



Croplands Methodology

Version 1.1

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1. Description of the Methodology

Nori LLC is a Washington-based company that has built the software infrastructure to establish a marketplace that incentivizes the removal of carbon dioxide (CO₂) from the atmosphere. The purpose of the Nori platform is to host the generation and sale of Nori Removal Tonnes (NRTs), where one NRT represents one tonne of CO₂ removed from the atmosphere when the recovered carbon (C) is retained in a terrestrial reservoir for at least 10 years. This Methodology should be read along with *How Nori Works* manual, where more details can be found on the overarching program design.¹

By adopting unique soil management and crop production practices or activities, global crop producers have the potential to draw CO₂ from the atmosphere and to retain the recovered C in cropland soils. The multiple activities that crop producers can employ to draw down and store C in terrestrial reservoirs are often collectively referred to as regenerative, sustainable, carbon beneficial, or climate positive agriculture. When incremental CO₂ is drawn out of the atmosphere and the recovered C is retained in cropland soils, we typically witness increases in the soil organic carbon (SOC) stock held in the topsoil, over time. The NRT is denominated in CO₂-equivalents (CO₂e), and one tonne of verifiable SOC stock gain is multiplied by 44/12 to reflect the amount in CO₂e removed from the atmosphere when 1 tonne of SOC stock gain is detected.

The Nori Croplands Methodology outlines: (1) the process and procedures through which United States crop producers can define NRT generation projects, (2) how carbon removal (CR) claims arising from those projects are estimated, monitored, reported and verified (3) how NRTs are generated and scored, (4) project eligibility rules, (5) the data project owners must provide to establish project baselines and establish their claims of incremental CO₂ drawdown and C retention, (6) record-keeping requirements, and (7) procedures for reporting project information to Nori. Individuals and entities who initiate croplands projects can use this document to understand the process to register their project, estimate and verify carbon removal claims, and receive and sell NRTs.

This Methodology is designed to ensure comprehensive, consistent, transparent, and conservative quantification and independent verification of the NRTs arising from the adoption of regenerative practices in US croplands. This Methodology is informed by the

¹ <https://nori.com/resources/how-nori-works>

peer-reviewed guidance published in 2014 by the US Department of Agriculture (USDA), which considers five distinct methods that can be used to quantify greenhouse gas (GHG) emissions and sinks at the field and farm entity scales: basic estimation equations, models, field measurements, inference, or a hybrid approach.² Based on the report's selection criteria and Nori's focus on carbon removal, the Nori Croplands Methodology applies a model-based hybrid approach.

As described in the *How Nori Works* document, all Nori Methodologies rely on an approved independent, third party-controlled, Carbon Quantification Tool (CQT) to establish carbon removal project baselines and quantify incremental CO₂ drawdown and C retention in terrestrial reservoirs. For SOC stock changes in croplands, USDA's guidance on quantification methods recommends the use of DayCent process-based models or platforms.

This Nori Methodology relies on the COMET-Farm platform, a tool developed and administered by scientists from the Natural Resource Ecology Laboratory (NREL) at Colorado State University (CSU).³ The COMET-Farm platform employs outputs from DayCent and up to 35 other models to estimate the SOC stock change and greenhouse gas (GHG) emissions impacts associated with changes in soil management and crop production practices at both the field and farm-scale. This tool was originally developed by CSU staff and students, with funding from and under the guidance of the US Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS), to be employed by US farmers and their farm management advisors to assist them in their decisions to adopt changes in soil management and crop production practices to achieve goals including but not limited to: improving soil health, increasing moisture retention in soils, and increasing soil productivity and farm profits over the longer term. COMET-Farm benefits from ongoing NRCS support and is a key source of inputs into the US national GHG inventory.

COMET-Farm currently estimates of SOC stock and GHG emissions changes for a historic baseline and numerous post-practice adoption scenarios. In order to produce estimates of the increment of SOC stock change that is attributable to the change in practices, COMET-Farm asks crop producers to supply substantial historical information describing past practices on the land, going back as far as 2000 when possible, including but not

² *Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-Scale Inventory*, available at: https://www.usda.gov/oce/climate_change/Quantifying_GHG/USDATB1939_07072014.pdf.

³ <http://cometfarm.nrel.colostate.edu/>

limited to: crop seeding dates; liming, fertilizer and nutrient applications; irrigation practices and water use, crop yields and uses; crop residues left on their fields; and tillage practices. Access to this history is important, because past practices can be as important in the determination of future changes in SOC stocks as are the choices in new practices that the crop producer might implement.

In the Nori market, a project is associated with a switch date. That is the date after which the Supplier adopted or adopts a new practice that is reasonably likely to draw down more CO₂ than the expected performance in the absence of the new practice adoption. Project switch dates can be in any year since 2010, but for a switch date to be verifiable, the Supplier must be able to provide at least 3 years of pre-switch operating data to support their claim of new practice adoption.

For most projects that register in the Nori market, NRTs can be issued for every year from one year before the Project Registration Agreement is approved, which is no earlier than 2019. In other words, 2019 vintage NRTs—representing incremental CO₂ drawdown that physically occurred in 2019—could reflect continuing incremental CO₂ drawdown arising from practice switches that occurred as early as 2010, subject to the availability of verifiable pre-practice change operating data and the Supplier’s commitment to maintain and/or adopt new practices that are reasonably likely to add to their incremental CO₂ drawdown for at least another 10 years.

Year-to-year SOC stock changes can be difficult to accurately estimate, even using the most precise measurement tools available (e.g. soil sampling and testing). One acre of soil that is 6 to 7 inches deep weighs roughly 1,000 tonnes. Incremental SOC stock gains on the order of 0.2 to 3.0 tCO₂e per acre per year are achievable with the adoption of regenerative practices, depending on the project location and practices adopted.⁴ But even 3 tonnes per acre falls within the range of estimation error when estimating year-to-year SOC stock changes in the context of 1,000 tonnes of soil. For this reason, most SOC stock change estimation methods and models generally focus on decadal SOC stock change trends, and then derive year-to-year SOC stock changes from these trends.

