COUNCIL ON SUSTAINABLE
BIOMASS PRODUCTION

# STANDARD
# FOR SUSTAINABLE PRODUCTION OF AGRICULTURAL BIOMASS

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BIOMASS PRODUCTION

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# 1 PRINCIPLES IN BRIEF

CSBP expects that growers will consider how best to meet environmental, economic, and social objectives by selecting feedstocks and production systems that optimize the balance between improving yields, reducing inputs, limiting footprints, supporting biodiversity, and maintaining long-term site productivity based on local conditions.

Maximizing production on lands dedicated to producing biomass and having additional lands with other primary end uses provide supplementary biomass can help address the multiple demands for land resources in a more sustainable way. Optimizing agricultural productivity (e.g., selecting feedstocks that balance interdependent goals of maximizing yields and minimizing input requirements based on local conditions) while limiting impacts to the environment can create profitable and more sustainable agricultural systems, and help minimize the footprint required to support the growth of a large-scale industry of low-carbon bioenergy.

The following principles express the key elements of sustainable biomass production and serve as the framework for the Criteria and Indicators of the standard.

## 1 INTEGRATED RESOURCE MANAGEMENT PLANNING

The preparation of and adherence to a complete management plan is considered the foundation for fulfillment of the standard and essential to ensuring that a grower can deliver on the multiple requirements for sustainable production and areas for continuous improvement.

PRINCIPLE: *Biomass production is based on an integrated resource management plan that is completed, implemented, monitored, and updated to address the environmental risks associated with current and future production, appropriate to the scale and intensity of the operation.*

## 2 SOIL

This principle recognizes that soil stability is vital, and that soil fertility and organic matter are critical to the sustainable production of food, feed, fiber, and fuel.

PRINCIPLE: *Biomass production maintains or improves soil quality by minimizing erosion, maintaining or enhancing soil carbon and nutrients at appropriate levels, and promoting healthy biological systems and chemical and physical properties.*

## 3 BIOLOGICAL DIVERSITY

The conservation of biological diversity is a critical component of sustainability at the field/stand level as well as at the landscape level. This Principle articulates the expectation that growers will deploy management systems in their operations that maintain or enhance biodiversity.

PRINCIPLE: *Biomass production contributes to the maintenance or enhancement of biological diversity, in particular native plants and wildlife.*

## 4 WATER

This Principle recognizes the vulnerability of both the available water supply and the quality of available water. Biomass production should not contribute to the depletion of ground or surface water supplies. When irrigation is necessary, the most efficient irrigation technology appropriate to the circumstance should be used.

PRINCIPLE: *Biomass and bioenergy production maintains or improves surface water, groundwater, and aquatic ecosystems.*

## 5 AIR QUALITY AND EMISSIONS

One fundamental objective of biomass-based bioenergy systems is to mitigate greenhouse gas (GHG) emissions, providing a low-carbon energy alternative to fossil fuels. This Principle embraces full life cycle assessment (LCA) as the primary tool for ensuring substantive reduction in GHG emissions.

PRINCIPLE: *Emissions are estimated via a consistent approach to life cycle assessment.*

## 6 SOCIO-ECONOMIC WELL-BEING

CSBP embraces a tripartite vision of sustainability, focusing on practices and products that are environmentally, socially, and economically sound. This Principle speaks to the need for sustainable distribution of socio-economic benefits to the various participants in biomass and bioenergy production systems. A sustainable commercial model benefits from the support of wealth creation in local communities.

PRINCIPLE: *Biomass and bioenergy production takes place within a framework that sustainably distributes overall socio-economic opportunity for and among all stakeholders (including land owners, farm workers, suppliers, biorefiners, and the local community), ensures compliance or improves upon all applicable federal and state labor and human rights laws, and provides for decent working conditions and terms of employment.*

## 7 LEGALITY

Compliance with all legal requirements by a grower is a minimum expectation for the standard.

PRINCIPLE: *Biomass production complies with applicable federal, state, and local laws, statutes, and regulations.*

## 8 TRANSPARENCY

The interactions of a participant with stakeholders must be conducted in a transparent manner while protecting commercially sensitive information and maintaining intellectual property.

PRINCIPLE: *The process of certified biomass production is transparent.*

## 9 CONTINUOUS IMPROVEMENT

CSBP is committed to a process of continued assessment of the usefulness of the standard's practices to ensure the desired sustainability outcomes. The standard will be updated periodically, incorporating scientific results that reveal better practices that are commercially viable. Growers are also expected to continuously improve performance as guided by annual certification audits and adherence to IRMP.

PRINCIPLE: *Biomass and bioenergy producers continuously improve practices and outcomes based on the best available science and appropriate grower development benchmarks.*

# 2 PRINCIPLES, CRITERIA, AND INDICATORS FOR BIOMASS PRODUCTION

## 1 PRINCIPLE 1 - INTEGRATED RESOURCE MANAGEMENT PLANNING (IRMP)

Biomass production is based on an integrated resource management plan (IRMP) that is completed, implemented, monitored, and updated to address the environmental risks associated with current and future production, appropriate to the scale and intensity of the operation.

### 1.1 ASSESSMENT

Participants use a complete assessment or conduct an initial assessment to support informed decisions regarding resource goals and land management options during the development and implementation for the IRMP.

#### *1.1.1 BASELINE INFORMATION*

At a minimum, Participants compile and evaluate baseline information on existing conditions within the biomass crop production area proposed for certification.

IMPLEMENTATION: Assessments involve gathering key information regarding the Participants' operational and planning effects on soil, biodiversity, and water. Typically this information includes crop production, soils, natural vegetation cover, rare species and communities, existing wildlife habitats and aquatic ecosystems, and past and current land and water conservation activities. This information will pertain to the area proposed for certification and should consider the larger planning landscape that provides context for the area of interest.

