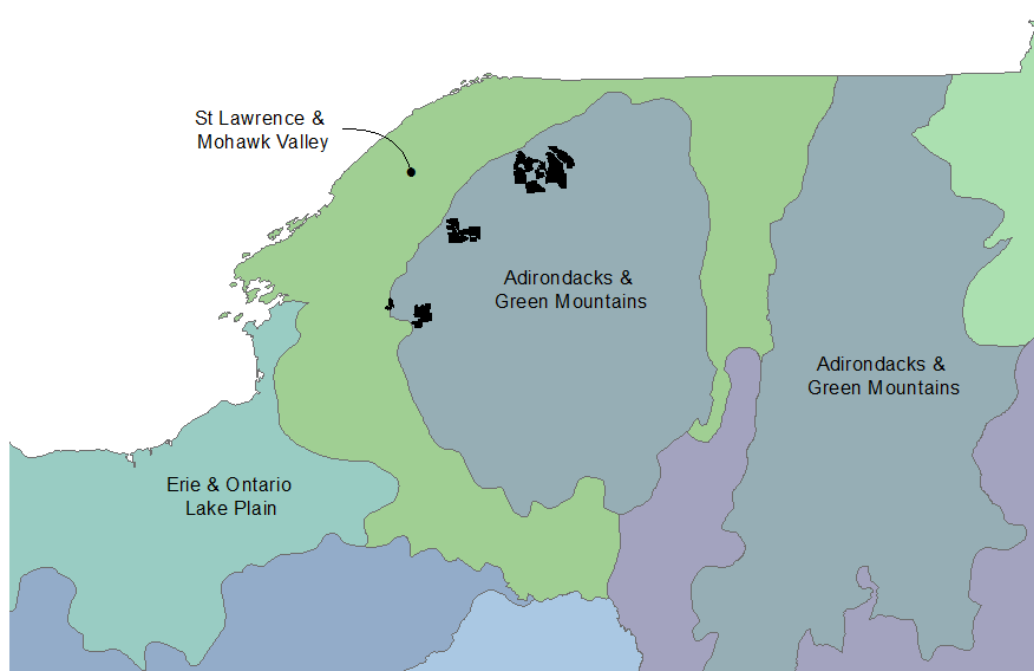


Figure 7. Project Area relative to CAR Supersections

The project area was further classified into Assessment Areas by associating the corresponding species composition from FOP Appendix F with that of the broad forest types mapped for each stratum and stand based on aerial photography analysis and field validation during the forest carbon inventory in 2009. There were three forest cover types identified in the project area which mapped to two Assessment Areas across two Supersections (i.e. 4 assessment areas overall) (see Table 10. Common Practice Assessment Area Data and Appendix E. Map_Assessment Areas.pdf).

Table 10. Common Practice Assessment Area Data

Supersection	Assessment Area	Associated Species	Site Class	Per Acre			Species Diversity Index
				Board Feet	Basal Area (Square Feet per Acre)	Common Practice - Above Ground Carbon Mean (Metric Tonnes CO ₂ -equivalent)	
Adirondacks & Green Mountains	Adirondacks & Green Mountains Northeast Conifers	Aspen, balsam fir, black spruce, eastern hemlock, eastern white pine, northern red oak, white ash, gray birch, northern white-cedar, Norway spruce, paper birch, red pine, red spruce, Scotch pine, tamarack, white, red, jack pine, white	Low	6,285	129	84	65%
			High	8,015	137	91	65%

		spruce					
	Adirondacks & Green Mountains Northern Hardwood	Balsam poplar, black ash, american elm, red maple, black cherry, cherry, white ash, yellow poplar, maple, basswood, maple, beech, birch group, mixed upland hardwoods, northern red oak, post oak, blackjack oak, lowland, oak, upland, scarlet oak, silver maple, sugar maple, yellow birch, sugarberry, hackberry, elm, green ash, sweetbay, swamp tupelo, sycamore, pecan, white oak, red oak, hickory, willow	High	5,153	120	98	65%
			Low	4,225	103	84	65%
St Lawrence & Mohawk Valley	St Lawrence & Mohawk Valley Aspen-Birch	Aspen, birch, gray birch, paper birch	All	1,653	68	41	80%
	St Lawrence & Mohawk Valley Northeast Conifer	Balsam fir, black locust, bur oak, eastern hemlock, eastern red cedar, eastern white pine, northern red oak, white ash, northern white cedar, pine, red maple, oak, red pine, red spruce, balsam fir, scotch pine, white oak, red oak, hickory, white spruce	Low	2,440	81	48	65%
			High	5,114	127	79	65%
	St Lawrence & Mohawk Valley Northern Hardwood	Balsam poplar, black ash, American elm, red maple, black cherry, cherry, white ash, yellow poplar, cottonwood, willow, elm, ash, black locust, hard maple, basswood, maple, beech, birch, river birch, sycamore, silver maple, sugar maple, beech, yellow birch, sugarberry, hackberry, green ash, pecan, willow	High	4,173	111	85	65%
			Low	1,986	76	52	65%

For Assessment Areas where data are attributed for high and low site classes, Forest Owners must further stratify the Project Area and identify the acreage that falls within each site class. For site class stratification purposes, a high site class means a Timber Site I or II (Forest Service Types I, II, and III). A low site class means a Timber Site III, IV, or V (Forest Service Types IV – VII). Landowners must determine the portion of the Project Area that is in each site class for each Assessment Area using soils data from a state or federal agency, direct site class data from a state or federal agency, attestation from a state forester, or through field analysis.

The proportion of project area that is in each site class for each Assessment Area to calculate the final common practice stocks was determined by overlaying soils data with the forest stands layer. A combination of soils datasets³ from state and federal agencies were used because no one dataset completely covered the project area. Site classes were spatially explicit based on these soil layers, but site index values used for modeling, while still species specific, were the same across the entire project area representing an appropriate regional average. Site class (high or low) was assigned to each forest stand based on its soil characteristics⁴ (e.g. drainage class⁵) using a

³ Spatial and tabular soils data was acquired through the NRCS Geospatial Data Gateway. The SSURGO 2.2 database for NY was acquired through NRCS Soil Data Mart in order to import and use the tabular soils data. There are gaps in this dataset where there is no coverage for the project area. A mesosoils dataset was acquired through the Adirondack Park Agency. This soils dataset covers most of the property. However, there are portions of the property that are not covered by this dataset as well. Some of the property that is not covered by the mesosoils is covered by the SSURGO soils. However, there is a small portion that is not covered by either dataset. A third dataset was acquired to cover these areas, STATSGO soils. STATSGO soils were acquired through Cornell's GIS Clearinghouse. Mesosoils were used first where there was coverage. Then, SSURGO soils were used where they had coverage and the Mesosoils did not. Finally, STATSGO soils were used in areas where Mesosoils and SSURGO soils did not have any coverage.

⁴ The "field guide uses soil characteristics to classify forest land into five categories of decreasing productivity (class I is the highest level)" (Briggs, 1994).

site classification field guide developed by Russel D. Briggs (1994). The following table in the field guide was used to make a site class designation for each forest stand:

Table 11. Site Class Field Guide

	Site Class							
	1		2		3	4		5
Drainage Class:	Well	Somewhat Excessive	Somewhat Excessive	Moderately Well	Somewhat Poorly	Poorly Drained	Excessive ¹	Very Poor
Mottling Depth ² :	>24"	-	-	16-24"	8-16"	4-8"	-	<4"
Thickness Loam Cap	-	>12"	8-12"	-	-	-	-	-

¹ Shallow to bedrock (<12") or coarse sand and gravel.

² Depth to the seasonal high water table is indicated by depth to low chroma motles (or gley)

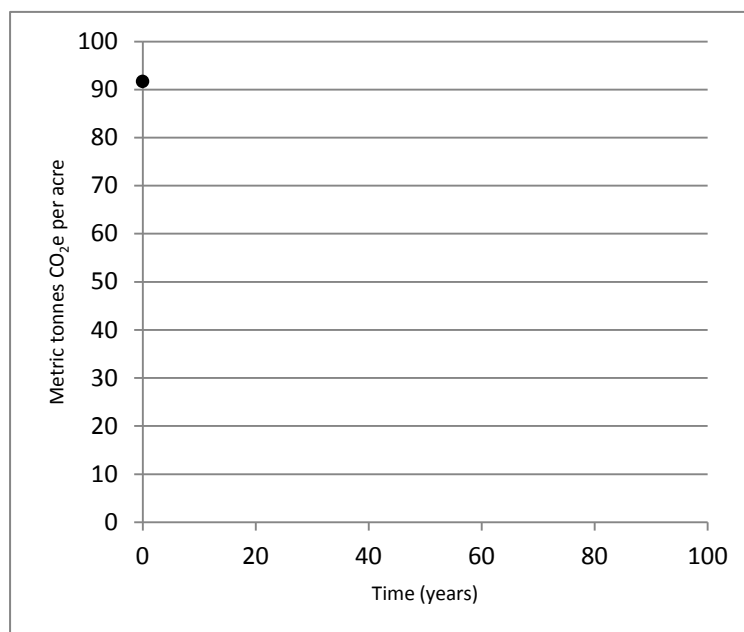
Site Classes 1, 2, and 3 were grouped into the High Site Class in Appendix F of the FOP. Site Classes 4 and 5 were grouped into the Low Site Class in Appendix F of the FOP. The only criterion that distinguishes High and Low site classes in this table is Drainage Class. The other criteria (Mottling Depth and Thickness of Loam Cap) only differentiate the sub-classes (i.e. 1, 2, 3, 4, and 5). The drainage class was used to assign the Site Class to each forest stand where Well, Somewhat Excessive, Moderately Well, and Somewhat Poor fell into the High site class and Poorly, Excessive, and Very Poor fell into the Low site class.

Based on this analysis, the total common practice carbon stock is 9,435,108.48 tCO₂e. The weighted average common practice carbon stock on a per acre basis is 91.69 tCO₂e (Table 12 and Figure 8).

⁵ "Soil drainage class, which reflects the combined effects of soil aeration, moisture, texture, and depth, is a useful indicator of site quality" (Briggs, 1994).

Table 12. Common Practice Carbon Stocks

Supersection	Assessment Area	Site Class	Area (acres)	CP Stock	Area Weight	Weight CP
Adirondacks...	NE Conifers	High	8,628.03	91	0.0838	7.63
Adirondacks...	NE Conifers	Low	8,234.26	84	0.0799	6.71
Adirondacks...	N.Hardwoods	High	52,772.74	98	0.5130	50.28
Adirondacks...	N.Hardwoods	Low	32,650.28	84	0.3178	26.69
St. Lawrence...	NE Conifers	High	29.58	79	0.0002	0.01
St. Lawrence...	NE Conifers	Low	69.03	48	0.0006	0.03
St. Lawrence...	N.Hardwoods	High	292.86	85	0.0026	0.22
St. Lawrence...	N.Hardwoods	Low	230.99	52	0.0020	0.10
			102,907.78			91.69

**Figure 8. Step 1 - Common Practice****Step 2 – Determine if Initial Stocks are Above or Below Common Practice**

Initial carbon stocks were determined using the inventory data and the most current volume and biomass equations (i.e. as specified for projects outside of California, Washington and Oregon on ARB's website as of January 2014) appropriate for the Project's Supersection and species as published and approved by ARB. The

species observed in the project are listed in Table 13. The total initial above-ground standing live carbon stock is 6,494,139.27 tCO₂e which is below the common practice. The weighted average above-ground standing live carbon stock per acre is 63.11 tCO₂e (Table 14 and Figure 9).