The COMET-Farm SOC stock change estimation method is generally consistent with this reality. The Nori Croplands Methodology requires NRT Suppliers to submit, through a Nori

⁴ The achievable range is based on minimum and maximum results for a representative “Multiple Conservation Practices” scenario using the USDA COMET-Planner tool: <http://comet-planner.com/>.

interface, sufficient historical and continuing operating data to enable the establishment of SOC and GHG emissions baselines for the project and to produce annual updates of estimated SOC stock changes. This methodology also invites, but does not oblige, Suppliers to submit additional data (e.g. soil sample test results, satellite images and their interpretations, and tractor-mounted, handheld, or in-ground sensor data) to complement the COMET-Farm estimates, where possible. But any SOC stock change estimates employed to inform a final Nori NRT issuance must include scientifically-derived and publicly-available uncertainty intervals.

As described in *How Nori Works*, the Nori platform guarantees NRT Buyers that when they acquire an NRT, they are buying real interest in the incremental removal of 1 tCO₂e from the atmosphere and retention of the recovered C in a terrestrial reservoir for at least 10 years. Nori has, therefore, adopted a NORI token holdback strategy to enable the platform operator to self-insure this commitment to Buyers. Inclusion of uncertainties with any/all SOC stock change estimates employed in the Nori market—whether they are directly or indirectly derived from modeled 5 to 10 year rolling averages, reflect differences in soil sample test results that are repeated every 4 to 5 years, or modeled estimates of year-to-year change based on other quantification techniques—enables Nori to assign quality “scores” to the NRTs. NRT scoring enables Nori to manage the NRT quantification and C retention risk arising from Nori’s “one NRT equals one tonne” guarantee. Therefore, SOC stock change estimates that do not have associated, scientifically-based uncertainty intervals will not be accepted as input into NRT quantification under any methodology.

It is also that case that SOC stocks can fluctuate, year-to-year, due to factors beyond the Supplier’s control, including but not limited to: temperature, precipitation rates, climate effects, and extreme weather events. COMET-Farm integrates weather, precipitation, temperature, and other data to create a dynamic, weather-normalized SOC stock change baseline estimate for each project, assuming continuation of the soil and production practices to which the project fields were subjected after 2000 and before the operator adopted new practices that are often described as regenerative or more sustainable. By applying this dynamic baseline, the Nori methodology ensures that US farmers are neither penalized nor rewarded for SOC stock changes that are natural in origin and not a function of the project.

This differs from the manner in which practice change-derived CO₂ removals are calculated in other carbon accounting programs, where the CO₂ removed is typically estimated relative to one of two kinds of baselines: (1) static or (2) performance.

A static baseline reflects SOC stocks at a single point or period in history. If the chosen static baseline period is, say, a flood or drought year, practice change-related incremental carbon removal claim estimates could be exaggerated. If it was an ideal year in terms of weather and field conditions, practice change-related incremental carbon removal claims could be underestimated.

A performance baseline or benchmark assumes an industry average mix of practices for different soil types, locations, and cropping mixes. Default estimates of average CO₂ drawdown (or net loss) and SOC stock change are produced for each soil type, location/region, and crop mix. Different SOC stock change estimation and/or modeling tools are then employed to produce SOC stock change estimates for new practices that go beyond the industry average performance benchmark. There are many issues with the performance standard approach, not the least of which is that the resulting CO₂ drawdown and incremental SOC stock changes attributed to the new practices will be associated with extremely wide uncertainty intervals.

The performance standard approach typically underestimates SOC stock gains for farmers who are late adopters in regions dominated by early adopters. A priority objective of the Nori market is to encourage the majority of farmers in the middle to adopt practices expected to draw down CO₂. Nori does not wish to over-allocate NRTs, but under-allocating carbon removal and retention credit to the farmers we most wish to draw into new practice adoption would be counterproductive.

Nori has chosen COMET-Farm as our croplands CQT because the COMET-Farm platform is:

- Transparent
- Subject to continuous scientific peer review and updates
- Able to link estimated changes in SOC stocks to changes in management and production practices
- Consistent with the official US GHG inventory
- A conservative incremental SOC stock change estimation tool
- Not inherently biased against late adopters.

Regardless of how project baselines are established, carbon quantification methodologies in other greenhouse gas project registries tend to be crop-specific and prescribe practices. The resulting need to develop unique approaches for each combination of crop and practice can be expensive and inefficient. Moreover, to efficiently manage soil health, crop producers must be responsive to natural events and open to practice change.

The COMET-Farm platform enables crop producers to evaluate and choose the best changes in practice for any combination of field location and crop mix on a continuing basis. NRT quantification is informed by historical and current practices, but does not prescribe or bind Project Owners to specific practices. The same methodology applies to a wide range of crop mixes and Project Owners are not required to adhere to different methodologies in the event they elect to change crop mixes and/or practices during the Project Registration term. In fact, this methodology potentially rewards crop producers for adopting different crop production and practice mixes if/when that might be the best real-time response to changes in soil health, weather, and climate.

2. Eligibility

2.1. Crops

Nori considers any crop or mix of crops that has been integrated into the COMET-Farm platform to be automatically eligible under this Methodology. These crops currently include:

- Row crop/hay/grass: Alfalfa, barley, broccoli, carrots, cauliflower, clover, corn (grain or silage), cotton, dry field beans, dry field pea, fallow, grass, grass-legume mix, lettuce (head, romaine, or leaf), millet, oats, peanuts, potato, rice (flooded), rye, sorghum (grain or silage), soybean, strawberries, sugar beets, sunflowers, switchgrass, tomato (fresh or processing), wheat (spring or winter)
- Seasonal cover crop: Annual rye, annual rye/legume mix, annual rye/legume/radish mix, Austrian winter pea, cereal rye, clover, corn, millet, radish (forage or oilseed), sorghum, vetch, winter wheat, other winter grain
- Orchard/vineyard: Almond, avocado, cherry, English walnut, grapefruit, grape (raisin, table, or wine), lemon/lime, olive, orange, peach/nectarine, pistachio, tangerine/mandarin

For crops not included in the above list, Suppliers or their authorized Data Managers may, in a number of cases, substitute proxy crops for the crops they are actually growing. Proxy crops are crops that are likely to have soil health impacts similar to those associated with the actual crops, for the given field location. COMET-Farm staff are available to assist Suppliers in the identification of appropriate proxies, for the combination of field locations and crops for which that is an appropriate strategy.