Through the IRMP assessment Participants evaluate risks to the environment from their existing operation and changes in operational scope or intensity. If environmental safeguards cannot be demonstrated, additional planning is needed and more in-depth assessments are required. In addition to changing scope or intensity, if the Participants' operations have inadequate conservation safeguards for high ecological values, then these higher environmental risks must be addressed in IRMP objectives and planning. Participants who demonstrate Good Agricultural Practices (GAP) and conservation safeguards may avoid conducting detailed environmental assessments of baseline conditions.

For further Indicators and implementation guidance regarding assessment, see the following:

2.1.1 Soil Productivity and Conservation Planning
3.1.1 Vegetation Types and Wildlife Habitat Planning
3.1.4 Control of Non-Crop Invasive Species
3.2.1 Invasiveness
3.2.2 Crop Spread
4.1 Water Quality
4.2 Water Quantity
4.3 Aquatic Ecosystems
9.2.3 Good Agricultural Practices (GAP)

### 1.2 OBJECTIVES

The IRMP includes objectives specific to the biomass production area that address each of the CSBP Standard Principles.

#### *1.2.1 ESTABLISH OBJECTIVES*

Based upon the initial assessment and/or subsequent IRMP reviews, Participants identify their priorities and describe management objectives or options for the biomass production area proposed for certification. Participants address landscape factors within the IRMP.

IMPLEMENTATION: All applicable certification Criteria and Indicators of the CSBP Standard are addressed for the biomass production area and the scale and intensity of the operation. The Participants' objectives are established after considering the unresolved significant issues and opportunities for improvement as determined by the self-assessment or auditing process. Certification Indicators provide a structure to evaluate management practices, identify potential conflicts, optimize achievement of management objectives, and explore opportunities to avoid, minimize, or mitigate environmental impacts during this phase.

### 1.3 OPERATIONS PLAN

Using baseline information to develop IRMP objectives, Participants develop and implement an Operations Plan to achieve the IRMP objectives.

#### 1.3.1 OPERATIONS PLANNING

Participants develop specific management actions, including corrective action and land-based action plans for each biomass production area, soil type, and vegetation cover type within the area proposed for certification.

IMPLEMENATION: Depending upon the scope of the plan, management actions may be described for a larger planning landscape. At a minimum, the Operations Plan includes a timeline for implementation and monitoring to ensure management objectives are accomplished.

#### 1.3.2 MONITORING AND REVIEW

Participants continually monitor specific management practices in order to ensure that management objectives are being met. Operations Plans are comprehensively reviewed by Participants at least every five years and updated as needed.

IMPLEMENTATION: Participants annually monitor specific management practices utilized in the operation and document, at the appropriate property and management unit level, the effectiveness of those practices identified. Annually Participants address areas of non-conformity within the timetables specified. Every five years Participants demonstrate a comprehensive review process identifying sustainable production achievements and areas for improvement in the operation. Based on the results of monitoring and other available information, Participants identify changing conditions and modify the Operations Plan and/or IRMP to address these changing conditions. Participants monitor and document the results of implementation over time. The Operations Plan identifies relevant crop and natural resource measures and other indicators, including those used in the standard to assess achievement of certification Criteria. Participants use those measures to identify improvement opportunities and to adjust the management plan accordingly.

## 2 PRINCIPLE 2 – SOIL

Biomass production maintains or improves soil quality by minimizing erosion, maintaining or enhancing soil carbon and nutrients at appropriate levels, and promoting healthy biological systems and chemical and physical properties.

### 2.1 MAINTAIN OR IMPROVE SOIL HEALTH

Minimize erosion and maintain soil carbon and nutrients at appropriate levels, as well as the overall physical, chemical, and biological properties of the soil.

#### 2.1.1 SOIL PRODUCTIVITY AND CONSERVATION PLANNING

Participants assess and monitor nutrient levels of the soil or plants, and soil capabilities to maintain and improve soil health, appropriate to the scale and intensity of the management unit.

IMPLEMENTATION: Soil assessments are conducted at the appropriate property and management unit proposed and include the use of data from soils maps where available. Soils are tested periodically for organic matter, nitrogen, phosphorus, and other nutrients relevant to local resource concerns. Management decisions are based on soil capabilities in the selection of appropriate species or crops, expected yields, and erosion control. Nutrients are managed to reduce loss off site to air and water.

#### 2.1.2 RESIDUE REMOVAL

The use of agricultural residues is not at the expense of long-term soil productivity, stability, health, and organic matter content. Participants retain biomass materials required for erosion control and soil fertility.

IMPLEMENTATION: Participants demonstrate conservation measures to mitigate soil erosion and conserve long-term soil fertility.

#### 2.1.3 COMPACTION

Participants identify soils vulnerable to compaction and use appropriate techniques to reduce compaction if necessary and to maintain site productivity.

IMPLEMENTATION: Participants demonstrate knowledge of the factors that contribute to soil compaction and demonstrate the use of Good Agricultural Practices (GAP) that minimize soil compaction and maintain soil structure.

#### 2.1.4 IN-FIELD OR ON-FARM TRAVEL

Participants limit, as appropriate to maintain soil structure and water quality, field travel zones or paths as needed to meet IRMP objectives.

IMPLEMENTATION: Temporary field travel zones or travel paths should be used when practical and consistent with IRMP objectives. If rutting, erosion, or compaction occurs, temporary travel zones and paths should be closed or rehabilitated.

#### 2.1.5 EROSION

Participants use practices that minimize erosion on biomass acres.

IMPLEMENTATION: Biomass operations demonstrate by applying USDA "conservation practices," "conservation systems," or other effective soil conservation practices that erosion control objectives are met or by obtaining a score less than or equal to T, or equivalent, for the current Revised Universal Soil Loss Equations.

#### *2.1.6 SOIL CARBON*

Participants maintain or improve soil carbon levels for the biomass production area.

IMPLEMENTATION: Participants periodically evaluate soils for organic matter.