Table 13. Volume and Biomass Equation Assignments by Species

Species Name	FIA Code	Published ARB FIA Volume Equation Reference (or Equivalent)		Equation Reference
Balsam Fir	012	012		Scott, Charles T., 1981
Tamarack	071	131		Scott, Charles T., 1981
Norway Spruce	091	131		Scott, Charles T., 1981
White Spruce	094	094		Scott, Charles T., 1981
Black Spruce	095	094		Scott, Charles T., 1981
Red Spruce	097	094		Scott, Charles T., 1981
Red Pine	125	129		Scott, Charles T., 1981
Eastern White Pine	129	129		Scott, Charles T., 1981
Northern White-Cedar	241	241		Scott, Charles T., 1981
Eastern Hemlock	261	261		Scott, Charles T., 1981
Other Softwood	298	131		Scott, Charles T., 1981
Striped Maple	315	315		Scott, Charles T., 1981
Red Maple	316	316		Hahn, Jerold T., 1984
Sugar Maple	318	318		Scott, Charles T., 1981
Yellow Birch	371	371		McClure, J. and Cost, N. 2010
Paper Birch	375	375		Hahn, Jerold T., 1984
American Beech	531	531		Scott, Charles T., 1981
White Ash	541	540		McClure, J. and Cost, N. 2010
Black Ash	543	540		McClure, J. and Cost, N. 2010
Bigtooth Aspen	743	740		McClure, J. and Cost, N. 2010
Pin Cherry	761	315		Scott, Charles T., 1981
Black Cherry	762	762		Scott, Charles T., 1981
American Basswood	951	950		Scott, Charles T., 1981
Other Live/Dead Hardwood	998	315		Scott, Charles T., 1981

Table 14. Standing Live Above-Ground Carbon

<i>Standing Live Above Ground metric ton CO₂e</i>				
Forest Strata	Year	Acres	Per Acre	Total
CR_H34A	2009	1,037.01	77.81	80,687.39
CR_H34B	2009	5,783.02	72.65	420,125.04
CR_H34BC	2009	1,371.44	67.62	92,731.65
CR_H3B	2009	8,926.68	62.60	558,838.14
CR_H3BC	2009	5,597.71	56.67	317,227.42
CR_H3C	2009	3,317.86	21.46	71,187.02
CR_H3CD	2009	166.19	44.83	7,450.10
CR_HS34B	2009	4,190.00	54.22	227,188.27
CR_HS3BC	2009	997.00	51.59	51,438.59
CR_S23B	2009	277.01	32.88	9,107.61
CR_S3AB	2009	791.07	69.92	55,312.83
CR_S3BC	2009	334.51	31.55	10,555.37
CR_SH34BC	2009	3,254.60	52.66	171,371.58
H12CD	2009	937.95	14.75	13,830.23
H1B	2009	3,715.53	38.06	141,412.60
H2AB	2009	1,547.35	48.15	74,502.68
H2C	2009	2,833.39	34.12	96,686.61
H34A	2009	2,114.09	85.76	181,297.01
H34B	2009	2,742.00	74.32	203,786.74
H34C	2009	1,173.21	48.66	57,088.63
H3A	2009	5,618.29	85.94	482,841.05
H3B	2009	8,363.61	84.32	705,245.55
H3C	2009	20,131.06	71.12	1,431,771.68
HS3B	2009	3,042.26	68.18	207,424.84
HS3C	2009	2,341.24	68.82	161,125.76
S2AB	2009	980.08	52.77	51,716.34
S2C	2009	943.03	30.17	28,450.56
S3AB	2009	3,117.73	53.66	167,288.24
S3C	2009	2,580.80	54.18	139,836.47
S3D	2009	715.82	38.69	27,698.27
SH3B	2009	2,343.41	60.90	142,719.82
SH3C	2009	1,622.85	65.43	106,181.51
Total		102,907.78		6,494,139.27
Average			63.11	

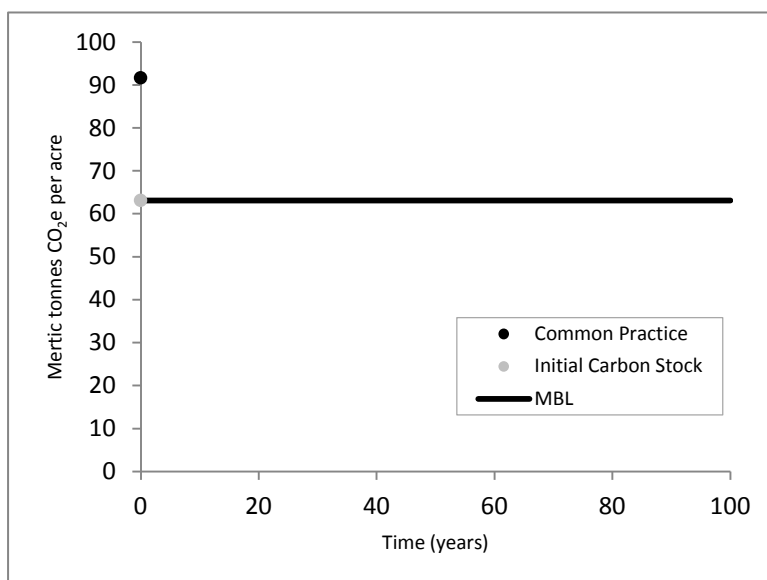


Figure 9. Step 2 - Common Practice vs. Initial Carbon Stock

Step 3 – Determine Baseline Above-Ground Standing Live Carbon Stocks

The baseline above-ground standing live carbon stocks were determined by modeling above-ground standing live carbon stocks through a series of growth and harvesting scenarios over 100 years. The annual stock levels were averaged over the required 100-year time frame such that the baseline is expressed as a single (average) value for above-ground standing live carbon stocks per acre in every year. The modeling was performed following the guidance in the FOP's Appendix B and considers the following required conditions:

Consideration of Legal Constraints

In modeling the baseline for standing live carbon stocks, the forest owner has considered and incorporated all legal constraints that could affect baseline growth and harvesting scenarios.

Characterization

The baseline scenario maximizes timber harvesting over 100 years, as a function of what it is legally allowable, financially feasible and physically possible. In the baseline model, forest stand development was projected using even-aged systems, sometimes creating two-aged or multi-aged conditions depending on the arrangement of treatment types over time. Forest stands were subject to two treatment types: geometric thinning and establishment cutting of the irregular shelterwood method. In no case did any treatment remove all trees in the same stand in the same entry, that is, clearcutting treatments were not prescribed.

Baseline Activities

A ‘geometric thinning’ was defined as an intermediate cutting with the distribution of the cut being equal across all diameter classes, that is, an equal proportion of trees were removed from each diameter class. In no case, was the proportion greater than 50 percent. A stand was eligible for this type of cutting if the sawtimber harvest volume was at least 2,500 board feet per acre and, needless to say, the residual basal area was not below the clearcut thresholds⁶. Stands were eligible for this treatment up to two times over the 100-year projection. A 40-year delay time was enforced between entries of this treatment type.

An ‘establishment cutting’ was defined as a regeneration event with the distribution of the cut taken from below starting at 4 inches dbh, cutting 100 percent of the live trees in a diameter class, and incrementally cutting trees of the next larger size until a residual basal area of 30 square feet. Cutting of this fashion leaves an overwood of reserve trees with upper crown position and the largest diameters. A stand was eligible for this type of treatment if the sawtimber harvest volume was at least 1,000 board feet per acre or the total harvest volume was at least 10 cords per acre. Stands were eligible for this treatment up to two times over the 100-year projection, or once if the stand had already received two geometric thinnings as described above.

The arrangement of these treatments over time and space create timber value and provide ecosystem services that are in line with the baseline scenario characterization. Before the end of the baseline model each acre in the project area was treated at least once. The arrows in Figure 10 indicate baseline treatment paths for the project area beginning with the start date condition (i.e. ‘Not treated’ yet). Baseline harvest yields by silviculture and legal constraint are also shown in Figure 10 (note: all baseline treatments were applicable to all legal constraints). The development case for each stand, and the management regime at the landscape level, yield an acceptable return on investment for the landowner while maintaining compliance with the working forest conservation easement to manage the forest sustainably and mitigate impacts to water quality, scenic benefits, wildlife habitat, outdoor recreation and other conservation values. In all cases, after a treatment, there is never a full canopy removal but instead, legacy trees which remain indefinitely to serve multiple management objectives.

⁶ See CE and APA Constraint Class with respect to clearcutting, page 28.

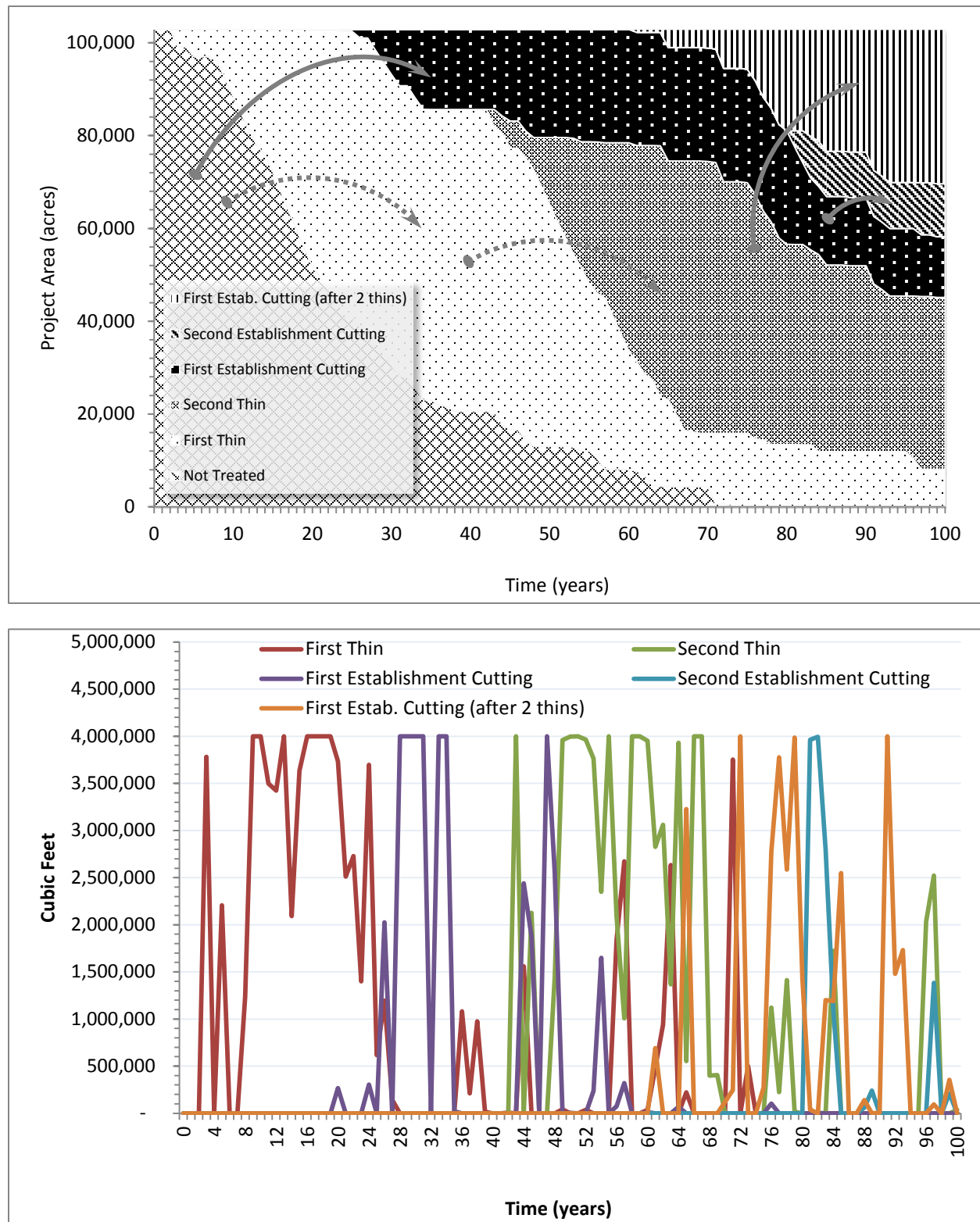


Figure 10. Project Area (top) and harvest volumes (bottom) over time by silviculture and legal constraints

Baseline Legal Constraints

Constraints that affect land-use specific to forest management activities have been incorporated into the carbon modeling. For this project, legal constraints have the greatest effect on timber harvesting levels. These constraints dictate what types of silvicultural activities (treatment types) are allowed, and where (spatial) and when (temporal) they are allowed, that is, there are different legal constraints for different sections of the project area. For this reason, each forest stand in the project area has been assigned to a “constraint class” indicating what constraints are applicable. (Note: constraint classes are attributed in the stands layer under the ‘ConstraintClass’ field in the project geodatabase). There are three constraint classes: 1) Conservation Easement and Adirondack Park Agency (CE and APA); 2) Adirondack Park Agency (APA only); and 3) General constraints. Each constraint, and how it is applied in the modeling, is described below by constraint class.