2.2. Land ownership

This Methodology is primarily designed to support CO₂ drawdown and retention in circumstances in which land owners and operators have agreed to and have documentation for the implementation and maintenance of SOC enhancing practices over the duration of the project term. But it is regularly the case that operators have and will adopt regenerative practices on year-to-year rental lands, where securing the land owner's approval of project registration and NRT sale is not immediately possible. For this reason, Nori has three paths for project registration:

- Path A is for projects/fields for which all parties with an interest in the associated land and operations have approved project registration and NRT sales;
- Path B is for rental lands under the control of operators who also control some Path A fields;
- Path C is for farmers on 100% rented lands.

For Path A fields, operators who have been assigned the right to register the fields as a Nori Project can potentially receive and sell NRTs every year of the initial 10-year minimum Project Registration term, and beyond that term.

Path B enables operators who have registered Path A fields to also establish a dynamic baseline and switch dates for Path B fields and to accumulate CR claims for incremental C stored in rented fields without the owner's prior agreement. But those CR claims cannot be offered for sale until they are verified and the landowner has agreed to retain the recovered C in those lands for the minimum 10-year retention period. This rental lands method creates the opportunity for the operator to accumulate CR claims before securing the 10 year project contract from the landowner.

Path C resembles Path B in that both require the accumulation of a public record of CR claims on the platform, but no NRTs are issued unless and until the owner assigns authority

to the operator or another designated entity to control the project and formally register it for the balance of the 10-year project term that started in the first year for which the operator listed (but did not formally register) the project. This enables the rental lands operator to create a limited backlog of up to 2 years of verifiable CR claims that they can show the owner to make the case that the owner should consider assigning the right/authority to register the project to the operator or their designate.

2.3. Project activities

In the pilot phase, only cropland remaining cropland will be eligible. Activities involving land use change, such as converting cropland to grazing land or increasing forest cover will be considered in a future version. Because the conversion of forests or grasslands to cropland results in significant net CO₂ releases to the atmosphere, only croplands that have not been forests or grasslands since January 1, 2000 are eligible.

Eligible changes in cropland practices that are currently incorporated into COMET-Farm include the following:

- Changing or expanding crop rotations and cropping intensity
- Introducing cover crops and/or shifting from annuals to perennials
- Reducing tillage events and intensity and/or adopting new residue management techniques
- Adopting new irrigation management techniques
- Substituting synthetic fertilizers with organic matter additions

Nori does not prescribe management practices in this Methodology, so adoption of one or any combination of the above, as well as changes in other parameters reportable through COMET-Farm, could result in incremental carbon removal compared to the project's dynamic baseline.

2.4. Customer types

The following Nori market participants will need to be familiar with this Methodology.

- **Supplier:** The owner, or the designated representative of the owner(s) of the croplands involved in a Nori Project. When multiple parties have real interest in the land and/or operations on which a Nori Project is based, all of those parties must formally assign authority to both a Primary and Secondary Nori Project Contact to

represent all of the owners in respect of the management of reporting for and sale of NRTs arising from the project in order for NRTs to be issued to the project.

- **Data Manager:** An entity which directly helps suppliers collect, organize, and report the data that they need to submit to Nori to register their projects and receive NRTs. Project owners can add Data Managers to their projects. A Data Manager can be identified as a Secondary Project Contact for the Supplier. A data manager can represent more than one supplier as an aggregator of projects.
- **Verifier:** A professional in good standing who is bound by a standard or ethical code to put the interests of their clients above their own with respect to a defined and limited class of transactions, and who is qualified to attest to the accuracy of evidence provided by NRT suppliers to a reasonable level of assurance. When an approved Verifier is a corporate entity, Nori asks for both a Primary and Secondary Contact for the corporate entity, both of whom must be authorized representatives or officers.

2.5. Project switch dates

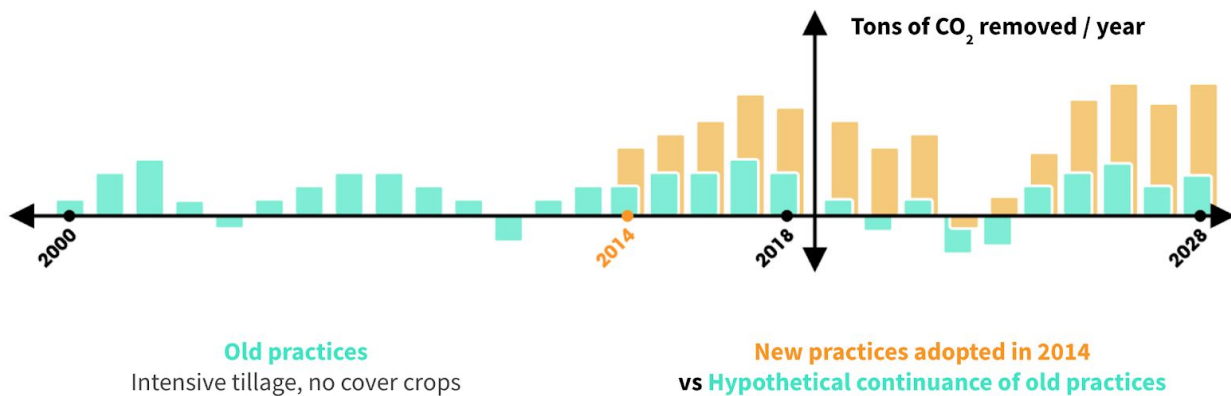
The project switch date is defined as the date (denominated as a calendar year) when a Supplier adopted practices defined in section 2.3. The switch date is used to differentiate between baseline and post-new practice adoption carbon stock changes, which are used to generate net, activity or practice change-derived CO₂ removal estimates. In order to qualify, a Supplier will need to provide evidence of undertaking at least one eligible project activity on or after January 1, 2010.

The registration approval date is the year before the year in which the project is approved for registration in the Nori marketplace. This means that the first calendar year in which a Supplier can potentially receive NRTs is the year of project approval, where the NRTs issued in that year will reflect verifiable CR claims that physically occurred in the prior year. Nori Pilot project participants are the exception, and they can potentially earn up to 5 years of grandfathered NRTs—NRTs representing incremental CO₂ drawdown that physically occurred prior to the project registration approval date—depending on the scope and quality of historical operating data they are able to submit to Nori during a Pilot Project.