## 3 PRINCIPLE 3 – BIOLOGICAL DIVERSITY

Biomass production contributes to the maintenance or enhancement of biological diversity, in particular native plants and wildlife.

### 3.1 BIODIVERSITY

Ensure that biomass production systems support native biodiversity both on-site and at an eco-regional level.

#### *3.1.1 VEGETATION TYPES AND WILDLIFE HABITAT PLANNING*

To support effective operations planning, Participants assess rare, threatened, and endangered species and communities (RTESC), vegetation cover types, and important wildlife species (IWS) on biomass production areas, on associated incidental areas owned or controlled by the Participants, and, where credible data are available, across the landscape.

IMPLEMENTATION: Specifications for assessments are dependent upon the operational risk to the environment. The assessment is conducted prior to the commencement of site-disturbing operations and is appropriate to the scale of the area proposed for certification and intensity of the operation. The prior condition of vegetation and location of known RTESC and IWS are considered in the assessment and incorporated into the IRMP. Participants consult with an appropriate state fish and wildlife agency, conservation organizations, biomass consumers, or expert professionals[1] to develop conservation actions to conserve all known RTESC on biomass production areas, associated incidental areas owned or controlled by the Participants, and where credible data are available, across the landscape. The assessment includes, but is not limited to:

- Information on known occurrences of RTESC and IWS, and their associated habitats;
- Identification of the presence of invasive species within the operational unit as well as potential threats in the local landscape;
- Review of potential impacts from biomass crop production on RTESC, IWS, and invasive species at the appropriate property, stand, site, or landscape level.

Findings of the assessment and the developed conservation actions are documented and incorporated into IRMP.

#### *3.1.2 IMPORTANT WILDLIFE SPECIES AND THEIR HABITATS*

Participants develop and implement practices that contribute to the conservation of IWS, native vegetation, and native wildlife.

IMPLEMENTATION: Practices to be adopted into the Operations Plan are appropriate to the scale of the operation and effect on the resource. The Operations Plan conserves, where practical, habitat of IWS to maintain biological diversity. Participants utilize diversity of feedstock within a stand as appropriate to provide structural habitat that supports biodiversity objectives as indicated in the IRMP.

For primary biomass production areas, harvesting during IWS and native wildlife nesting, calving, fawning, and brood-rearing seasons is minimized to the greatest extent possible. Participants retain sufficient vegetative cover for IWS and other native wildlife inhabiting their biomass fields (e.g. leaving stubble on the field, leaving strips of unharvested biomass, and/or other effective practices). Disruptive operations (e.g. mowing, disking, and harvesting) are timed to minimize impacts on IWS, especially during critical reproduction and migratory periods.

#### *3.1.3 RARE, THREATENED, AND ENDANGERED WILDLIFE, COMMUNITIES, AND BIODIVERSITY*

Participants develop and implement practices to conserve RTESC and biodiversity appropriate to the scale and intensity of the operation.

IMPLEMENTATION: Participants protect those RTESC species that are state or federally listed under an endangered species law. For all other known RTESC species, conservation actions are considered and integrated into the Operations Plan. The IRMP includes mapping, cataloging, and monitoring of known RTESC, as well as the design and adoption of specific conservation actions consistent with the conservation objectives identified in the IRMP.

[1] May be employees of the Participants

Participants cooperate and allow an inventory of lands where there could be a lack of information and a need for surveys and other information gathering for RTESC.

#### *3.1.4 CONTROL OF NON-CROP INVASIVE SPECIES*

Participants recognize the risks associated with non-crop invasive species and adopt conservation practices related to control of non-crop invasive species (e.g. those not intentionally planted) on biomass production acres. If invasive species are observed, Participants include in the IRMP a strategy to manage and minimize spread.

IMPLEMENTATION: Participants demonstrate participation in state or local invasive assessment programs, quarantine, cooperative extension programs' continuous education programs, national association of conservation districts, or native plant societies. Participants implement strategies as identified in IRMP.

### 3.2 SPECIES AND CULTIVARS

Participants adhere to appropriate conservation practices, crop developer recommendations, and federally-mandated requirements, where applicable, for species or cultivars being deployed.

#### *3.2.1 INVASIVENESS*

Participants avoid introduction or production of an energy crop that is invasive in the target region and that may disrupt biodiversity on an eco-regional scale. Participants do not utilize species that are known to be invasive or are potentially invasive in the relevant eco-region. Prior to planting, an assessment is completed by a suitable 3rd party (e.g., crop developer, academic scientist, government agency).

IMPLEMENTATION: The following decision methodology will be used to determine whether a species is invasive in the target region.

A feedstock crop would be "known to be invasive" in the target region if it appears on a list for that target region compiled by a scientifically credible national, state, or county authority, and would therefore not be eligible for certification.

- A feedstock crop will not require assessment for invasiveness if the crop has been grown at a reasonable scale for similar purposes in the target region and not been found to be invasive.
- If the crop is not "known to be invasive" in the target eco-region and has not previously been grown in the target region or is a variety that includes characteristics beyond the known range of the species, then it will be evaluated to determine if it is "potentially invasive" in the target region. If the results of the assessment determine that the crop is not potentially invasive, it is eligible for certification.
- If the results of the assessment determine that the crop is potentially invasive, additional protocols, still to be determined, will be required to determine whether the feedstock is eligible for certification in target region. This will include evaluating the crop for invasiveness using carefully controlled field trials in the target region.

#### *3.2.2 CROP SPREAD*

Participants include, in the IRMP, protocols for the biomass crop prior to cultivation that include, where applicable:

- Adoption of conservation practices that limit potential for the spread of the crop, including:
    - Harvest, transportation, equipment cleaning, and storage protocols (e.g. steps to limit seed dispersal during transport).
    - Chemical or cultural control methods to ensure crop removal at the conclusion of production.
- Conservation practices or chemical, cultural, or physical control methods for removal of plants or pests that represent a significant risk of establishment outside the production system.
- Assistance to owners or managers of neighboring properties to respond if spread occurs.