CE and APA Constraint Class

These are forest stands in the project area subject to the CE and APA regulations, as well as any other applicable standards or regulations. There are 98,562 ± acres that fall into this constraint class. The conservation easement sets parameters on forest management activities, to an extent, through its terms and conditions, some of which are specific and others that default to APA regulations and/or general New York State Department of Environmental Conservation (NYSDEC) guidelines. Forest stands in the project area of this constraint class must follow these terms at a minimum:

1. Conduct forest management and harvest activities under the supervision of a professional forester in accordance with sound and generally accepted silvicultural standards at the time of harvest, and follow a written forest management plan. This is a requirement of the conservation easement terms and conditions. The baseline scenario in the project area subject to the CE is consistent with the primary goal of the management plans in place at the project start date, to manage the property as a yield oriented investment while maintaining compliance with the CE held by NYSDEC.

This overall constraint is emulated in the baseline model by maximizing forest product yields with silvicultural systems and treatment types generally used by the forest owner for compliance since implementation of the conservation easement (e.g. irregular shelterwood methods).

2. No forest management activities shall occur within all land 100 feet from the high water mark of any lakes, ponds and bogs. This is a requirement of the conservation easement terms and conditions. Forest management activities may occur within these areas when activities are intended to enhance specific ecological or silvicultural goals related to native species. In such cases, activities shall be guided by NYSDEC Timber Harvesting Guidelines which suggest to avoid cutting within 10 feet of banks, and when clearcutting, to leave a 50 foot wide uncut strip along all sides. In addition, APA has restrictions that apply to “Adirondack Shorelines.” Shoreline restrictions apply to all lakes and ponds, all rivers being studied for inclusion in the Wild, Scenic and Recreational Rivers System, and all other rivers or streams navigable by boat, including canoe. Along these shorelines, there is no cutting within six feet of the shore and no removing more than 30 percent of the existing trees in excess of six inches in dbh within 35 feet of the shore, over a 10-year period.

This overall constraint is emulated in the baseline model by using silvicultural systems and treatment types generally used by the forest owner for compliance since implementation of the conservation easement (e.g. irregular shelterwood methods).

3. Forest management activities along streams, rivers or in wetlands must meet or exceed currently accepted silvicultural practices. This is a requirement of the conservation easement terms and conditions. APA also regulates forest management in freshwater wetlands. Selective cutting and harvesting fuel wood are activities that *do not* need permitting in wetlands. Clearcutting in wetlands greater than three

acres requires obtaining a permit.

This overall constraint is emulated in the baseline model by using silvicultural systems and treatment types generally used by the forest owner for compliance since implementation of the conservation easement (e.g. irregular shelterwood methods). For simplicity in compliance with clearcutting constraints, the baseline model does not employ clearcut harvesting practices, including in wetlands.

4. The APA regulations stipulate there shall be no cutting in areas within 100 feet of the mean high-water mark of any wild, scenic or recreational river. There are exceptions which allow cutting within 100 feet; however, none of the property, let alone the project area, is located in such areas. Therefore, it is not necessary to incorporate this regulation into the baseline model.
5. The APA regulations also stipulate, between 100 feet from the mean high-water mark of any wild, scenic or recreational river and one-quarter mile from the bank (referred to as the Designated River Area or River Area), there is no cutting that removes the main crown canopy of a forest stand on more than one-third of the total area of the stand during any 10-year period. In no event, however, shall more than 15 contiguous acres in the same ownership be clearcut, nor shall more than 50 percent of the basal area of timber in any tract of 30 contiguous acres in the same ownership be cut during any 10-year period in the River Area.

There are no Designated River Areas in the Project Area or under ownership by the Forest Owner. Most of these areas are held in ownership by the state of New York.

6. Visual and auditory impacts of tree harvesting shall be minimized within one-half mile of wild, scenic or recreational rivers for the sake of recreational users of river corridors. No timber harvesting or road building activities shall take place within one-half mile of the banks of Oswegatchie, Grasse, St. Regis and Deer Rivers from May 1 to October 15 of each year except as provided for and justified in the forest management plan. This is a requirement of the conservation easement terms and conditions.

This overall constraint is emulated in the baseline model by using silvicultural systems and treatment types generally used by the forest owner for compliance since implementation of the conservation easement (e.g. irregular shelterwood methods). Additionally, no more than 4 million cubic feet can be harvested in any single year. This represents historical and current feasible harvest levels that provide flexibility in harvest timing and location to maintain compliance.

7. Regeneration Standards: Stand density shall not be reduced below the C-line of the appropriate silvicultural guides for the forest types being treated unless there is sufficient regeneration present or it is warranted to promote the establishment and growth of desirable regeneration where insufficient regeneration is present. This is a requirement of the conservation easement terms and conditions.

This overall constraint is emulated in the baseline model by using silvicultural systems and treatment types generally used by the forest owner for compliance since implementation of the conservation easement (e.g. irregular shelterwood methods).

8. No clearcut, as defined by the APA, will exceed 25 acres in area (size). This is a requirement of the conservation easement terms and conditions. The APA defines clearcutting as any cutting over a 10-year period of time, where the total basal area for trees at least 1 inch dbh is less than 30 square feet per acre. However, it is not deemed a clearcut if the total basal area of trees at least 1 inch dbh is at least 30 square feet per acre AND the total basal area for trees in excess of 6 inches dbh is at least 10 square feet per acre. Clearcut areas of 8 acres or more will be aggregated in computing the 25 acre threshold if they are not separated from each other by uncut areas at least 300 feet wide at all points.

For simplicity in compliance with clearcutting constraints, the baseline model does not employ clearcut

regeneration methods. Every harvest treatment leaves a total residual basal area of at least 30 square feet per acre, of which at least 10 square feet is distributed in trees with a minimum dbh of 6 inches.

9. Harvest levels are restricted to a volume that does not exceed 70 percent of the periodic annual growth on growing stock trees, and shall remain in force until the year 2019. After 2019, harvest levels are restricted to periodic annual growth. This is a requirement of the conservation easement terms and conditions. Periodic annual growth for the purposes of the easement shall be defined as: the total volume of wood produced by all growing stock trees in the forest net the losses attributable to mortality. The percentage of periodic growth is referred to as a percentage of the periodic growth of all properties subject to the easement that are under common ownership at the time of harvest. Periodic annual growth shall be calculated as an annual average for a 10-year period. Allowable cut is monitored and tracked over 10-year intervals to reflect the ability of managers to address markets, weather and other management considerations. Managers either increase or decrease the harvest on an annual basis to fall within the allowable cut parameters for a 10-year period. The conservation easement uses the term 'growing stock' as defined by the USDA Forest Service Forest Inventory and Analysis: all trees of commercial species found in the seedling, sapling, pole timber, and saw timber size classes.

This constraint is emulated in the baseline model by limiting the total volume of wood harvested each year (or as reconciled over a 10-year period) to the appropriate percent of periodic annual growth (70 percent up to 2019, 100 percent after 2019).

10. Logging operation closure zones as required by the conservation easement terms and conditions:
 - a. Harvest closure to acceptable public recreation on any forested stand cannot exceed 24 months in duration.

This constraint is emulated in the baseline model by the maximum time any stand is closed for harvesting, which is one year. If a stand is selected for harvest, it is assumed to be completely harvested in the year it is selected.

- b. No more than 10 percent of the property subject to the easement can be closed at any other time for logging operations.

This constraint is emulated in the baseline model by setting a constraint on the number of annual harvest acres. The baseline model results demonstrate less than 5 percent of the project area was treated in any single year.

APA Constraint Class

These are forest stands in the project area subject to APA regulations, as well as any other general regulations, but not subject to the conservation easement. There are 174 ± acres that fall into this constraint class. Generally, there are no requirements for the harvesting of trees on non-shoreline parcels unless the forest owner plans to clearcut more than 25 upland acres or 3 wetland acres, or the property is located in a Designated River Area. Forest stands in the project area of this constraint class must follow these terms at a minimum:

1. No clearcut, as defined by the APA, will exceed 25 acres in area (size) without an approved permit authorized by the APA. The APA defines clearcutting as any cutting over a 10-year period of time, where the total basal area for trees at least 1 inch dbh is less than 30 square feet per acre. However, it is not deemed a clearcut if the total basal area of trees at least 1 inch dbh is at least 30 square feet per acre AND the total basal area for trees in excess of 6 inches dbh is at least 10 square feet per acre. Clearcut areas of 8 acres or more will be aggregated in computing the 25 acre threshold if they are not separated from each other by uncut areas at least 300 feet wide at all points. This is a requirement of the APA rules and regulations.

For simplicity in compliance with clearcutting constraints, the baseline model does not employ clearcut harvesting practices. Every harvest treatment leaves a total residual basal area of at least 30 square feet per acre, of which at least 10 square feet is distributed in trees with a minimum dbh of 6 inches.

2. There are no Designated River Areas in this constraint class.
3. There are no Adirondack shorelines in this constraint class.
4. There are no freshwater wetlands in this constraint class.

General Constraint Class

These are forest stands in the project area subject only to general state and federal regulations. There are 4,163 ± acres that fall into this constraint class. Generally, there are no requirements for the harvesting of trees in this constraint class other than restricted cutting near shores of NYS wild, scenic and recreational rivers or in regulated freshwater wetlands. Forest stands in the project area of this constraint class must follow these terms at a minimum:

1. Only selective cutting of trees is allowed in designated freshwater wetland areas. Clearcutting treatments must obtain a permit. This is a requirement of the NYS Freshwater Wetlands Act.

This constraint is emulated in the model by employing harvesting methods other than clearcutting in designated wetland areas. The model assumes no permit applications are submitted for clearcutting projects in wetlands.

2. There are no wild, scenic or recreational river areas in this constraint class.

Consideration of Financial Constraints

In modeling the baseline for standing live carbon stocks, the forest owner has incorporated financial constraints that affect baseline growth and harvesting scenarios. For example, the project area only includes sites with adequate operability and access for commercial harvesting. As mentioned previously, stands were only eligible for treatments if they yielded a minimum harvest volume. On an annual basis at the project area level, no more than 4 million cubic feet was permitted to be harvested which conservatively reflects the historical capacity and resources of the forest owner, available logging contractors, and markets. The forest owner also maintains an extensive network of permanent and seasonal roads to support forest operations across the property.

Harvest activities similar to those modeled in the baseline have been taking place on the project area by the forest owner for the past 10 years. Likewise, other landowners in the surrounding area and within the same Assessment Area have been conducting comparable activities in their forests for decades. As per FOP section 6.2.1.3, the forest owner has provided evidence that demonstrates harvest activities which have taken place on other properties within the project's Assessment Areas in the past 15 years and also have:

- a. Slopes that do not exceed slopes in the project area by more than 10 percent
- b. An equivalent zoning class to the project area
- c. Comparable species composition to the project area (i.e. within 20 percent of project species composition based on trees per acre.
- d. Similar access by road, cable or helicopter

The table below summarizes an analysis of similar harvest activities on nearby lands.

Table 15. Baseline harvest activity comparison on nearby lands demonstrating consideration of financial constraints

Evidence/Document	Slope	Zoning Class	Species Composition	Access
Timber Harvesting Activity showing establishment cutting and thinning treatments on nearby lands (for further detail reference Timber Harvesting Agreement submitted under separate cover, <i>CAR 1088 Winter 10-11-CW – Timber Harvesting Agreement.pdf</i> page 16)	Slope, elevation, and terrain in terms of operability within 10 percent of lands in project area (see Figure 11 and “Hatch Brook” harvest map on page 18 of Timber Harvesting Agreement)	Same zoning class as project area (both subject to APA regulations)	Species composition is comparable (i.e., overstory comprised of red maple, sugar maple, American beech, yellow birch, and aspen). Trees per acre not available; harvest removals are consistent with baseline minimum harvest volumes.	Nearby harvest activity close enough to project area whereby they would use the same paved roads. Woods roads and skid trails comparable and typical for the region, i.e. fair condition.