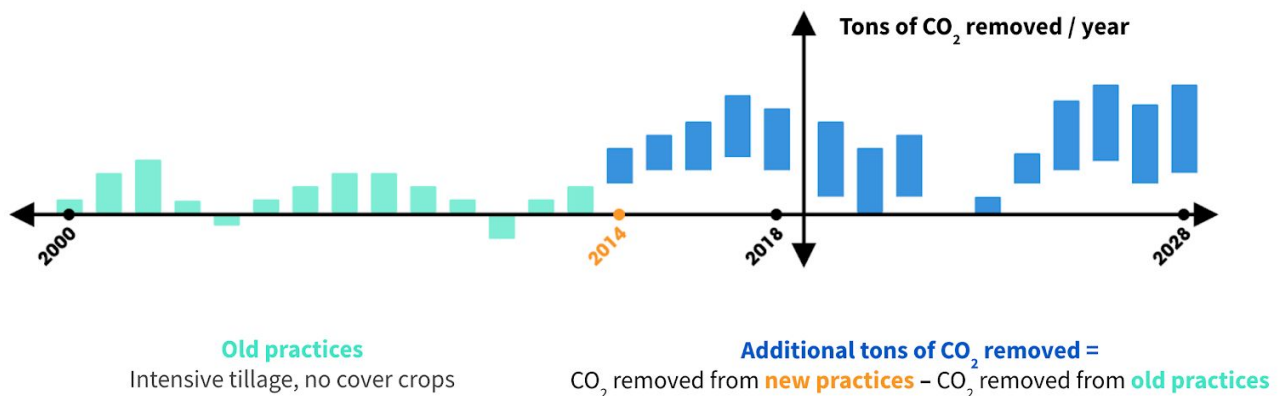
2.6. Additionality

Nori will only issue NRTs representing incremental CO₂ drawdown and retention that arising from an activity or practice change that is reasonably expected (given the scientific evidence available at the time) to result in a net new CO₂ removal. Nori employs COMET-Farm’s dynamic baseline, which makes it possible to control for weather and climate conditions.

The diagram below depicts the potential SOC stock changes that could be associated with a Nori Project after adopting cover crops and no-till in 2014. The line in teal shows fluxes in SOC stocks from historic practices starting in 2000. These fluxes form the project’s dynamic SOC stock change baseline, which is updated annually with new operating data.



Under this Methodology, Suppliers will only be issued NRTs based on the amount of SOC added to their fields above what would have otherwise occurred in the absence of the adoption of new practices as illustrated above and below.



2.7. Geographic location

This Methodology is only applicable to croplands located in the continental United States.

3. Project Definition

3.1. Spatial boundary

Nori Suppliers can define projects as the entire farm operation or a subset of fields. Suppliers can also join together to combine multiple farms or sets of fields as one larger project. Because Nori is a dedicated carbon removal marketplace and the NRT represents only net CO₂ drawdown and retention, the Nori market defines an NRT as 1 tCO₂e removed and retained within the physical project boundaries, and does not include indirect upstream or downstream GHG emissions.

Even though Suppliers can list only a subset of fields, Nori still requires project owners to disclose total farm acreage and total farm energy use, even though Nori does not reward or penalize Suppliers for practice change associated GHG reductions or increases in NRT issuance. Research and experience to date suggest that when we account for all sources of on-farm GHGs, it is most unlikely that the adoption of the practices listed above will cause no net increase in total farm GHGs. So far, that assumption has been confirmed in the evidence submitted by Nori Pilot Project participants. Therefore, for projects registered with this version of the Methodology, Suppliers' will receive NRTs reflecting full, verifiable CR claims. CR claims will not be adjusted to reflect related GHG reductions or increases that might be revealed in the evidence they submit. But this procedure is subject to change if the evidence Nori collects negates the assumption that related net GHG increases are rare.

In the event that the evidence Nori collects from Suppliers negates this current assumption, and if Nori decides, as a result, to modify this methodology to net any related net GHG increases out of CR claims in the NRT generation process, Suppliers who registered their projects under this version of the Croplands Methodology must expect to be required to adhere to this change in methodology if it becomes necessary.⁵

While Nori allows Suppliers significant discretion in the definition of project boundaries, if/when the project is defined as a subset of the entire farm operation, the CR claim verification process will establish whether or not the incremental SOC stock gains realized

⁵ With respect to most aspects of this methodology, Suppliers will only be obliged to adhere to the version that applied at the time of their Project Registration. They will have the option but not an obligation to adopt new versions that might be introduced during their first 10-year Project Registration term. The obligation to adhere to this possible change is an exception to that standard practice.

within the project boundaries directly result in SOC stock losses outside the boundaries elsewhere on the farm(s) for which the selected fields are a subset. CR claims will not attract a positive verification finding in the event that the CR claims are found to be primarily an artifact of boundary definitions.

Suppliers are required to include, in the Project Registration Application, GIS files or GPS coordinates sufficient to identify the locations and boundaries of all fields that are included within the project boundaries for which NRTs can be generated.⁶

3.2. Temporal boundaries

3.2.1. Switch date

The switch date refers to the date when a Supplier lists the adoption of eligible project activities. This date can be before the Project Registration date, but must be verifiable to show that new carbon removing activity was adopted since January 1, 2010. Suppliers must be able to provide three years of pre-switch date verifiable practice data for a switch date to be considered valid.

Most Nori registered projects will not qualify for grandfathered NRTs (NRTs representing incremental CO₂ drawdown that physically occurred prior to 2019). However, a limited number of Nori Pilot Projects will qualify for up to 5 years of pre-2019 vintage NRTs. Suppliers who register in the Nori market during Pilot project phases are contributing to the design and testing of the Nori market interface and new methodologies. This limited grandfathering provision is to reward Suppliers for their contributions to these processes.

3.2.2. Project registration term

The project registration term is a minimum of 10 years. Suppliers will be issued NRTs over the project registration term. Suppliers will also be required to report operating data to prove C retention for 10 years from the date of their last NRT sale. The project registration can be renewed upon completion of the first 10-year contract term, using the dynamic baseline reported at that time.

⁶ Nori Cropland Project Data Template. Available at: <https://go.nori.com/pilot-data>.

3.3. NRT Lifecycle

3.3.1. Applying to register a project

A Project Owner initiates the Project Registration Application process by submitting a complete-as-possible Croplands data template to Nori.⁷ Nori's data privacy policy applies to any data the Supplier shares with Nori in this or any other manner.⁸ For help filling out the template, to better understand data definitions, or get answers to any other questions, the Supplier can contact Nori support at pilot@nori.com. During this phase, the supplier may also work with a data manager, who can serve as an intermediary between the Supplier and Nori to gather a complete data set.