IMPLEMENTATION: Where adoption of conservation practices do not prevent the establishment of a crop or its problematic genetic material outside the production area, control methods taken by the responsible party fail to remediate the invasion of plants or problematic genetic material within two growing seasons, and the invasion is considered problematic to the neighboring landowner/leaseholder or to the integrity of natural ecosystems, CSBP certification will be revoked.

### 3.3 LAND CONVERSION

Promote the conservation of native ecosystems of lands important to conservation objectives as defined by local, state, and federal agencies.

#### *3.3.1 DOCUMENTATION OF VEGETATION CATEGORY*

Participants have documented the vegetation category as of December 19, 2007, of all lands in each contiguous ownership/leasehold where they are seeking certification.

IMPLEMENTATION: Participants identify cover as of December 19, 2007 in their IRMP and document production history and vegetative cover since that date. Documentation includes the acreage of biomass crops, non-biomass crops, and non-croplands under the Participants' control. Special attention is required when agricultural operations have cleared non-crop vegetation after December 19, 2007.

#### *3.3.2 LANDS ELIGIBLE FOR CONVERSION*

Participants utilize lands for biomass production that maintain or enhance biodiversity.

IMPLEMENTATION: For agricultural lands[2], Participants do not produce raw materials or convert land areas designated by law[3] or by the relevant competent authority for nature protection purposes[4], wetlands, peatlands, untilled prairies, native sod, natural savannah, native natural grasslands, or lands where there is no clearly visible indication of human activities and the ecological processes are not significantly disturbed. Participant may source biomass from other unmanaged native vegetation tracts, provided that the management does not endanger[5] the structure or functioning of these ecosystems.

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### 3.4 PEST MANAGEMENT

Participants use an integrated pest management approach to effectively control outbreaks of pests, diseases, fire, and introduction of invasive plants while protecting human health and the environment.

#### *3.4.1 CONTROL AGENTS*

When applicable, Participants utilize control agents such as biological agents or pesticides to minimize damage to the biomass crop. When pesticides are used, Participants use the most effective pesticide necessary to achieve biomass management plans considering biological and environmental impacts. In all cases, the application of control agents will be completed in accordance with approved protocols and in compliance with applicable federal and/or state laws.

IMPLEMENTATION: Participants document the use of control agents in operations and the application practices.

## 4 PRINCIPLE 4 – WATER

Biomass and bioenergy production maintains or improves surface water, groundwater, and aquatic ecosystems.

### 4.1 WATER QUALITY

Maintain or improve surface and ground water quality.

#### *4.1.1 WATER QUALITY MANAGEMENT PLANNING*

Participants comply with a water management plan that addresses impacts to water quality or comply with an existing plan meeting these objectives (including pollution prevention, control and mitigation, and fertilizer, pesticides, biosolids, and waste water disposal treatments).

IMPLEMENTATION: The IRMP addresses water quality risk and the management practice to avoid water contamination. In cases where Participants do not apply manure, Participants have an up-to-date IRMP that addresses nutrient management planning and pesticide application (runoff and drift control) for their entire operation. In cases where Participants apply manure, an up-to-date comprehensive nutrient management plan is also required. The plan should be based on university extension recommendations unless conditions on site differ significantly from the assumptions on which extension recommendations are based.

#### *4.1.2 EROSION AND SEDIMENT AND RUNOFF CONTROL*

Participants adopt conservation practices and tillage systems related to erosion control.

IMPLEMENTATION: Participants demonstrate the use of practices suggested in USDA Conservation Practices, suggestions in the farm USDA Conservation Plan for erosion control or comparable federal or state conservation agencies recommendations.

#### *4.1.3 USE OF WASTEWATER FOR IRRIGATION*

Participants test wastewater (or receive documentation of testing conducted by provider) and treat wastewater as needed before using it for irrigation.

IMPLEMENTATION:

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[2] See the Glossary for the definition of Agricultural Lands.
[3] Any identified lands with G1-3 and S1-S2 ecosystems, critical habitat for G1-3 & S1-S2 species, or lands having threatened and endangered species. See Glossary for the definition of Endangered Species Act.
[4] Includes but is not limited to lands serving as critical corridors for wildlife, and S3 species and ecosystems.
[5] The structure and ecological functioning of unmanaged native vegetation should not be altered or threatened by managerial activities such as use of genetically modified organisms, agrochemicals, or soil movements for land intensification. Natural vegetation types may only be used for biomass acres if their general ecological characteristics are not changed.

- Wastewater may be applied for irrigation, consistent with nutrient management planning.
- Wastewater must be tested before application. Participants secure documentation of testing by the water provider or have the wastewater tested themselves.
- Animal wastewater is tested for nitrogen, phosphorus, and total suspended solids.
- Wastewater from municipal sources are tested for nitrogen, nitrate, phosphorus, and total suspended solids.
- Wastewater from industrial sources undergo a complete chemical profile, to include metals, ions, organics, and volatiles.

#### *4.1.4 TRACE ELEMENTS IN BIOSOLIDS*

Participants apply only biosolids that have been screened for heavy metal contaminants.

IMPLEMENATION: Participants document biosolid application on operations and maintain records from testing.

#### *4.1.5 NITROGEN*

Participants preserve nitrogen on site for plant uptake through plant tissue indicators or judicious soil sampling. Potential nitrogen runoff is dealt with in conjunction with Indicator 2.1.1 Soil Productivity and Conservation Planning and 4.1.1 Water Quality Management Planning, to avoid ground and surface water contamination.

IMPLEMENTATION: Through periodic soil sampling, applied research, accurate yield monitoring, and following prescriptive soil sample recommendations, plant tissue testing, or color metric analysis, Participants demonstrate a working knowledge of nutrient uptake from their production. Coupled with conservation practices modeled and deployed through the USDA "conservation practices" or "conservation systems," Participants demonstrate the ability to impact plant utilization while avoiding water pollution.