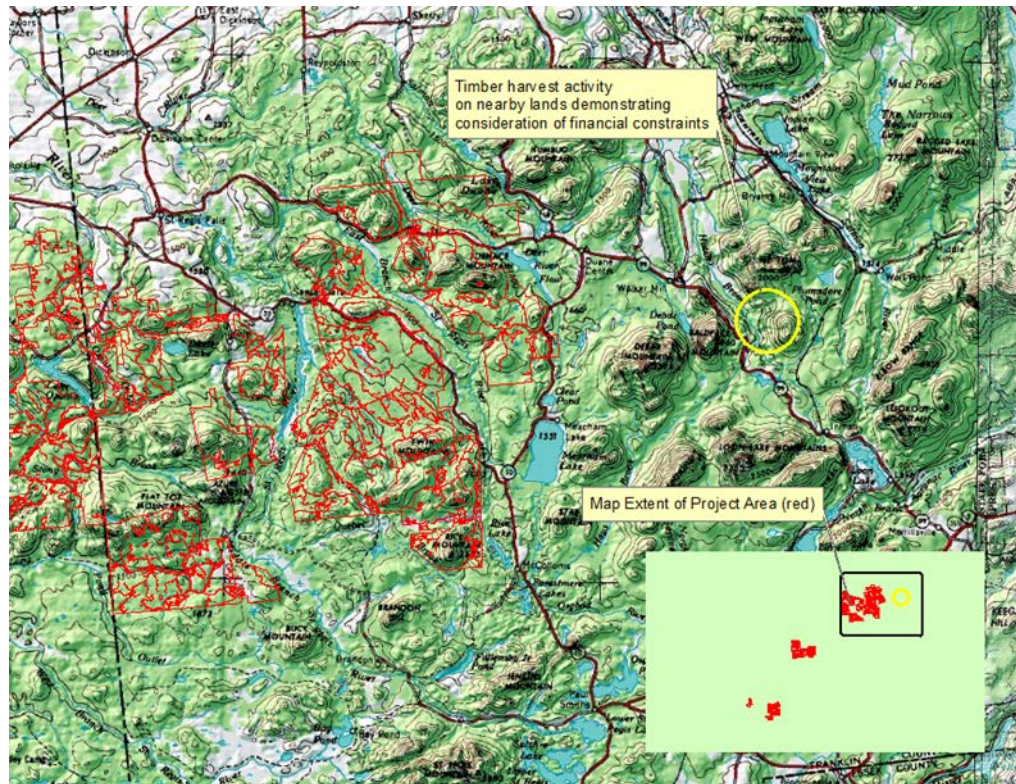


Figure 11. Terrain of timber harvest activity on nearby lands

Minimum Baseline Level

The averaged model results must not fall below a minimum baseline level (MBL). Since initial above-ground standing live carbon stocks were below Common Practice, the MBL was determined using the formula in the FOP's Equation 6.6 (Determining the Minimum Baseline Level Where Initial Stocks Are Below Common Practice).

Equation 6.6:

$$\text{MBL} = \text{MAX} (\text{MAX} (\text{HSR}, \text{ICS}), \text{MIN} (\text{CP}, \text{WCS}))$$

Where:	MBL	=	Minimum baseline level (above-ground standing live carbon stocks)
	HSR	=	The "High Stocking Reference" for the Project Area. The High Stocking Reference is defined as 80 percent of the highest value for above-ground standing live carbon stocks per acre within the Project Area during the preceding 10-year period. To determine the High Stocking Reference, the Forest Owner must document changes in the Project Area's above-ground standing live carbon stocks over the preceding 10 years, or for as long as the

Forest Owner has had control of the stocks, whichever is shorter.

CP	=	Common Practice (as determined in Step 1)
ICS	=	Initial above-ground standing live carbon stocks per acre within the Project Area (as determined in Step 2)
WCS	=	The weighted average above-ground standing live carbon stocks per acre for all Forest Owner (and affiliate) landholdings within the same logical management unit as the Project Area. See Section 6.2.1.1 in the FOP for requirements and guidance on calculating WCS.

The first inner function in Equation 6.6 evaluates the maximum of HSR and ICS. The ICS was determined in step 2 (ICS = 63.11 t CO₂e per acre). The HSR was assessed using the forest owner's timber harvest depletion records, which are also subject to an annual review by two third parties, FSC forest certification and NYS DEC. The 10-year period preceding the project commencement date coincides with the forest owner's first 10 years of holding title to the land. The property was acquired by the forest owner in 1999. Since acquisition of the property, the forest owner has cut less than periodic annual growth (PAI) as calculated over 10 year periods. In fact, it has been no more than 70 percent of PAI. This harvest level threshold reflects constraints on the forest owner stipulated in the conservation easement (further described in CE and APA Constraint Class, page 44). Table 16 shows cumulative net growth has increased each year since acquisition to the time of the project commencement date. An affidavit that includes the growth and harvest volume summary report used to determine the HSR has been submitted to the verifier and made part of the OPDR as Appendix N. High Stocking Reference Affidavit.pdf.

Table 16. Harvest volumes and net forest growth (cords) to assess HSR

Year	Forest Growth		<----- Harvest Volume ----->				Net Forest Growth	
	Periodic Annual Growth ¹	Legal Allowable Harvest ²	Saw logs ³	Pulpwood ⁴	Chipwood ⁵	Total Harvest Volume	Net Forest Growth	Cumulative Net Growth
1999	52,800	36,960	376	1,114	0	1,491	51,309	51,309
2000	52,800	36,960	2,781	9,908	0	12,689	40,111	91,420
2001	52,800	36,960	4,431	27,639	3,678	35,749	17,051	108,471
2002	52,800	36,960	7,210	27,530	3,201	37,942	14,858	123,330
2003	52,800	36,960	6,482	26,450	2,974	35,905	16,895	140,224
2004	52,800	36,960	6,901	31,228	10,686	48,815	3,985	144,209
2005	52,800	36,960	6,585	17,425	9,802	33,812	18,988	163,197
2006	52,800	36,960	9,157	20,828	20,569	50,554	2,246	165,443
2007	52,800	36,960	7,935	16,944	25,522	50,402	2,398	167,841
2008	52,800	36,960	6,252	18,401	12,115	36,769	16,031	183,872
2009	52,800	36,960	2,398	2,898	5,104	10,400	42,400	226,272
Total	580,800	406,560	60,508	200,368	93,652	354,528	226,272	-

1. The total 'merchantable' volume of wood produced by all growing stock trees in the forest net the losses attributable to mortality (model considers trees $\geq 3.1"$ dbh and commercial species only – volumes calculated using LandVest equations).

2. Per Conservation Easement, eased lands are legally allowed to harvest 70% of the Periodic Annual Growth for the first 20 years (i.e., 1999-2019)

3. Taken from "MBF Harvested" column in "Champion Lands Harvests and Allowable Cut" report; conversion - 2 cords/MBF

4. Taken from "Cords Harvested" column in "Champion Lands Harvests and Allowable Cut" report

5. Taken from Chipwood data; no chipwood data in 1999 and 2000; 15 percent topwood discount replaced in 2004 through 2009; no 15 percent topwood discount apparent in 2001 through 2003

Data source: Forest owner records, see HSR calculations in Worksheet Calculations file provided for verification purposes.

Therefore, HSR can be conservatively calculated as 80 percent of the above-ground standing live carbon stocks at the project start date (ICS):

$$\begin{aligned}
 \text{HSR} &= \text{ICS} \times 0.80 \\
 &= 63.11 \times 0.80 \\
 &= 50.49
 \end{aligned}$$

Therefore,

$$\begin{aligned} & \text{MAX} \quad (\text{HSR}, \text{ICS}) \\ & (50.49, 63.11) \\ & (63.11) \end{aligned}$$

The second inner function in Equation 6.6 evaluates the minimum of CP and WCS. The CP was determined in Step 1 (CP = 91.69 t CO₂e per acre). The WCS was calculated using inventory data and **Equation 6.7** (Formula for WCS Using Inventory Data) from the FOP which is expressed as:

$$\text{If } \left| 1 - \frac{\text{ECS}}{\text{ICS}} \right| \leq 0.2, \text{ then } \text{WCS} = \text{ICS}$$

$$\text{If } \left| 1 - \frac{\text{ECS}}{\text{ICS}} \right| > 0.2, \text{ then } \text{WCS} = \frac{\text{ICS} \times \text{PA} + \text{ECS} \times \text{EA}}{\text{PA} + \text{EA}}$$

Where:	WCS	=	Same as in Equation 6.6
	ICS	=	Same as in Equation 6.6
	PA	=	Size of the project area in acres
	ECS	=	Above-ground standing live carbon stocks per acre within the LMU <i>but excluding the Project Area</i> (EA), as determined from existing inventory data
	EA	=	Size of the LMU in acres, <i>excluding the Project Area</i>
	LMU	=	Logical Management Unit

In this case, the LMU is defined by all lands where the forest owner either owns in fee or holds timber rights on within the same Assessment Area(s) as the Project. This is the total ownership and includes the Project Area (PA)

and the Excluded Area (EA) which is defined below and in Section 4. Identifying the Project Area. As a matter of evaluating the first if-then expression in Equation 6.7, ECS was determined by summarizing the above ground standing live carbon stocks per acre within the LMU, excluding the Project Area (i.e. the excluded area or EA) using the inventory data. The EA is comprised of non-fee simple lands, lands retained from scheduled lands to be transferred to State of New York as part of a deal to modify the conservation easements, and a Positive Boundary Discrepancy. The results in Table 17 show that ECS equals 64.60 t CO₂e per acre.

Table 17. Excluded Area carbon stock to calculate WCS

EA Type	Forest Strata	Acres	SLAGCO ₂ e	Weighted SLAGCO ₂ e
Non-Fee Simple Lands	CR_H34A	42.11	77.75	3.59
	CR_H34B	432.62	72.45	34.41
	CR_H3B	183.47	62.41	12.57
	CR_H3BC	94.83	56.54	5.89
	CR_H3CD	18.53	44.49	0.90
	CR_HS3BC	4.32	50.53	0.24
	CR_SH34BC	1.61	52.18	0.09
Future Transfer to NYS	H1B	51.52	37.76	2.14
	H2AB	12.04	48.14	0.64
	S2AB	7.33	52.59	0.42
Positive Boundary Discrepancy	CR_HS34B	57.66	54.22	3.43
	SH3B	4.83	52.18	0.28
EA =		<u>910.88</u>	ECS =	<u>64.60</u>

Using the values of ECS and ICS, the first if-then expression can be tested as:

$$\text{If } \left| 1 - \frac{ECS}{ICS} \right| \leq 0.2, \text{ then } WCS = ICS$$

$$\text{If } \left| 1 - \frac{64.60}{63.11} \right| \leq 0.2, \text{ then } WCS = ICS$$

$$\text{If } |1 - 1.024| \leq 0.2, \text{ then } WCS = ICS$$

$$\text{If } |0.024| \leq 0.2, \text{ then } WCS = ICS$$

Because the sentence in the first if-then expression is true, WCS equals ICS and the second inner function of Equation 6.6 is evaluated as:

$$\begin{aligned} \text{MIN} \quad & (\text{CP}, \text{WCS}) \\ & (91.69, 63.11) \\ & (63.11) \end{aligned}$$

The primary function of Equation 6.6 is then reduced and the minimum baseline level is determined as:

$$\begin{aligned} \text{MBL} &= \text{MAX} (\text{MAX} (\text{HSR}, \text{ICS}), \text{MIN} (\text{CP}, \text{WCS})) \\ &= \text{MAX} (\text{MAX} (50.49, 63.11), \text{MIN} (91.69, 63.11)) \\ &= \text{MAX}(63.11, 63.11) \\ &= 63.11 \end{aligned}$$

The average modeled results, expressed as above-ground standing live carbon stocks per acre, must not fall below the MBL, 63.11 tCO₂e.

Setting the Baseline for Above-Ground Standing Live Carbon Stocks

The baseline growth and harvest regime was planned using Remsoft's forest modeling software, Woodstock⁷. Yield tables (i.e. development cases) were created from the 2009 inventory data for each stratum using the Forest Vegetation Simulator (FVS⁸) as described previously, taking into account the timing and responses of harvesting and mortality. All legal and financial considerations were applied in the baseline model through treatment types and output constraints. Figure 12 plots above-ground standing live carbon stocks against time. The results show the 'average above-ground standing live carbon stocks' per acre (66.08 tCO₂e), which constitutes the baseline and

⁷ <http://www.remsoft.com/products.php>

⁸ <http://www.fs.fed.us/fmssc/fvs/>

is a result of modeling the legal constraints as the basis for the project baseline, does not fall below the MBL (Figure 12). The total baseline average above-ground standing live carbon stock is 6,800,474 tCO₂e.