Upon receipt of a completed data template, Nori will automatically execute a customized COMET-Farm model run. This run will identify and issue or anomalies in the submitted evidence. There may be a resulting need for clarification regarding the Supplier's submission. If so, Nori Support will reach out to the Supplier to address outstanding questions. If necessary, Nori will run a revised Croplands data template through the COMET-Farm platform.⁹

In addition to project location, ownership and historical practice/activity information, the data template requires the Supplier to communicate the future practices/activities that are reflected in their existing farm management plans. Nori will not hold the Supplier to any practice adoption projections. But including these projections in the data submitted to Nori enables Nori to produce a pro-forma NRT generation projection that the Supplier could use to inform their final decision whether or not to register their project in the Nori market. These practices include but are not limited to:

- Cropping sequence
- Planting and harvest dates
- Tillage methods and dates of tilling
- Rate, timing, type and application methods for fertilizers and nutrients
- Irrigation method and water use rates

⁷ Ibid.

⁸ <https://nori.com/resources>

⁹ Note that Nori has a custom interface to the COMET-Farm model. While users are encouraged to interact with the COMET-Farm website, it cannot be used to generate a Project Registration Application or related output.

- Crop end-use and residue management methods
- Type of grazing system
- Manure production volumes and manure disposition
- Source location for imported manure and/or compost
- Transport mode for imported manure and/or compost
- Composting practices
- Energy and heat use

Nori's COMET-Farm model run will automatically generate a confidential Draft Verification Report. This report will include all of the confidential project ownership and historical operating data that the Supplier submitted, along with provisional COMET-Farm output that will communicate the project's dynamic baseline, along with a 10-year pro-forma NRT projection and an indication of the scores that might be associated with NRTs generated from the project as it is described in the data template.

3.3.2. Verifying the data that forms the project registration application

To continue their Project Registration, the Supplier selects and enters into a bilateral contract with a Nori-approved Verifier from the list that is available at the Nori website. The Supplier directly shares their Draft Verification Report with their Verifier. Nori does not own the confidential data/information that is included in the report and Nori will not directly share any such report with any entity other than the owner of record. Any data sharing with a Verifier is at the sole discretion of the Supplier.

The Verifier completes the Verification Report, including assigning levels of assurance and verification quality scores consistent with Nori guidance and returns it to the Supplier. The Verifier may find cause to recommend adjustments to the data template that generated the first Draft Verification Report, in which case the Supplier will submit a replacement data template to Nori and a new Draft Verification Report will be generated.

3.3.3. Finalizing the project registration application

When the Supplier and Verifier are both satisfied with the final Verification Report, the Supplier formally applies to register their project in the Nori by submitting the final Verification Report to Nori. After opening a Nori account (see *How Nori Works*), the Supplier will then be prompted to review and accept Nori's Project Registration Contract.

The Project Registration term is initially 10 years, for which period certain commitments made by the NRT Supplier and Nori, to each other, shall hold. Those commitments are detailed in the Project Registration Contract. Rejection of the Project Registration Contract constitutes cancellation of the application, though the Supplier can restart the process at any time by re-submitting their Final Verification Report. Any Final Project Registration Verification Report is valid for one year.

After the Final Project Registration Verification Report is received, Nori will assign the initial initial quality score to the project baseline. The score and its breakdown will be outlined in a summary that will be added as a schedule attached to the draft Verification Report. The Supplier will have a one-time opportunity to appeal the dynamic SOC stock baseline estimation method and NRT scoring procedure that is outlined in this schedule. All such appeals will be reviewed by the Nori Peer Review Committee, whose decisions are final. Suppliers should initiate any appeals prior to confirming their Nori Project Registration.

3.3.4. The Project Registration Contract

Under the Nori Project Registration Contract, the Supplier commits to update the data template for the project once each year, on or before the anniversary of the Project Registration. Nori commits to issue NRTs reflecting the Croplands Methodology that was in effect at the time the project was registered. Suppliers will have the choice but not the obligation to adopt a new version of the Croplands Methodology that might be approved during the 10-year Project Registration term, except as otherwise stipulated in this document or *How Nori Works* program manual.

3.3.5. Annual data template updates and NRT issuance

Upon receipt of each complete annual data update, Nori will submit to the Supplier a draft Verification Report. This report will show how the data provided by the Supplier is converted into estimates of incremental CO₂ removed from the atmosphere, and how those estimates translate into potential NRT issuance. The report will indicate how scores will be assigned to the resulting NRTs.

To receive NRTs, the Supplier selects a Nori-approved Verifier to review and sign this report. Data adjustments and a new Draft Verification Report may be generated, in an

iterative process similar to that outlined for Project Registration. But the method for converting CR claims to NRTs and NRT scores are not appealable.

A Supplier that fails to update their data template annually is in breach of their Project Registration Contract with Nori.

3.3.6. Carbon removal claim verification

While suppliers must update their project data template annually, they do not have to submit Verified CR Claim reports more frequently than once every 3 years. The Project Registration Contract includes Supplier record-keeping requirements, the sole purpose of which is to ensure up to 3 years of historical data can be cost-effectively verified.

The NRT Verification Report includes a section that requires the Supplier to direct Nori NRTs issued in response to this report to one of three Supplier accounts: (1) the Nori FIFO market, (2) the Supplier's Forward Contract auction holding account, or (3) the Supplier's retired NRT sub-account.

3.3.7. Selling NRTs

When a Supplier sells a Croplands Methodology NRT in either the FIFO or Forward Contract market, the NRT is "retired" (not re-tradable) and the Supplier accepts a new agreement, the Nori NRT Retention Contract (see next section).

At the time of an NRT sale, a score will be attached to the NRT. That score will reflect a combination of estimation error, risk the recovered C will not be retained in the soil for at least 10 years and other factors that contribute to uncertainty that the NRT truly represents 1tCO₂e removed from the atmosphere and that the recovered C is retained in US cropland soils for at least 10 years. If an NRT's score is 50 at the time of sale, then 50% of the NORI token the Supplier is paid for the NRT is held in the Supplier's restricted token sub-account.

The NRT score is divided into 2 parts: (1) the share that represents uncertainty associated with the incremental CO₂ drawdown estimate, and (2) the risk the recovered C may not be retained in the topsoil for at least 10 years. (See below for more details on NRT scoring.)