#### *4.1.6 PHOSPHORUS*

Participants preserve phosphorus on site for plant uptake through plant tissue indicators or judicious soil sampling. Potential phosphorus runoff is dealt with in conjunction with Indicator 2.1.1 Soil Productivity and Conservation Planning and 4.1.1 Water Quality Management Planning, to avoid ground and surface water contamination.

IMPLEMENTATION: Through periodic soil sampling, applied research, accurate yield monitoring, and following prescriptive soil sample recommendations, plant tissue testing, or color metric analysis, Participants demonstrate a working knowledge of nutrient uptake from their production. Coupled with conservation practices modeled and deployed through the USDA "conservation practices" or "conservation systems," Participants demonstrate the ability to impact plant utilization while avoiding water pollution.

#### *4.1.7 PESTICIDE MANAGEMENT*

Participants adopt pest and disease management methods that effectively control outbreaks of pests, diseases, fire, and introduction of invasive plants while not harming human health or the environment.

IMPLEMENTATION: Integrated Pest Management (IPM) is used when practical. Regardless of the use of an IPM, pest management methods include:

- where possible, the use of least-toxic and narrow-spectrum pesticides to achieve management objectives;
- application of pesticides in compliance with label requirements;
- application of pesticides in accordance with conservation practices;
- provision of equipment and training to employees and contractors for the safe application, storage of pesticides, and response to hazardous spills; and
- if biological control agents are used, they are applied by trained workers using proper equipment.

Pest Management methods will be documented, monitored, and strictly controlled in accordance with state and national laws and internationally-accepted scientific protocols.

#### *4.1.8 PESTICIDE USE*

Participants identify sources of concern and mitigate potential pesticide impacts.

IMPLEMENTATION: The identified areas of concern are protected with erosion control measures and correct timing of chemical applications.

#### *4.1.9 WASTE DISPOSAL*

Participants dispose of agricultural chemicals, containers, and liquid or solid non-organic wastes, including fuel and oil, off-site and in compliance with federal and state laws in a manner that is not harmful to the environment.

IMPLEMENTATION: Participants document waste disposal methods and activities on their property.

## 4.2 WATER QUANTITY

Irrigation practices do not deplete the quantity of surface or ground water.

### *4.2.1 IRRIGATION PLAN*

Participants provide annual documentation of compliance with and updates to a water management plan that ensures efficient use of water in irrigation practices.

IMPLEMENTATION: Irrigation plans must include a strategy to maximize efficiency in irrigation systems and reduce water use where possible, the re-use of treated wastewater where possible, the adoption of conservation practices related to water management, and conform to local or regional water allotment plan(s).

### *4.2.2 LEGAL COMPLIANCE*

Participants use, for irrigation only, water for which they held legally valid use rights before commencement of biomass production or rights that have been subsequently acquired through legal means.

IMPLEMENTATION: Participants identify the water authority that has oversight of the irrigation rights on the lands under their biomass production. Participants provide evidence of annual compliance with the rules of the water body.

### *4.2.3 PREVENTING DEPLETION*

In areas where the local water authority determines that ground or surface water is being depleted faster than it is being naturally replenished, Participants acquire existing water rights for any new irrigation, rather than securing new water rights from the local water authority, that would increase ground or surface water depletion rates.

IMPLEMENTATION: Participants provide a copy of their irrigation permits and provide evidence of compliance in areas where depleted water supplies are identified, where applicable, by state designations or local designations, and new irrigation in areas with depleted water supplies can only be done if it is offset by a reduction elsewhere in the irrigation district, unless the irrigation is just done for perennial crop establishment purposes for one or two years.

### *4.2.4 USE RIGHTS*

Participants demonstrate compliance with local water laws.

IMPLEMENTATION: Participants provide documentation of compliance with local water laws as prescribed by the local water board, irrigation district or similar.

### *4.2.5 IRRIGATION/SALINITY*

Participants demonstrate that the salinity of soil is within acceptable parameters for the crop produced.

IMPLEMENTATION: If soil salinity exceeds acceptable parameters, Participants take action to bring soil salinity into acceptable parameters.

### *4.2.6 MAXIMUM WATER USE PER ACRE*

Participants measure water use in a fashion that allows calculation of acre-feet of water applied per acre of cropland and ensures that water use per acre of cropland is consistent with the water use rates of the most efficient irrigation technology available in the area for the same or similar crops.

IMPLEMENTATION: Where specific circumstances warrant the use of other irrigation methods, Participants provide satisfactory documentation of the rationale and demonstrate that water is being used in the most efficient manner reasonable given the circumstances. In their assessment of the appropriateness of alternative irrigation methods, auditors may consider groundwater levels, soil type, topography, existing permits, water source, use of recycled water, use of irrigation to deliver fertilizers or pesticides, and other relevant factors.

Water recycled within an operation should only be counted as being applied once

## 4.3 AQUATIC ECOSYSTEMS

Preserve or enhance the functions and services of aquatic ecosystems.

### *4.3.1 AQUATIC ECOSYSTEM MANAGEMENT PLAN*

Participants comply with an IRMP that address the potential impacts of operation on aquatic ecosystem health within the watershed.

IMPLEMENTATION: Participants identify and map the watershed that the Participants' biomass acres drain into wetlands, blue-line streams, riparian zones, and streamside conservation zones. If the watershed is impaired, Participants, at a minimum, identify the watershed's current impediment and prescribed operational limitations.

#### *4.3.2 STREAM FLOW*

Participants adopt conservation practices considered sufficient to avoid negative impact on local stream flows and stream channel morphology, flood storage and conveyance capacity, and in-stream habitat conservation practices.