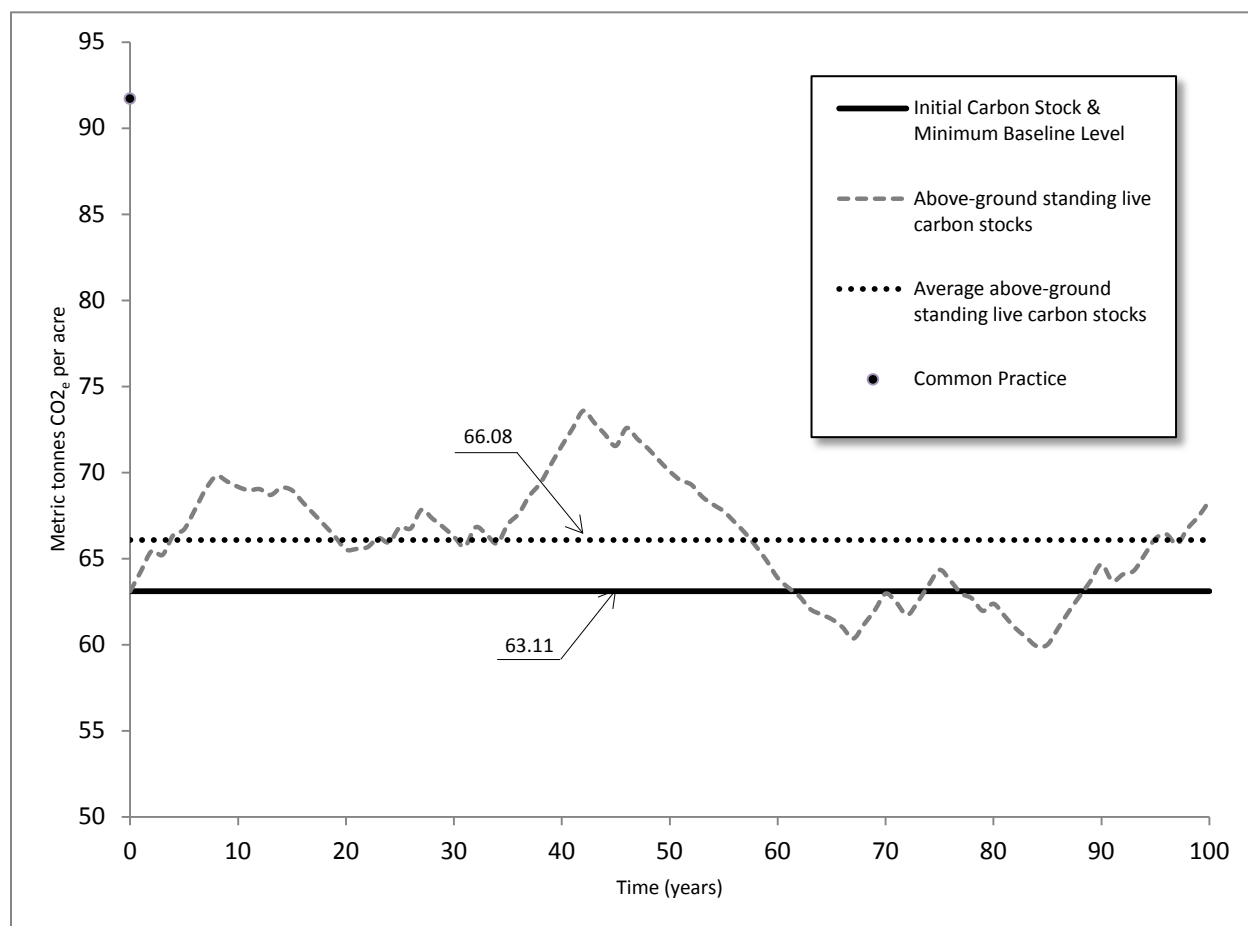


Figure 12. Baseline above-ground standing live carbon stocks.

Step 4 – Determine the Baseline for All Onsite Carbon Pools

Additional pools, shown in Figure 13, were modeled and quantified in the same fashion as the above-ground standing live carbon stocks in the previous step. These additional pools were below-ground standing live carbon stocks and total standing dead carbon stocks. The final total baseline onsite carbon stock for all pools is 8,458,085 tCO₂e or 82.19 tCO₂e per acre (Figure 14). This was input to the ROC/ARBOC Monitoring Calculation Worksheet under *Baseline Onsite Carbon Stocks (tonnes CO₂e)*, calc row 6.

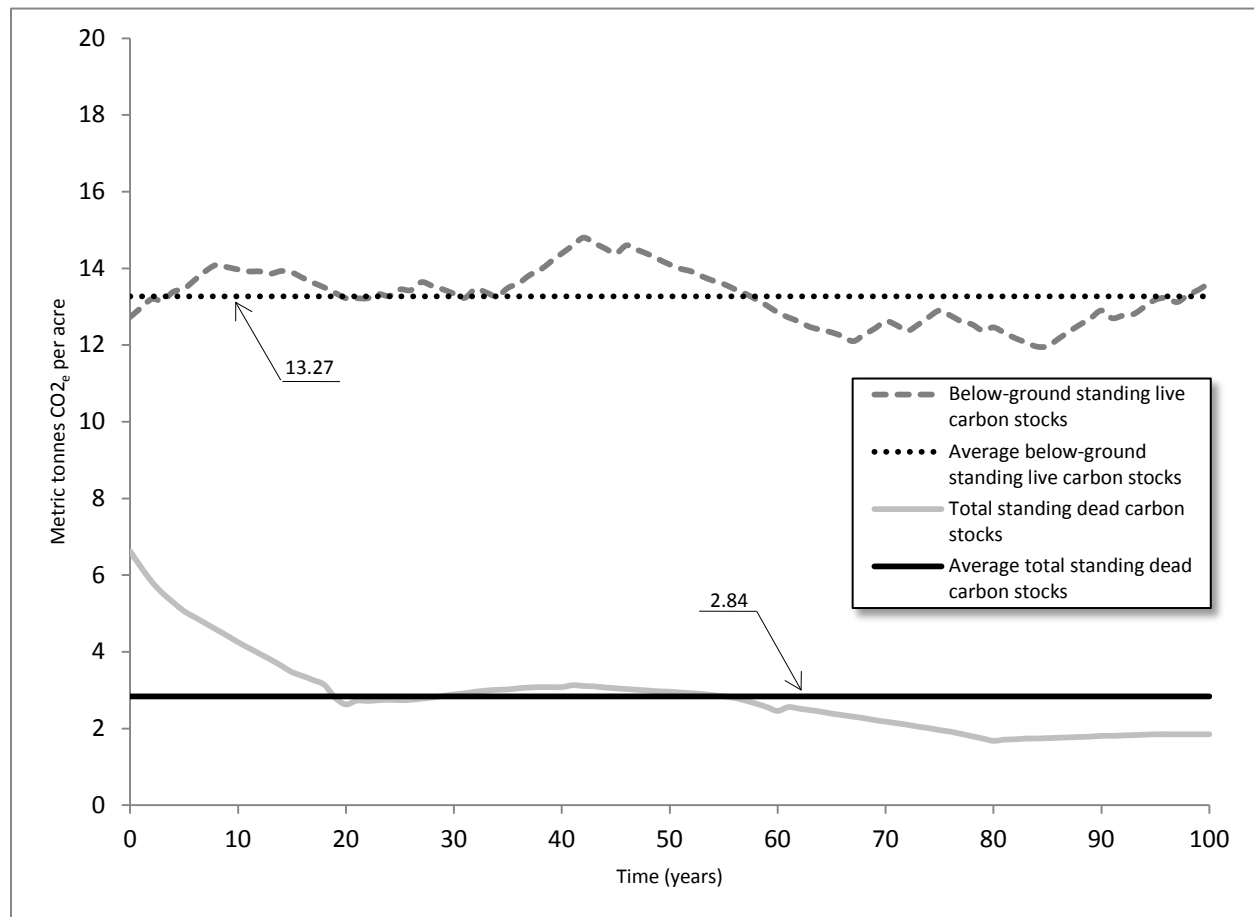


Figure 13. Additional baseline carbon pools.

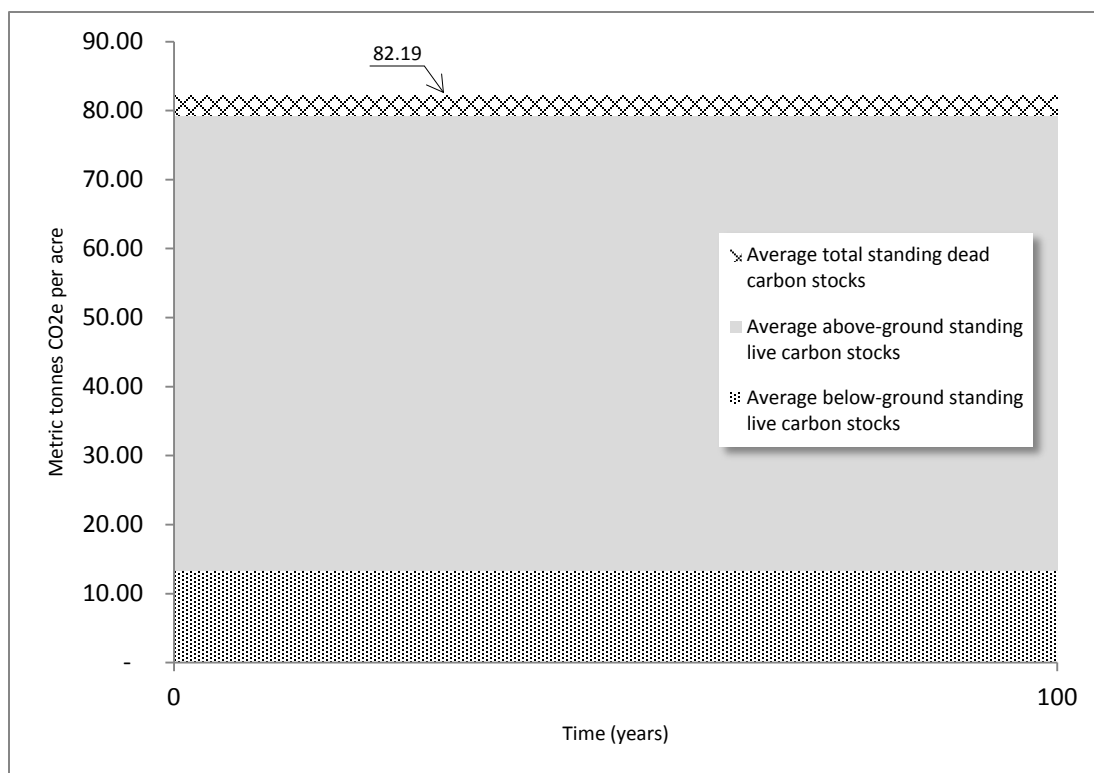


Figure 14. Final baseline for all onsite carbon pools.

6.2.2 Estimating Baseline Onsite Carbon Stocks – Public Lands (n/a)

6.2.3 Estimating Baseline Carbon in Harvested Wood Products

To estimate the amount of baseline carbon transferred to long-term storage in harvested wood products, first the amount of carbon in trees (i.e. standing live carbon stocks) harvested for wood products was determined from the growth and harvest regime used to develop the baseline for onsite carbon stocks. Baseline and project harvest volume projections in cubic feet are shown in a table in Appendix G. Baseline and Project Harvest Volumes RP1 v1.0.pdf. The average of baseline carbon in trees harvested for wood products was 122,496 tCO₂e (1.19 tCO₂e/acre) as shown in Figure 15. This was input to the ROC/ARBOC Monitoring Calculation Worksheet calc row 10.