For most projects the CO₂ removal estimation error should normally decline over time. Annual data updates and the manner in which incremental CO₂ drawdown is estimated over a Croplands Project Registration term, should typically result in increasing confidence

and improving scores for previously sold NRTs. So an NRTs score can improve after it is sold, resulting in the release of fractions of the token that was paid for that NRT from the Supplier's restricted account. Suppliers can also accelerate the rate at which tokens are released by adopting new, complementary SOC stock monitoring, estimation and verification methods, at the Supplier's sole discretion.

The share of the token that is allocated to C retention risk for any given NRT will be released from the Supplier's restricted account if/as continuing verified data updates in and the accuracy of the incremental CO₂ drawdown estimates. During the Project Registration term, the Supplier is obliged to update the project data template every year and get it verified at least once every 3 years, up to 3 times. Each Project Registration Contract-mandated verification event will trigger a release of tokens held in the Supplier's restricted account in proportion to the share of the retention term for which data updates have been verified. So if an NRT is issued in 2021 and then sold, a Project Registration Contract-mandated CR claim verification report filed in 2024 would trigger the automatic release of 3/10ths of the share of the token that is in the restricted account to cover 10-year retention risk.

But Suppliers have no Project Contract obligations after the end of its 10-year term. They must submit verified data updates for every year of each NRT Retention contract in order to trigger the release of tokens held to cover C retention risk. The Supplier can elect to deliver one verified report at the end of year 10 (subject to the assumption that they are retaining such records as are required to facilitate retrospective verification for such a long term), or one report each year of the retention period, at the Supplier's sole discretion, for NRT retention period that extend beyond the last year of the Project Registration Contract.

3.3.8. The NRT Retention Contract

When Nori issues an NRT to a Supplier's account, the Supplier enters into the 10-year NRT Retention Contract with Nori. The contract terms and conditions will be published on the Nori website. When the Supplier sells an NRT, they are committing to update and finance a "desk verification" of the project data template for the 10 years from the NRT vintage year being issued, even if/when that 10-year reporting term extends beyond the end of the term of the Project Registration Contract. The annual data updates required under the

Project Registration Contract are sufficient to meet the Suppliers' reporting obligations under any NRT Retention Contract.

A Supplier does not enter into a 10-year NRT Retention Contract if they elect to retire, and not sell their NRT. If a Supplier is unwilling or unable to commit to retain the recovered C represented by in their topsoil for at least 10 years, they likely should elect to retire the NRT and not sell it. But if/when a Supplier elects to retire an NRT and not sell it, they are also committing, pursuant to the pre-existing Project Registration Contract that they will not offer to sell real interest in the related CO₂ removal service in any other market.

If a Supplier elects to sell their NRTs but fails to keep their commitments under the C retention contract, Nori will have the right to expropriate any tokens remaining in the Supplier's restricted account, at the time the breach is recognized, and deposit those tokens in Nori's insurance reserve.

Nori can only use tokens in the insurance reserve to buy and retire NRTs to address any CO₂ drawdown shortfalls that are found in Final Project Audits. Should Nori not need to use tokens in the Nori insurance reserve for this purpose, those tokens will be "burned" (destroyed) and not sold or otherwise distributed in the Nori market.

3.3.9. The Final Project Audit

In the last year of the Project Contract term, the Supplier must select a Verifier to complete a Final Project Audit. See *How Nori Works* for more details and guidance for this audit. But the primary objective of the audit is to trigger the release of any tokens remaining in the Supplier's restricted token account allocated to the uncertainty associated with CO₂ drawdown estimation.

3.4 Co-benefits

Nori is a dedicated carbon removal marketplace, and the primary objective of the Croplands Project Registration and CR claim documentation and verification processes outlined above is to quantify incremental CO₂ drawdown and retention is achieved and converted into tradable and usable NRTs.

However, for a majority of Nori Croplands projects, the dataset that is used to document incremental CO₂ drawdown will often form the basis for documenting a range of environmental co-benefits, including but not limited to changes in:

- Direct nitrous oxide (N₂O) emissions from synthetic fertilizer applications and organic matter additions
- Soil organic carbon sequestration in woody biomass (orchard and vineyard crops)
- CO₂ emissions associated with urea fertilizer use and liming
- Carbon monoxide (CO) and methane emissions from biomass burning
- Methane and N₂O emissions from flooded rice cultivation
- Soil health and ability to retain nitrates and other biological oxygen demanding nutrients that would otherwise leach from the soil to rivers and water bodies

When a Supplier accepts the Nori Croplands Project Registration terms and conditions, they agree not to register any CR claims on the Nori marketplace that are also listed for sale in another market. CR claims can only be converted into NRTs and cannot be double-credited or double sold. But registration in the Nori market does not preclude listing related other ecosystem services (e.g. avoided GHG emissions, GHG emission reductions, water quality services, etc.) in other markets, as long as those other markets approve the splitting of environmental services that derive from one project, or set of activities, when that project is registered in the Nori marketplace.

4. Carbon Removal Quantification

4.1. Collecting data

Suppliers can use one or more of the following pathways to collect and submit data:

- The farm operator directly uploads required data to Nori using the data entry form. Nori then utilizes the COMET-Farm platform for the project.
- Operators who already hold data in another farm management system (e.g. Granular, Climate FieldView, Farmers Business Network, MyJohnDeere, Farm O.S.) instruct their Data Manager to work with Nori to establish the capacity to transfer required data to the Nori platform. Nori staff will then work with the Data Manager to write the software required to automate the data transfer.

- Some operators may wish to develop their own or work with a third party to develop a new farm system data management platform. These operators can bring the necessary staff into the process to work with Nori to establish the necessary data-sharing capacity. Please note that an lengthy development processes may jeopardize a Supplier’s ability to immediately participate in the Nori marketplace

4.2. Procedure for establishing historic proxies

Some Suppliers will not have the capacity to provide all of the historical operating data requested in the Nori project enrollment data template. Potential Suppliers will have the option of asking Nori to complete the data template by filling in missing parameters from publicly-available sources appropriate to the project location and scope. In the continental US, these sources currently cover the following categories:

- Cropping sequence from 2008 through 2018, or as early as 2000 in some states¹⁰
- Typical planting and harvest dates by state and crop¹¹
- Tillage methods and dates of tilling
- Rate, timing, type and application methods for fertilizers and nutrients
- Irrigation method and water use rates

Though Suppliers will be able to register projects and establish Nori project baselines using proxy historical practices, Nori will not issue grandfathered NRTs to any project that relies primarily on this alternative project baseline-setting method. To qualify for grandfathered NRTs, Suppliers must participate in a Nori Pilot Project and also be able to provide complete sets of verifiable farm records-backed data for at least 3 years prior to the first year for which grandfathered NRTs will be issued.