IMPLEMENTATION: If the watershed is impaired or impacted by the Participants' operations, Participants provide management practices and desired future conditions.

#### *4.3.3 STREAM TEMPERATURE*

Participants adopt conservation practices considered sufficient to avoid negative impact on local stream temperature.

IMPLEMENTATION: Participants describe and demonstrate operational limitations or conservation practices for biomass acres on temperature impacted steams.

#### *4.3.4 HYPOXIA*

Participants do not contribute to increasing the risk of hypoxia in downstream environments.

IMPLEMENTATION: Participants describe and demonstrate operational limitations and conservation practices for biomass acres that minimize hypoxia if the watershed is impaired for nitrate.

#### *4.3.5 WETLANDS*

Participants prevent negative impact on local wetlands through adoption of relevant conservation and appropriate management practices.

IMPLEMENTATION: Participants do not directly impact or make changes to hydrology that result in the drainage, filling, or degradation of any wetland that is not considered "prior converted" or drained prior to passage of the 1985 Food Security Act's "Swampbuster" provision.

## 5 PRINCIPLE 5 – AIR QUALITY AND EMISSIONS

Emissions are estimated via a consistent approach to life cycle assessment.

### 5.1 AIR QUALITY AND EMISSIONS

Participants provide data[6] needed for the biofuel or biopower producer to conduct a life cycle assessment (LCA) that accurately reflects emissions from the production and pre-conversion processing of biomass on the acres under consideration for certification.

#### *5.1.1 YIELD DATA*

Participants provide accurate and complete yield data on the farm production.

IMPLEMENTATION: Yield will be reported on an as delivered basis (yield in weight and percent moisture) or as stated on contract documents between Participants and their consumers.

#### *5.1.2 PRODUCTION INPUTS*

Participants provide accurate information regarding fertilizer, pesticides, and fuel utilized in biomass production.

IMPLEMENTATION: Participants provide the amount and type of nutrient amendments and the chemistry (product name and active ingredient per unit of production) of pesticides applied to their biomass production acres.

#### *5.1.3 PLANTING AND TILLAGE*

Participants provide accurate, planting methods, and tillage practices.

IMPLEMENTATION: Participants provide the name or type or equipment and the number of passes for each tillage fertilization, spraying, or planting tools take during the establishment of their biomass acres. Participants provide an estimated fuel usage for each equipment choice for each operation (gallons per acre or gallons per hour).

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[6] All data required in the Indicators under Criterion 5.1 are necessary for the CSBP GHG modeling tool developed for biomass consumers to calculate their aggregate GHG impacts. Participants may only provide the input data for the consumers or may provide their own GHG emissions factor by utilizing the CSBP Producer GHG modeling tool subject to audit review.

#### *5.1.4 SOIL CARBON AND ORGANIC MATTER*

Participants provide accurate data related to emissions resulting from soil carbon depletion or organic matter test results.

IMPLEMENTATION: Participants provide documentation of the soil organic matter as determined on the latest soil tests taken from their biomass production acres or by applied research.

#### *5.1.5 HARVESTING, COLLECTION, HANDLING, PROCESSING, AND STORAGE*

Participants provide accurate harvesting, collection, handling, processing, and storage of biomass practices.

IMPLEMENTATION: Participants provide the name or type of equipment and the number of trips or machine hours as appropriate for each on farm collection, harvesting, road siding, stacking, pre-processing, or processing tool takes during the harvesting of their biomass acres.

#### *5.1.6 TRANSPORTATION*

Participants provide accurate transportation data for biomass production.

IMPLEMENTATION: Participants provide the name or type of transportation equipment and the number of trips or miles of each known event associated with the biomass acres or production or the delivery of the biomass while under the care custody or control of the Participant.

## 6 PRINCIPLE 6 – SOCIOECONOMIC WELLBEING

Biomass and bioenergy production takes place within a framework that sustainably distributes overall socio-economic opportunity for and among all stakeholders (including land owners, farm workers, suppliers, biorefiners, and the local community), ensures compliance or improves upon all applicable federal and state labor and human rights laws, and provides for decent working conditions and terms of employment.

### 6.1 COMPLIANCE WITH LABOR LAWS

Ensure that human rights and labor laws are respected in biomass production fields for both employees and contractor employees.

#### *6.1.1 FAIR LABOR STANDARDS ACT*

Participants demonstrate employee protection that is compliant with or exceeds the Fair Labor Standards Act (FLSA) and all other federal and state labor laws.

IMPLEMENTATION: Participants demonstrate employee protection concerning minimum wage and overtime pay; health, retirement, and leave benefits; equal opportunity hiring; safety and health in the workplace; fair youth employment; and union rights, among others, unless state law requires greater employee protection. Participants' contracts with contractors or contracting agencies require they abide by or exceed the employee protection requirements stipulated in the FLSA and all other applicable federal and state labor laws.

### 6.2 FAIR TREATMENT OF WORKERS

All workers and contractors shall receive fair treatment.

#### *6.2.1 GRIEVANCE PROCEDURES*

Participants with 10 or more full-time employees, including seasonal workers, have a management policy that provides a mechanism for employees to raise concerns, safety issues, or grievances without fear of termination or any other reprisal, and inform workers of the policy at the time of hire or adoption of the policy.

IMPLEMENTATION: Participants demonstrate a system for the operation that provides a platform for employee grievances without fear of reprisal. Participants' contracts with contractors or contracting agencies require comparable grievance procedures.

#### *6.2.2 EMPLOYMENT CONTRACT*

Participants provide workers with a written agreement describing the terms of hire.

IMPLEMENTATION: Participants demonstrate a written agreement (e.g. employment contract) regarding hiring, firing, working hours, and vacation time. Participants demonstrate compliance with local, state, and federal labor contract laws. Participants' contracts with contractors or contracting agencies require written agreements describing terms of hire.

#### *6.2.3 WORKPLACE IMPROVEMENTS*

Participants provide opportunities for employees to make suggestions for workplace improvements.