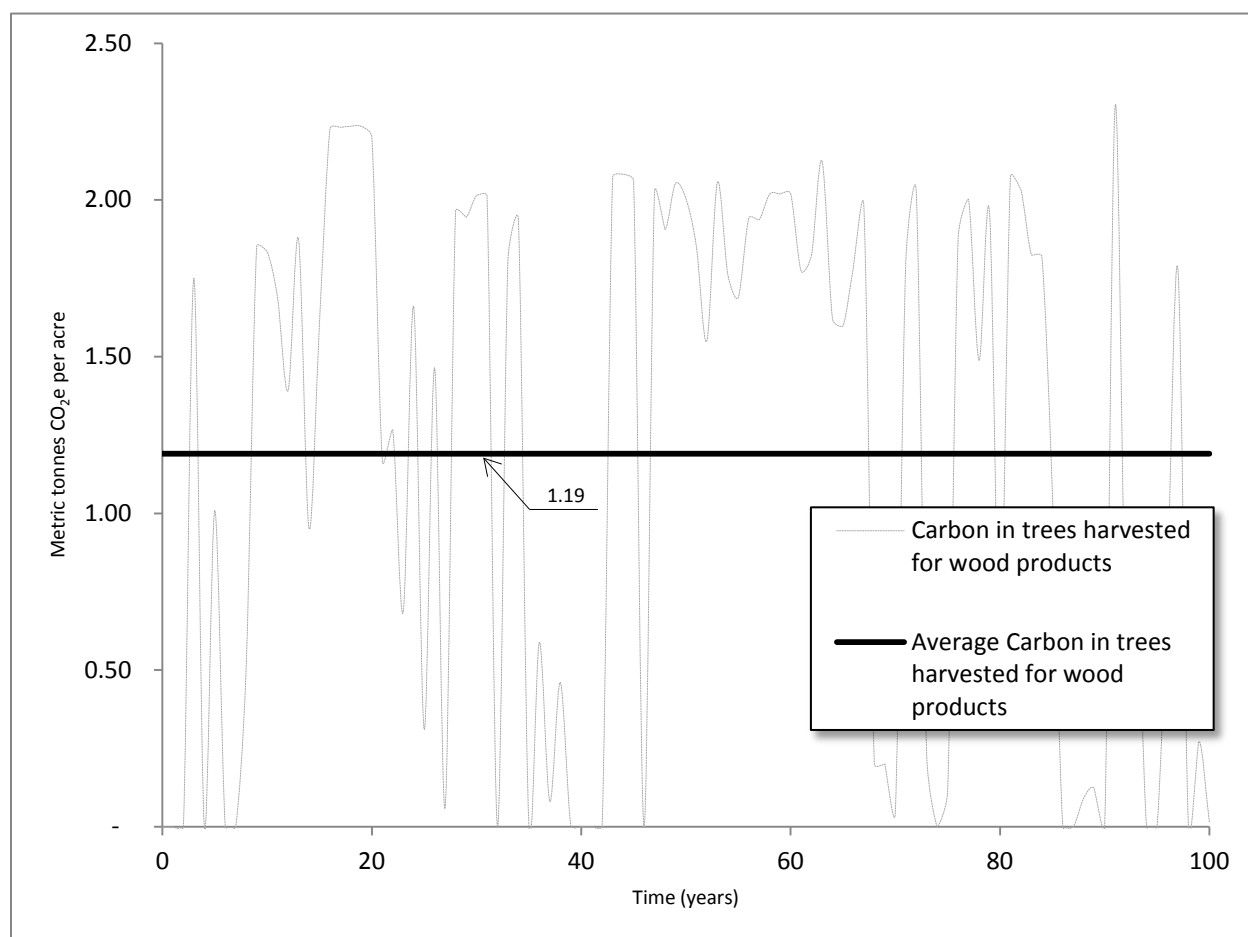


Figure 15. Baseline carbon in trees harvested for wood products.

Second, the amount of baseline carbon in harvested wood delivered to the mill was calculated. This is only the carbon in the merchantable wood portion of the trees harvested for wood products prior to delivery to the mill (i.e. DRYBIO_BOLE less the bark component). The top, stump and below ground portions were considered to be immediately emitted to the atmosphere for accounting purposes. The estimates were derived using the same volume and biomass equations to calculate biomass in live trees. The average baseline carbon in harvested wood delivered to the mill was 62,600 tCO₂e (0.61 tCO₂e/acre) as shown in Figure 16. This was input to the ROC/ARBOC Monitoring Calculation Worksheet, calc row 12.

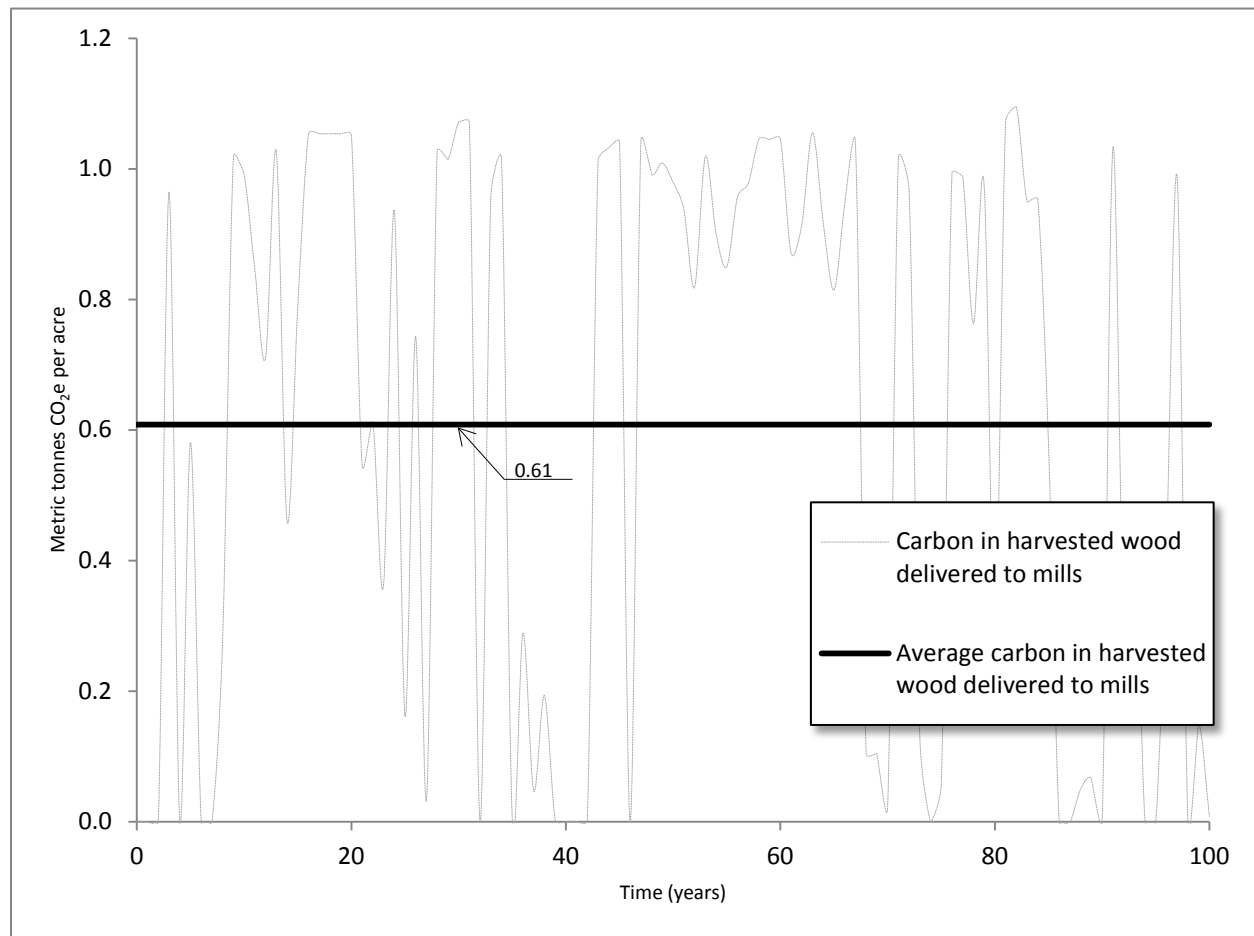


Figure 16. Baseline carbon in harvested wood delivered to mills.

The amount of carbon in wood delivered to the mill that transfers to wood products is then determined for each reporting period using the Harvested-Wood-Products-Calculation-Worksheet (HWPCW) tool provided under separate cover for verification purposes. The HWPCW tool is regional specific. Champion Carbon is in New York which is grouped in the Northeast Region as shown in Figure 17 ("NE").

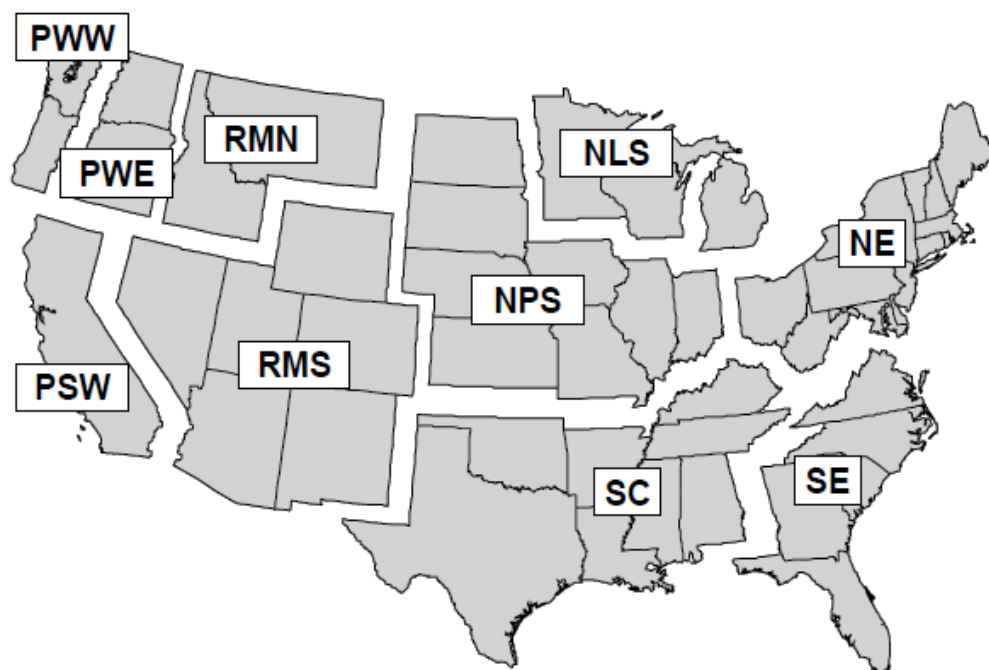


Figure 17. Definition of Regions

The average baseline carbon in harvested wood delivered to the mill was input to HWPCW Table 7. In HWPCW Table 5, the average baseline carbon in harvested wood delivered to the mill is then distributed among the wood product classes based on the percent product values established by the volume actually harvested in the project for that reporting period (see “% Product” in HWPCW Table 4). Actual harvest volumes for Reporting Period 1 were entered by wood product class in HWPCW Table 3 so the average baseline carbon in harvested wood delivered to the mill is distributed among the correct wood product classes in HWPCW Tables 4 and 5. A mill efficiency rate is applied next to determine the net baseline carbon in harvested wood delivered to the mill that is actually transferred to wood products. Default mill efficiency data, which vary by region, state, species group and product class, is provided in the Mill Efficiency Data File as it appears on the ARB website and is also in Table 11 of the HWPCW. The mill efficiencies are also shown in Table 18 below. The mill efficiency values are automatically used in the HWPCW tool as a function of selecting the Region in Section 1.

Table 18. Mill Efficiencies by Product

Region	State	Hardwood Saw Log	Hardwood Pulpwood	Softwood Saw Log	Softwood Pulpwood
Northeast (NE)	New York	0.614	0.650	0.569	0.513

After applying the mill efficiency rate, the HWPCW tool approximates the climate benefits of carbon storage in harvested wood products by estimating the *average* amount of carbon stored over 100 years in In-use wood products and landfills for each *wood product class*. Decay rates for each wood product class for In-use wood products and landfills have been provided by ARB as “average storage factors” (found in FOP, Table C.2 and C.3).

The amount of carbon transferred into each wood product class was multiplied by the 100-year average storage factor for In-use wood products to estimate the average carbon storage over 100 years in In-use wood products for the period (Table 19)

Table 19. Average storage factors used to estimate carbon in In-Use wood products and landfills

100-Year Average Storage Factor	Softwood Lumber	Hardwood Lumber	Plywood	Oriented Strand Board	Non- structural Panels	Miscellaneous	Paper
In-Use (IFM7)	0.463	0.250	0.484	0.582	0.380	0.176	0.058
Landfills (IFM8)	0.298	0.414	0.287	0.233	0.344	0.454	0.178

In the same fashion, 100-year average storage factors were used to estimate the average carbon storage over 100 years in landfills for the period. This is automatically calculated in the HWPCW tool. Finally, the HWPCW tool sums the baseline carbon stored long-term in wood products for the reporting period, first by excluding carbon stored in landfills, and then by including carbon stored in landfills (see HWPCW tool Table 6). These values are then input to the ROC/ARBOC Monitoring Calculation Worksheet in calc rows 15 and 16.

The total baseline carbon stored long-term in wood products since the project start date is shown in Table 20.