4.3 Nori Removal Tonne Quantification using COMET-Farm

Once the data records for a project are complete, the Supplier can use the Nori product to generate a provisional 10-year projection of NRTs. This initial projection is intended to inform the Supplier’s decision whether or not to register their project in the Nori market, and is not a firm or final estimate of the number of the NRTs the project will generate.

¹⁰ https://www.nass.usda.gov/Research_and_Science/Cropland/metadata/meta.php

¹¹ https://www.nass.usda.gov/Publications/National_Crop_Progress/

Nori's current procedure compares the average annual changes over the 10-year projection period following the project switch date to the annual changes between the switch date and most recent full calendar year, taking the lesser of the two average values to be conservative. The same date ranges will continue to be run for the duration of the project registration term, correcting for any over- or under-crediting in past runs, and with the estimates eventually converging by year 10.

4.4. Procedure for modifying carbon removal estimates

Some project owners will also have access to high-quality soil sample test results,¹² ground sensor data, or remote sensing-based analysis. If a project owner has and elects to make such supplemental data available to Nori, NRT quantification and scoring could be impacted. Assuming the project owner is able to provide high-quality evidence that suggests that they are removing and storing more incremental C in cropland soils than the COMET-Farm model output suggests, there will be a related modification of the NRT issuance for the project.

If/when Nori issues more NRTs than suggested by the COMET-Farm estimated mean SOC stock change value for a given set of practices, slightly more NORI tokens will be assigned to the restricted NORI token account to temporarily offset associated project risks. Over time, we believe this procedure will further incent market participants to develop and adopt superior and more cost-effective methods to monitor, track and estimate soil organic matter (SOM) content and SOC stocks.

If a project owner is able to present credible, replicable soil sample test results that include uncertainty intervals, Nori will be able to modify NRTs generated. For illustration purposes, let's say that the COMET-Farm platform finds a mean incremental SOC stock change value of 1.5 tCO₂e/acre, on average for the last 4 years, with a +/- 50% uncertainty range (0.75 to 2.25 tCO₂e/acre). But the high quality soil sampling and testing method suggests a 3.0 tCO₂/acre mean value for the same period, also with a +/- 40% uncertainty range (1.8 to 4.2 tCO₂/acre) for the same year. Nori would, in these circumstances, issue 1.8 NRTs/acre/year to the project for the reporting period in question, which is within the uncertainty interval associated with the COMET-Farm estimate while at the low end of the soil sample test

¹² See *Recommended Soil Health Indicators and Associated Laboratory Procedures*, available at: <https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/soils/health/?cid=nrcseprd1315420>.

result uncertainty range. The 0.3 tCO₂/acre per year difference will convert into restricted NORI tokens, after the resulting NRTs are sold, unless/until a more accurate re-estimate of the incremental SOC stock change is available.

4.5. NRT Scoring

Nori is still in the process of finalizing the project baseline and NRT scoring procedures and guidance. The baseline and NRT scores will reflect a finite set of weighted factors that influence confidence in soil organic carbon (SOC) baseline and stock change estimates, data input quantity and quality and number of years the project has been registered (confidence improves over time for projects meeting all of the reporting requirements).

At this time, Nori is contemplating 5 to 7 scoring factors. The sum of the weights of all of the factors is 100. A score of 100 results in 100% Unrestricted NORI tokens. Any and all NRTs that are sold in demonstration transactions prior to adoption of the final scoring system are assigned a score of zero. Unless otherwise stipulated in the Project Registration Agreement with Nori, 100% of NORI tokens Suppliers receive for NRTs sold in demonstration transactions will be retained in the Supplier's restricted Nori account for 10 years, until completion of the Final Project Audit, or when those NRTs are retrospectively assigned a score, whichever comes first.

Each factor will initially be rated for each project at the time the project's baseline is established (at the time of project enrollment). The weighted sum of the factor ratings equals a project's initial NRT score. Factor ratings can and likely will change, over time, because the uncertainty associated with SOM content and SOC stock change estimates can change--usually it shrinks--as time passes and as more project data is collected.

NRT scores will be split into two parts, each of which will be sized differently for different project types/methodologies: (1) uncertainty associated with incremental CO₂ drawdown, and (2) 10-year C retention risk. We are currently leaning towards a 70%/30% split in the NRT score for this Croplands Methodology. But the analysis and consultation with the Nori Peer Review Committee required to finalize this decision is still in progress.

For interim illustration purposes, if 100 NRTs are sold in 2021 with a score of 50 at the time of sale, then 50 of the NORI tokens the Supplier receives in payment as payment for the NRT will be immediately allocated to the Supplier's unrestricted account, and 50 tokens

will be allocated to the Supplier's restricted account. If the Supplier submits a verified CR claim report 3 years later, in 2025, it is possible that the report will show that the score for those vintage 2021 NRTs will have improved to 70, with uncertainty shrinking in the face of more verifiable data availability. The verified CR claim report could coincidentally confirm that the Supplier has retained the C recovered from the atmosphere in 2021, through 2024.

In response to the 2025 verified data updates, 14 tokens would be released from the Supplier's restricted account, reflecting the change in NRT score multiplied by 70% of the restricted tokens. And 4.5 tokens would be released reflecting the proof that the Supplier has retained the C that was recovered from the atmosphere in their topsoil for 3 of the 10-year NRT Retention Contract period.

Once a scoring system and related factor rating guidance is complete:

- The uncertainty output from the COMET-Farm platform will be the dominant, but not sole, determinant of the share of the score that relates to CO₂ drawdown estimation.
- The score will be designed to award a bonus to Suppliers who provide more data originating in other-than COMET-Farm and credible SOC estimation, monitoring and tracking methods, even if sharing this additional information does not necessarily contribute to a change in the NRT quantity estimate or reduction in estimation error. The purpose of including this bonus in the score is to encourage information sharing in the ecosystem services market.
- Guidelines showing how and why NRT can automatically change over time, reflecting the fact that estimation error should shrink over time (all other things being equal). The purpose of these guidelines will be to ensure that the NRT score adjustment process is full transparent, and will send signals the market regarding what investments in new SOC stock change monitoring, estimation and verification are more likely to generate better financial returns for the Suppliers.
- The levels of assurance that Verifiers' provide will be reflected in one of the factors informing the NRT score, to incent Suppliers to maintain complete and accessible records and share any other information that might contribute to increased confidence in the SOC stock change estimates that derive from the evidence the Suppliers share.