IMPLEMENTATION: Participants demonstrate a system to provide an opportunity for employee suggestions and a sample of suggestions in the previous year.

#### *6.2.4 FREEDOM OF ASSOCIATION*

Participants respect the right of workers to associate freely in the workplace and, if desired, organize among themselves to negotiate working conditions.

IMPLEMENTATION: Verified through private interviews employers and/or employees, or written policies and procedures.

### 6.3 ENVIRONMENT, HEALTH, AND SAFETY

Participants ensure that biomass production activities are conducted in a manner that protects the health and safety of employees.

#### *6.3.1 COMPLIANCE WITH LAWS AND REGULATIONS*

Participants maintain and provide documentation of compliance with federal, state, and local occupational health and safety laws and regulations.

IMPLEMENTATION: Participants demonstrate compliance with OSHA and applicable federal, state, or local laws or regulations. Participants' contracts with contractors or contracting agencies require compliance with OSHA and applicable federal and state health and safety laws.

#### *6.3.2 TRAINING*

Participants and Participants' contracting agencies maintain and provide documentation that employees are trained for health and safety in the workplace.

IMPLEMENTATION:

- All employees, including seasonal employees, receive health and safety information, in a language they understand.
- All full-time employees receive health and safety training and get updated training at least every 5 years.
- All employees using potentially dangerous chemicals and machinery have received appropriate training.
- Supervisors are trained in emergency procedures and all provided information about who to contact in case of emergency and location of emergency kits.
- Participants' contracts with contractors or contracting agencies require comparable training and documentation for workplace safety training.

#### *6.3.3 HAZARDOUS MATERIALS PROTECTION*

Participants and Participants' contracting agencies provide, and employees use, adequate protective clothing, appropriate safety equipment, and filtered air respirator systems and/or positive pressure cabs for workers handling highly toxic chemicals.

IMPLEMENTATION: Participants document the purchase of Hazardous Materials Protection for employees or identify the location of the equipment on the premises evidence of worker education. Participants' contracts with contractors or contracting agencies require comparable protective equipment and clothing for the use of hazardous materials.

#### *6.3.4 ACCIDENTS AND INJURIES*

Participants and Participants' contracting agencies are prepared to handle injuries and chemical spills.

IMPLEMENTATION:

- Employees have access to well-stocked first aid kit at each work site.
- Employees are trained in emergency response procedures.
- Appropriate to the size of operation, procedures, materials, and training to address spills of hazardous materials are maintained.

#### *6.3.5 SANITATION*

Participants or Participants' contracting agencies provide clean drinking water and sanitary services.

IMPLEMENTATION: Participants provide records that document employee access to sanitation devices and clean drinking water for employees. Participants' contracts with contractors or contracting agencies have assurances to provide workers with clean drinking water and access to sanitation.

#### *6.3.6 INSURANCE AGAINST WORKPLACE INJURY*

Participants and Participants' contracting agencies provide workers compensation for all full-time employees.

IMPLEMENTATION: Participants provide evidence of insurance policies documenting the purchase of insurance products to cover workplace injury situations. Participants' contracts with contractors or contracting agencies require the purchase of workman's compensation insurance.

## 7 PRINCIPLE 7 – LEGALITY

Biomass production complies with applicable federal, state, and local laws, statutes, and regulations.

### 7.1 KNOWLEDGE OF LAWS

Participants and employees are knowledgeable about and comply with laws, statutes, and regulations applicable to their operation.

#### *7.1.1 KNOWLEDGE OF LAWS*

Participants, employees, and relevant contractors are able to demonstrate working-level awareness and knowledge of the laws, statutes, and regulations that apply to their ownership/leasehold and operation.

IMPLEMENTATION: Verified through interviews.

#### *7.1.2 ENSURING COMPLIANCE*

Program or processes to ensure compliance with applicable laws, ordinances, and regulations are in place.

IMPLEMENTATION: Participants provide evidence of any pending litigation or action by a local, state, or federal regulatory agency against the operation.

## 8 TRANSPARENCY

The process of certified biomass production is transparent.

### 8.1 PUBLIC ACCESS

Make results of certification audits and general information related to producing sustainable biomass available to the public.

#### *8.1.1 PUBLIC TRANSPARENCY*

Participants provide a publicly available summary of the audit findings.

IMPLEMENTATION: Participants promote transparency by allowing the Council to release summary certification audit reports that provide non-proprietary data to the public upon request. (CSBP will not require public disclosure of proprietary information or information protected by intellectual property laws.)

## 9 CONTINUOUS IMPROVEMENT

Biomass and bioenergy producers continuously improve practices and outcomes based on the best available science and appropriate grower development benchmarks.

### 9.1 COMPLIANCE

Comply with all changes made to the standard over time.

#### *9.1.1 PARTICIPANT COMPLIANCE*

Participants comply with changes to the standard within the specified compliance period.

IMPLEMENTATION: Participants demonstrate compliance with non-conformity with the standard.

### 9.2 REVIEW AND IMPROVEMENTS

The CSBP Standard and Participants demonstrate efforts to improve the environmental outcomes, agricultural practices, environmental approaches and social outcomes to the operation.

#### *9.2.1 STANDARD REVIEW*

Participants participate in periodic reviews of the CSBP Standard.

IMPLEMENTATION: Participants provide feedback and engage in periodic review of the CSBP Standard.

### 9.2.2 IMPROVE PERFORMANCE

Participants demonstrate efforts to improve environmental performance based upon monitoring programs and actions to address any non-conformances identified during certification audits.

IMPLEMENTATION: Participants comply with the time table of the IRMP and addresses non-conformity issues within the time frame specified.

### 9.2.3 GOOD AGRICULTURAL PRACTICES (GAP)

Participants demonstrate adoption of good agriculture practices through the use of "Best Agriculture Practices" and Integrated Pest Management to improve performance to the operation.