Table 20. Total Baseline Carbon Stored Long-Term in Harvested Wood Products

Reporting Period Start Date	Reporting Period End Date	Baseline Carbon Stored Long-term in Wood Products (tonnes CO ₂ e) - Excl Landfill	Baseline Carbon Stored Long-term in Wood Products (tonnes CO ₂ e) - Incl Landfill
4/22/2009	12/31/2010	3,395	11,749
1/1/2011	12/31/2011	3,300	11,488
1/1/2012	12/31/2012	3,496	11,807
1/1/2013	8/31/2014	9,702	32,393

6.2.4 Determining Actual Onsite Carbon Stocks

Initial onsite carbon stocks were determined using the inventory data and the most current volume and biomass equations (i.e. volume and biomass equations for projects outside of California, Washington and Oregon) appropriate for the Supersections and species as published by the ARB. For each subsequent reporting period (excepting inventory years) actual onsite carbon stocks were determined using the same growth and yield model software as described in the baseline. Activity data and emissions factors were updated based on inventory updates and data collected for harvest events. The actual onsite carbon stocks are listed by reporting period in Table 21 and the total stocks were input to the ROC/ARBOC Monitoring Calculation Worksheet in calc row 1 (Sampled Onsite Carbon Stocks).

This difference between the baseline carbon stocks and the actual carbon stocks is a result of the project's management activities. The management activities that lead to increased carbon stocks are not necessarily characterized as different types of silviculture systems than what are used in the baseline (see baseline characterization). Rather, the project deploys different procedures and technology which influence management decisions and the intensity of harvest treatments across space and time. The most noticeable change is the implementation of forest carbon accounting. Now, maintaining and increasing onsite carbon stocks is a forest management objective and is part of the inventory specifications and management planning process.

Table 21. Actual Onsite Carbon Stocks

		< -----Total Stocks (tCO2e) ----->			< -----Stocks Per Acre (tCO2e) ----->			
Reporting Period Start Date	Reporting Period End Date	IFM 1	IFM 3	Total	IFM 1	IFM 3	Total	
		Initial Carbon Stocks	7,804,494.0	681,382.0	8,485,876.0	75.84	6.62	82.46
4/22/2009	12/31/2010	7,888,840.4	638,224.0	8,527,064.4	76.66	6.20	82.86	
1/1/2011	12/31/2011	7,992,916.4	595,066.1	8,587,982.5	77.67	5.78	83.45	
1/1/2012	12/31/2012	8,072,551.3	562,534.3	8,635,085.6	78.44	5.47	83.91	
1/1/2013	8/31/2014	9,164,277.1	331,152.5	9,495,429.6	89.05	3.22	92.27	
		Baseline Carbon Stocks	8,166,012.6	292,072.5	8,458,085.1	79.35	2.84	82.19

6.2.5 Determining Actual Carbon in Harvested Wood Products

The amount of actual carbon transferred to long-term storage in harvested wood products was estimated using the same HWPCW tool and settings as discussed in 6.2.3 Estimating Baseline Carbon in Harvested Wood Products. Harvest volume delivered to the mill was summarized in a Verified Mill Report in cords for both softwoods and hardwoods based on the actual harvest reports and mill scale receipts/load tickets in the Project reporting periods. This was input to Table 3 of the HWPCW tool by wood product class. The Verified Mill Reports and HWPCW files have been provided under separate cover for verification purposes. See the following files:

- CAR1088 Verified Mill Report RP1 v1.0.xlsx
- CAR645 Verified Mill Reports 2009-2012.xlsx
- CAR1088 Harvested-Wood-Products-Calculation-Worksheet EA 2010 v1.0.xlsx
- CAR1088 Harvested-Wood-Products-Calculation-Worksheet EA 2011 v1.0.xlsx
- CAR1088 Harvested-Wood-Products-Calculation-Worksheet EA 2012 v1.0.xlsx
- CAR1088 Harvested-Wood-Products-Calculation-Worksheet ARB RP1 2013 v1.0.xlsx
- CAR1088 Harvested-Wood-Products-Calculation-Worksheet ARB RP1 2014 v1.0.xlsx

The harvest volume is then subsequently converted to cubic feet and then tons of CO₂e using the conversion factors and specific gravity factors found in HWPCW tool Table 11. The sum of these tons of CO₂e in all wood product classes is reported as the actual project carbon in harvested wood delivered to the mill and is input to the ROC/ARBOC Monitoring Calculation Worksheet in calc row 11.

The actual project carbon in trees harvested for wood products (i.e. carbon in the wood delivered to the mill plus all other components of the tree, i.e. bark, stump, top, and coarse roots) is determined using a multiplier, or expansion ratio. The multiplier is developed based on the ratio of baseline carbon in trees harvested for wood

products to baseline carbon in harvested wood delivered to the mill (see calc rows 10 and 12 in the ROC/ARBOC Monitoring Calculation Worksheet and Table 7 of the HWPCW tool). Because the carbon harvested in the baseline was determined using the method and equations required for projects outside of California, Washington and Oregon, the multiplier also reflects this method. The multiplier, in this case 1.96, is the same for all reporting periods. The actual project carbon in trees harvested for wood products is calculated in Table 6 of the HWPCW tool and then input to the ROC/ARBOC Monitoring Calculation Worksheet in calc row 9.

The net wood material transferred to wood products (i.e. after mill processing) is determined by applying the respective mill efficiency rates to the harvest volumes by wood product class (Table 18. Mill Efficiencies by Product). This volume is then converted to cubic feet and tons of CO₂e. After the net tons CO₂e transferred to wood products is calculated, the long-term storage in In-Use wood products and wood products in landfills is determined by applying the average-storage factors by wood product class (Table 19. Average storage factors used to estimate carbon in In-Use wood products and landfills, also see HWPCW tool Table 4).

Finally, the actual project carbon stored long-term in wood products is summed by wood product class for both excluding and including carbon stored in landfills (see Table 6 of the HWPCW tool). These values are entered into the ROC/ARBOC Monitoring Calculation Worksheet in calc rows 12 and 13, for each reporting period.

A summary of the actual project carbon stored long-term in wood products is shown in Table 22. Market Leakage and Other Secondary Effects.

6.2.6 Quantifying Secondary Effects

Secondary effects were calculated automatically by the project ROC/ARBOC Monitoring Calculation Worksheet according to Equation 6.10 in the FOP. The results, which reference the ROC/ARBOC calculation rows, are shown in Table 22. Market Leakage and Other Secondary Effects. The values used were (CalcRow9 – CalcRow10) * 20%, which equals CalcRow28. The baseline and actual carbon in trees harvested for wood products represents total tree carbon. Note that landfill carbon is included in the harvested wood products calculation if the cumulative project harvests are less than baseline harvests in that reporting period.

Table 22. Market Leakage and Other Secondary Effects

Calc Row	Market Effects and Leakage - All Projects	Reporting Period Begin Date	22-Apr-09	1-Jan-11	1-Jan-12	1-Jan-13	1-Jan-14
		Reporting Period End Date	31-Dec-10	31-Dec-11	31-Dec-12	31-Dec-13	31-Aug-14
9	Actual Carbon in Trees Harvested for Wood Products in (tonnes CO ₂ e)		114,537	94,808	167,019	161,485	108,950
10	Baseline Carbon in Trees Harvested for Wood Products (tonnes CO ₂ e)		122,496	122,496	122,496	122,496	122,496
11	Actual Carbon in Harvested Wood Delivered to Mills (tonnes CO ₂ e)		58,533	48,450	85,353	82,525	55,678
12	Baseline Carbon in Harvested Wood Delivered to Mills (tonnes CO ₂ e)		62,600	62,600	62,600	62,600	62,600
13	Actual Carbon Stored Long-term in Wood Products (tonnes CO ₂ e) - Excl		3,231	2,600	4,850	6,694	4,256

	Landfill					
14	Actual Carbon Stored Long-term in Wood Products (tonnes CO2e) - Incl Landfill	11,094	8,975	16,228	22,244	14,117
15	Baseline Carbon Stored Long-term in Wood Products (tonnes CO2e) - Excl Landfill	3,395	3,300	3,496	5,013	4,689
16	Baseline Carbon Stored Long-term in Wood Products (tonnes CO2e) - Incl Landfill	11,749	11,488	11,807	16,738	15,655
17	Diff Between Actual and Baseline Carbon in Harvested Wood (tonnes CO2e) - Excl Landfill	(164)	(699)	1,354	1,681	(433)
18	Difference Between Actual and Baseline Carbon in Harvested Wood (tonnes CO2e) - Incl Landfill	(654)	(2,513)	4,421	5,506	(1,538)
19	Difference in Actual and Baseline Carbon Stored in Wood Products (tonnes CO2e) - Landfill Adj	(654)	(2,513)	1,354	1,681	(433)
20	GHG Reductions / Removals for Carbon Stored in Wood Products (tonnes CO2e) w/ mkt response	(524)	(2,011)	1,083	1,345	(346)
Other Secondary Effects - IFM Projects						
27	Difference Between Actual and Baseline Carbon in Trees Harvested for Wood Products (tonnes CO2e)	(7,959)	(27,688)	44,523	38,989	(13,546)
28	Other Secondary Effects Emissions (shifting activities/materials) IFM Projects (tonnes CO2e)	(1,592)	(5,538)	-	-	

6.2.7 Calculating Total Net GHG Reductions and Removals

6.2.7.1 Confidence Deduction

The inventory uncertainty was calculated as 3.14 percent error (see Table 9). The inventory was field-verified using the sequential sampling method. Plots were randomly selected and measured by the verifier for three (3) different strata during the site visit which occurred the week of December 7, 2014. The test results concluded that all strata passed at the required allowance level. Consequently, no additional uncertainty deduction was applied during field verification. Because the inventory percent error is less than the 5 percent threshold for allowed uncertainty before applying a discount (see Table A.4. in FOP, Appendix A), 0.0 percent was applied in the ROC/ARBOC Monitoring Calculation Worksheet (i.e., Calc row 2).

6.2.7.2 Total Net GHG Reductions and Removals

Total Net GHG Reductions and Removals were calculated automatically using the Project ROC/ARBOC Monitoring Calculation Worksheet. The results, which reference the ROC calculation rows, are shown in Table 23.

Table 23. Total Net GHG Reductions and Removals

Calc Row	Onsite Carbon Stocks	Start Date	Reporting Period Begin Date	22-Apr-09	1-Jan-11	1-Jan-12	1-Jan-13	1-Jan-14
		22-Apr-09	Reporting Period End Date	31-Dec-10	31-Dec-11	31-Dec-12	31-Dec-13	31-Aug-14
1	Sampled Onsite Carbon Stocks (tonnes CO ₂ e)	8,485,876		8,527,064	8,587,982	8,635,086	9,380,841	9,495,430
2	Confidence Deduction			-	-	-	-	-
3	Adjusted Sampled Onsite Carbon Stocks (adjusted for confidence deduction) (tonnes CO ₂ e)			8,527,064	8,587,982	8,635,086	9,380,841	9,495,430
4	Soil Carbon Emissions			-	-	-	-	-
5	Increment in Actual Onsite Carbon Stocks (tonnes CO ₂ e)			8,527,064	60,918	47,103	745,755	114,589
6	Baseline Onsite Carbon Stocks (tonnes CO ₂ e)	8,485,876		8,458,085	8,458,085	8,458,085	8,458,085	8,458,085
7	Increment in Baseline Onsite Carbon Stocks (tonnes CO ₂ e)			-	-	-	-	-
8	Quantified GHG Reductions / Removals for Onsite Carbon Stocks (tonnes CO ₂ e)			68,979	60,918	47,103	745,755	114,589
20	GHG Reductions / Removals for Carbon Stored in Wood Products (tonnes CO ₂ e) w/ mkt response			(524)	(2,011)	1,083	1,345	(346)
28	Other Secondary Effects Emissions (shifting activities/materials) IFM Projects (tonnes CO ₂ e)			(1,592)	(5,538)	-	-	-
	Quantified GHG Reductions and Removals							