In addition to a one-time right to appeal the initial NRT score that will be assigned at the time of Project Registration--which score will largely reflect the scope and quality of historical practice data the Supplier is able and willing to share--Suppliers Project owners will have the continuous right to appeal adjustments to their NRT scores that are introduced over the Project Registration Term.

All short- to medium-term SOC stock and flux estimates are associated with significant estimation error and other forms of uncertainty, whether those estimates are modeled output or drawn from high caliber laboratory-produced soil sample test results. Even with the most disciplined estimation method, there are uncertainty intervals associated with both Project Baseline SOM content (from which SOC stock values are derived), as well as the estimate of the incremental SOC that is stored or lost as a result of changes in soil management and agricultural practices.

The Nori baseline-setting and NRT quantification methods reflected in this version of the Croplands Methodology rely largely on the COMET-Farm platform, which is really a hybrid modeling and reference soil sample testing approach. We currently plan to add options into the next version of this Methodology that will allow for the adjustment of NRT estimates when alternative, truly comparable SOC stock change estimates originating from other credible methods (e.g. soil sample test results, in-ground sensors, etc.) are available and verifiable, and when the uncertainty intervals for these credible estimates overlap the uncertainty intervals associated with the COMET-Farm estimates.

When comparable but different SOC stock change estimation methods confirm or improve Nori NRT quantification, and shrink overall uncertainties, NRT scores will also improve.

5. Verification

As described above, when a Supplier has remitted a completed data template and applies to register their project in the Nori market, Nori generates a draft Verification Report. Verification is one--but not the only--factor that informs the Project's NRT score. The verification factor scores for generally reflect Verifier/audit assurance levels as follows: The Verifier may elect to add a bonus of 1 to the rating for excellent record keeping and another bonus of 1 for Suppliers who share complementary evidence that goes beyond that requested in the Nori template and that simplifies the Verifier's task.

During the pilot phase, verifiers should follow the draft guidelines found at:

<http://go.nori.com/verification-guidelines>.

5.1. Verification tasks

In the verification of the Project Registration Application, if the primary contact can provide any of the following pieces of evidence, a site visit is not required.

5.1.1. Right to register the project

Verifiers must affirm that the Supplier has the right to register the project. It is critical that the Verifier reviews land boundaries. If the land is owned by the farmer, this can be verified through a reviewing a deed, typically have a map associated with them, or other proof that the individual has the right to represent the business. The Verifier may also access online databases showing land records such as AcreValue.com.

If the land leased by the farmer, the Verifier may review the Lease agreement, determine proof that the individual has the right to represent business if lease is with the farmer's business, or review a copy of agreement between landowner and farmer to participate in Nori Marketplace.

5.1.2. Evidence replicability

The Verifier will conduct statistic representative sampling of the Project Owners Records. This includes seed purchase, fuel purchase, crop sales and receipts, etc. To become confident that the operating data claims that the Supplier submitted to COMET-Farm are consistent that showed up in those records.

5.1.3. Appropriateness of project switch date

The Verifier must confirm that the switch date represents the date the Supplier adopted eligible project activities. The Verifier may accept attestations, review seed purchases, satellite imagery, and reported data from marm management software.

5.1.4. Not double selling

The Verifier must confirm that real interest in the CR claims represented in the verification report are not directly or indirectly listed for sale, or have not been sold, through other registries or carbon markets. The Verifier may accept attestations that this is the case from the Supplier.

5.1.5. Legal Compliance

The Verifier will confirm that the Supplier and any associated entities are in full compliance with existing laws and regulations that are material to the project scope.

5.1.6. Conflict of Interest

The Verifier must disclose if they have a conflict of interest or potential conflict of interest with the listed Nori Project and/or its owner(s).

The Carbon Removal Claim report verification process will address the same questions outlined above for the Project Registration report verification process, except:

- Confirmation of the appropriateness of the project switch date is not required, but
- The Verifier will be asked to confirm that the Supplier has maintained previously adopted and/or added new practices that are reasonably expected to draw down incremental CO₂ and retain existing SOC stocks.

5.2. Final project audit

We anticipate that methods/technologies to more accurately and comprehensively estimate changes in SOC stocks will improve, perhaps dramatically, over the next 10 years. To reduce investment uncertainty for Suppliers, Nori is in the process of developing provisional guidance for the Final Project Audit. This guideline will outline at least two Final Project Audit options and related guidelines, and be based on our current understanding of the best, most cost-effective methods of reducing uncertainty for a 10-year rolling average SOC stock change estimate.

Then, in anticipation of significant and quick evolution in SOC sampling, estimation and testing techniques, Nori will revisit the Final Project Audit guidelines once a year. Our hope is that this annual review and revision process will be our way of documenting technological progress and indirectly sending a market signal that might indirectly reward

such progress in the SOC sampling, estimation, testing, and verification fields. It is our intent, in the annual updating of Final Project Audit guidance, to reduce administrative cost uncertainty for Suppliers.

We currently anticipate that Nori's initial Final Project Audit guidelines will prescribe a combination of remote sensing image analysis and representative soil sampling and testing, to ground-truth the interpretation of the images. We expect this guidance will encourage (but not oblige) Nori project owners to collect and retain satellite images of the fields that constitute their projects for every year of the project term, to reduce the future cost of the Final Project Audit.

5.3. Desk verification for carbon retention

The desk verification for carbon retention is an attestation by a Verifier that the Supplier has maintained Project Activities, has retained credible and accessible farm operating records for all NRT retention terms, and hasn't taken action that is likely to have released the C from the soil to the atmosphere. The desk verification begins at the end of year 10.

Appendix 1. Version History

Version 1.0 - Initial release.

Version 1.0.1 - Additional guidance and clarifications in the following areas:

- Treatment of rental lands (section 2.2)

Version 1.1 - New and updated sections

- Segmenting chapter 1
- Merging of chapters 3, 4, and 5
- Addition of procedures for carbon quantification in chapter 4
- Updates to verification chapter 5
- Linking to <http://go.nori.com/verification-guidelines>