	Annual GHG Reductions/Removals Net of Discounts and Secondary Effects (tonnes CO2e)					
34		66,864	53,370	48,186	747,100	114,242
	Cumulative GHG Reductions/Removals; not incl.neg. carryover or reversals (tonnes CO2e)					
35		66,864	120,234	168,420	915,520	1,029,762
	Cumulative Negative Carryover from Prior Year (tonnes CO2e)					
36		-	-	-	-	-
	Calculated ROCs - Net of Negative Carryover, bef. Buffer or adjust for Reversals (tonnes CO2e)					
37		66,863	53,369	48,186	747,100	114,242
	Calculation of Buffer Pool Contribution					
38	Project Specific Reversal Risk Rating	19.24%	19.24%	19.24%	19.24%	19.24%
39	ROCs from other Reporting Periods submitted to Buffer Pool	-	-	-	-	-
40	Buffer Pool Contributions (ROCs)	12,865	10,269	9,271	143,743	21,981
	Accounting for Reversals					
41	Annual Reversals (tonnes CO2e)	-	-	-	-	-
42	Total "Avoidable Reversals" to be compensated by the Forest Owner (tonnes CO2e)	-	-	-	-	-
43	"Unavoidable Reversals" compensated by ARB from the Buffer Pool (tonnes CO2e)	-	-	-	-	-
	Compensating for Avoidable Reversals					
44	"Avoidable Reversals" compensated by retirement of ROCs in the Forest Owners Buffer Pool Account (tonnes CO2e)	-	-	-	-	-
45	"Avoidable Reversals" compensated by retirement of ROCs issued to other Forest Projects Registered with ARB (tonnes CO2e)	-	-	-	-	-
46	Carryover "Avoidable Reversals" which need to be compensated by Forest Owner (tonnes CO2e)	-	-	-	-	-
	ROCs Issued to Account Holder					

47	Calculated Annual ROCs to be Issued to Account Holder	N/A	N/A	N/A	603,357	92,261
48	Vintage I - Calendar year of Reporting Period start date (Vintage)	N/A	N/A	N/A	N/A	N/A
49	Portion of ROCs in first vintage in Reporting Period	N/A	N/A	N/A	N/A	N/A
50	Vintage II - Calendar year of Reporting Period end date (Vintage - if different from start date vintage)	2010	2011	2012	2014	2014
51	Portion of ROCs in second vintage Reporting Period	N/A	N/A	N/A	N/A	N/A
52	Actual Cumulative ROCs Issued to Account Holder after Buffer Contribution	N/A	N/A	N/A	603,357	695,618

7. Ensuring the Permanence of Credited GHG Reductions and Removals

The ARB requires that credited GHG reductions and removals be effectively “permanent.” For Forest Projects, this requirement is met by ensuring that the carbon associated with credited GHG reductions and removals remains stored for at least 100 years. The ARB ensures the permanence of GHG reductions and removals through three mechanisms:

7.1 Monitoring, Reporting and Verification

Forest owners are required to monitor onsite carbon stocks, submit regular monitoring reports, and submit to regular third-party verification of those reports along with periodic verification site visits for the duration of the project life. See the Project Monitoring section for more detail. As demonstrated in Table 21 and from the ROC/ARBOC Monitoring Calculation Worksheet no reversal has been identified in Reporting Period 1 nor has there been any decrease over any 10-year consecutive period in the standing live carbon pool.

7.2 Regulatory Obligation

The regulatory obligation for all intentional reversals of GHG reductions and GHG removal enhancements will be compensated for through retirement of other Compliance Instruments.

7.3 Forest Buffer Account

A buffer account is maintained by the ARB to provide insurance against reversals of GHG reductions and removals due to unavoidable causes (including natural disturbances such as fires, pest infestations or disease outbreaks). The required buffer account contribution is determined by a project-specific, risk rating worksheet and the following formula:

$$100\% - ((1-\text{financial failure}\%) \times (1-\text{illegal forest biomass removal}\%) \times (1-\text{conversion}\%) \times (1-\text{over harvesting}\%) \times (1-\text{social risk}\%) \times (1-\text{wildfire}\%) \times (1-\text{disease/Insect outbreak}\%) \times (1-\text{other catastrophic events}\%))$$

The total required buffer account contribution for the current reporting period is 19.24 percent (Table 24).

Table 24. Risk rating analysis for required buffer pool contribution

Risk Category	Risk Sub-Category	Without QCE and or Public Ownership	QCE and or Public Ownership	Score	(1-Score)
Financial		5.0%	1.0%	5.0%	95.00%
Management					
	Illegal Logging	0.0%	0.0%	0.0%	100.00%
	Risk of conversion	2.0%	0.0%	2.0%	98.00%
	Risk of over harvesting	2.0%	0.0%	2.0%	98.00%
Social		2.0%	2.0%	2.0%	98.00%
Natural Disturbance					
	Wildfire*	4.0%	4.0%	4.0%	96.00%
	Disease Insect	3.0%	3.0%	3.0%	97.00%
	Other catastrophic	3.0%	3.0%	3.0%	97.00%
Risk Rating Analysis Result				100% -	80.76%
Total Risk Score					19.24%

* = Default values from FOP Assessment Area Data File

All risk 'scores' were determined using the 'Without QCE' ratings. Wildfire risk was established based on the default risk for the subject Supersection and Assessment Areas from the most recent Assessment Area Data File as published on the ARB website.

8. Project Monitoring

The primary purpose of the project's annual monitoring plan is to ensure up-to-date estimates of project carbon stocks and provide assurance that GHG reductions or removals achieved by a project have not been reversed. See full monitoring plan in Appendix J. Full Monitoring Plan Proprietary v1.0.pdf.

This project enhances an already very strong forest monitoring program on the property. The major components of the monitoring plan are:

- Multiple Annual Third-Party Audits
 - Enforcement of the conservation easement by New York State Department of Environmental Conservation
 - Forest Stewardship Council certification under the Rainforest Alliance forest certification program
 - Forest carbon project verification by OPR/ARB accredited verifier
- Recreation User Reporting: Informal monitoring by private hunting lessees and public outdoor recreation users through forest owner's public operations website (www.tfgoperations.com). This web-site was created as a platform from which to reach out to forest owner's neighbors, natural resource agencies and local community leaders. The forest owner has found based on its experience that its neighbors and stakeholders often have important knowledge of the property that helps them do a better job of managing, maintaining and protecting the resources contained within their boundaries.
- Annual forest inventory and carbon stock updates (described in detail below)

The forest owner will use the most recent measurements from the permanent CFI plots and approved growth & yield modeling to annually update the project's forest carbon stocks in between full site visit verifications. The CFI plots will be remeasured just prior to the full site visit verifications. Measuring the same plots through time will reduce sampling variability and provide reliable estimates of actual growth through time. Inventory plot data used in the estimate of actual onsite carbon stocks will not be more than 12 years old.

For annual inventory updates that utilize growth and yield modeling, each event (e.g. timber harvests) will require spatial and tabular updates of the carbon data set. Data updates, including harvest volume summaries and silvicultural prescriptions, will be submitted by the Forest Owner to Finite Carbon on or shortly after August 31st for the previous year and prepared for verification within the required time period allowed (4 months for annual OPDR submittal).

1. Land Sales: Land sales activity has a tremendous bearing on every carbon project. Should all or a portion of the area committed to the carbon contract be sold while under the contract term, Finite Carbon will need to be notified as soon as possible. The forest owner will be required to provide digital mapping and possibly other documentation for the area affected by the sale. Please note that any Land Sales taking place on the Project Area will remain subject to the Regulations, and therefore remain part of the Project. Should any portion of the Project Area be sold and wish to terminate the Project, the whole project will be considered terminated. Once the Project Area for Improved Forest Management Projects has been verified, the Project Area cannot be changed for the duration of the Project's lifetime.

2. Natural Events: Natural events can include wind storms, tornadoes, ice storms, floods, land-slides, earth quakes, insect or disease infestations, or other impacts of weather or nature on the forest carbon stocks. Finite Carbon must be notified immediately following an event of this type. The forest owner will be required to supply mapping of the damaged area, and in some cases, a re-inventory of the original sample locations affected by the event performed to the specifications attached.

3. Harvests and Land Use Conversions: IFM projects typically encounter planned timber harvests, thinning, clearing for roadways, log yards, decks, or other uses on a regular basis. When these events occur, the Forest Owner is required to provide Finite Carbon with a digital (GPS and/or GIS) polygon file of the affected area. Finite Carbon shall also be informed if the activity produces or is expected to produce a forest type conversion.

On-going monitoring by the forest owner and its forest managers will ensure Unintentional Reversals and will be reported to ARB. Where necessary, an inventory of affected portions of the forest may be inventoried to account for unintentional reversals that create a need for ARB offset credits replacement from the ARB buffer account. Inventory design to account for losses from unintentional reversals will depend on the extent and intensity of the reversal should they occur; however, they will always follow the project inventory specifications

8.1 Methods for Quality Control

Quality Control for this project is defined as a series of activities and documented procedures that serve to maintain an acceptable level of data quality for monitoring forest carbon stocks and demonstrating compliance with the FOP. Quality control success will be measured by whether or not the project passes annual verifications.

8.1.1 Organization and Responsible Individuals

Individuals responsible for maintaining project operations have been defined in the Listing Form and listed under the OPO's account information. Any changes, including new contact information, will be updated to the account information immediately.

8.1.2 Document Control

Forest Owner and Finite Carbon will be responsible for maintaining critical documents and files that support forest carbon data collection and processing. The most critical documents and files necessary to be maintained include:

- Offset Project Data Reports;
- Inventory Specifications and Procedures document;
- Project geodatabase (GIS files);
- Model Plan and Analytical Systems document;
- ARB Offset Credit Monitoring Calculation Worksheet;
- Harvest Wood Product Calculation Worksheets; and
- Annual forest monitoring report.

All edits and revisions to documents after project registration will be clearly marked and identified by placing a revision date or version at the beginning of the document or at the end of the name of the file. Operation procedures are in place so that out dated files will be archived in the OPO's OPR project account, the OPO's computers and offices and/or Finite Carbon's computers and offices for a minimum of 15 years. Other forms and documents required by the ARB will be maintained and stored in the Offset Project Registry software.

8.1.3 Central Data Repository

The ESRI personal geodatabase format will be used to store spatial and tabular project inventory data. Built-in features of the geodatabase structure, such as domains (i.e. field value validation) and relationships, help control data quality. Edits and updates will occur at the end of each reporting period to account for activities in the previous year unless an event such as a reversal occurs, in which case updates will take place and be reported to the ARB in the required time frame as outlined in the FOP. All results will be summarized in the annual forest offset project data report.

8.1.4 Accuracy of Project Listing Information

All of the information submitted for project Listing is still accurate with the exception of the following updates listed in Table 25.

Table 25. Summary of Updates Since Project Listing

Update ID (UID)	Listing Form Section	Update Description	Update Document Location Reference
1.	Part V. Offset Project Area	Change to project area total and acres in assessment areas	<i>CAR1088 OPDR RP1 v1.0</i> Section 4. Identifying the Project Area and Table 12. Common Practice Carbon Stocks
2.	Part VII. Carbon Stock Inventory	The confidence statistics have been update based on inventory and field verification results	<i>CAR1088 OPDR RP1 v1.0</i> Table 9. Summary of Percent Error by Strata and Project Total (RP1 tCO ₂ e/acre, all portions)
3.	Part VIII. Offset Project Baseline	Baseline stocks were updated based on change to project area total and acres in assessment areas	<i>CAR1088 OPDR RP1 v1.0</i> 6.2.1 Estimating Baseline Onsite Carbon Stocks – Private Lands
4.	Part IV. Land Ownership	The property was purchased since listing. The seller, also the OPO, owns a retained interest in the carbon rights.	<i>CAR1088 OPDR RP1 v1.2</i> 2.2 Forest Owner <i>CAR1088 List Attachment A</i>
5.	Part III. OPO/APD Information	Finite Carbon Corporation was added as an APD.	<i>CAR1088 OPDR RP1 v1.2</i>

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List of Appendices

Certain appendices referenced throughout the OPDR document have been made proprietary and are removed for purposes of protecting private information. These appendices serve as supplemental documentation for verification purposes. The appendices that have been removed are F, H, J, and M are designated with the word “Proprietary” near the end of the document title. The geodatabase of the project area is also not included as it is in a GIS format.

Appendix A. Map_TownsRoads.pdf

Appendix B. Map_Watercourses.pdf

Appendix C. Map_Topography.pdf

Appendix D. Map_CountyTwنشp.pdf

Appendix E. Map_Assessment Areas.pdf

Appendix F. Data Management & Analytical Systems Proprietary v1.1.pdf

Appendix G. Baseline and Project Harvest Volumes RP1 v1.0.pdf

Appendix H. Project Inventory Specifications Proprietary v1.0.pdf

Appendix I. Champion_GDB_RP1.mdb

Appendix J. Full Monitoring Plan Proprietary v1.1.pdf

Appendix K. Baseline Inventory, Growth and Harvest by Year v1.1.pdf

Appendix L. Harvested Wood Products Calculation Worksheets v1.0

Appendix M. Sampling Error Calculations Proprietary RP1 v1.0

Appendix N. High Stocking Reference Affidavit.pdf

Appendix O. Canopy Cover RP1 v1.0.pdf