IMPLEMENTATION: Examples of areas Participants can demonstrate use of Good Agricultural Practices:

- Chemical, nutrient or manure application, on farm storage practices and disposal of hazardous waste materials.
- Integrated pest and disease management
- Usage of agriculture chemicals and germplasm according to Federal, State and Local Law and other Treaty Obligations
- Other techniques and practices as the well-vetted science and practice of sustainable biomass production evolves

# 3 GLOSSARY

**Agriculture**: all facilities and equipment engaged in growing crops and raising animals.

**Agricultural Lands**: lands defined as "Existing Agricultural Land" in regulations implementing the Renewable Fuel Standard provisions of the Energy Independence and Security Act of 2007, 75 Fed. Reg. 14670, 14864-14865, § 80.1401. Specifically, existing agricultural land is cropland, pastureland, and land enrolled in the Conservation Reserve Program (administered by the U.S. Department of Agriculture's Farm Service Agency) that was cleared or cultivated prior to December 19, 2007, and that, on December 19, 2007, was: (1) Nonforested; and (2) Actively managed as agricultural land or fallow, as evidenced by records which must be traceable to the land in question.

Records to demonstrate eligibility include: (1) Records of sales of planted crops, crop residue, or livestock, or records of purchases for land treatments such as fertilizer, weed control, or seeding; (2) a written management plan for agricultural purposes; (3) documented participation in an agricultural management program administered by a Federal, state, or local government agency; or (4) documented management in accordance with a certification program for agricultural products.

**Aquatic ecosystems**: a basic ecological unit composed of living and non-living elements interacting in an aqueous environment.

**Assessment:** a written evaluation to determine baseline conditions for establishing a structured approach to improving the performance regarding this Standard. The initial assessment involves both the Participant and the independent auditor.

**Audit:** an independent evaluation of the Participants' operation against the CSBP Standard; a systematic and independent process of obtaining evidence and evaluation to determine the extent that CSBP Standard Indicators and Criteria are fulfilled.

**Auditor:** the person, an employee of a certification body, conducting the audit of the Participants' operation.

**Bioenergy:** energy produced from biomass (electricity; liquid, solid, and gaseous fuels; and heat).

**Biofuel:** Biomass converted to liquid or gaseous fuels such as ethanol, methanol, methane, and hydrogen.

**Biological diversity (biodiversity):** the variety and abundance of life forms, processes, functions, and structures of plants, animals, and other living organisms, including the relative complexity of species, communities, gene pools, and ecosystems at spatial scales that range from local through regional to global.

**Biomass:** organic matter intended for conversion into bioenergy or other bioproducts, including dedicated fuel crops, crop residues, purpose-grown wood, and native vegetation.

**Biomass Production Area**: a unit of land managed for the removal and harvest of biomass energy crops. There are two distinct groups of biomass production areas:

1) _Primary Biomass Production Area: a unit of land managed for the growth and harvest of a crop which has a primary end use for or economic driver from biomass energy (e.g. *Miscanthus* sp., switchgrass, short rotation woody crops).

2) Secondary Biomass Production Area: a unit of land managed for the growth and harvest of a crop which has a primary end use or economic driver that is not biomass energy (e.g. corn stover).

The CSBP Standard addresses all management and operations practices on primary biomass production areas and the additional activities, management, and practices on secondary biomass production areas incurred because of the growth and harvest of relevant biomass energy product.

**Biopower:** the use of biomass to generate electricity; system technologies include direct-firing, co-firing, gasification, pyrolysis, and anaerobic digestion. (National Renewable Energy Laboratory)

**Biorefinery:** a facility that integrates biomass conversion processes and equipment to produce fuels, power, and chemicals from biomass.

**Conservation Action:** are measures designed to minimize and mitigate the effects of land management actions- to ensure that species will be conserved and to contribute to their recovery. These actions may take many forms, including, but not limited to, preservation of existing habitat; enhancement or restoration of degraded or a former habitat; establishment of buffer areas around existing habitats; modifications of land use practices, and restrictions on access. The appropriateness of an individual action is determined on a case by case basis, and is based upon the needs of the species and type of impacts anticipated.

**Conservation Practice**: an agricultural management practice that have been determined by the Natural Resource Conservation Service as an effective method to address resource concerns, either alone or in combination with other practices. Conservation practices are not equivalent to "best management practices." In many cases, there are multiple conservation practice options that growers might consider for development of a resource conservation system to address a resource concern.

**Certification Body (CB):** an independent third-party- auditing firm that to provides independent assessments of the Participant's operations regarding the compliance to this Standard.

**Corrective Action:** action in response to non-conformities raised by the certification body's auditor.

**Criteria:** the organizational category of the standard characterized by a set of related Indicators by which biomass production can be determined or assessed. (e.g. Criteria 1.1 "Assessment" has only one Indicator "1.1.1 Baseline Information").

**Critical Habitat:** the habitat necessary for the sustenance of a population within a specific locale.

**Eco-region:** a relatively large unit of land or water containing a distinct assemblage of natural communities sharing a large majority of species, dynamics, and environmental conditions. (www.wwf.org)

**Ecosystem services and resources:** goods and services that are traditionally viewed as free benefits to society, or "public goods," including wildlife habitat and diversity, water filtration, carbon storage, and scenic landscapes.

**Endangered Species Act:** federally mandated requirements for the protection and recovery of imperiled species and ecosystems. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within the foreseeable future. Globally threatened species are species designated as critically endangered (G1), endangered (G2), or vulnerable (G3). State-listed threatened species are species designated as critically endangered (S1), endangered (S2), or vulnerable (S3). (See www.natureserve.org for additional details).

**Environment, Health and Safety (EHS):** broad set of regulations or procedures to ensure acceptable working conditions.

**Fair Labor Standards Act (FLSA):** establishes minimum wage, overtime pay, recordkeeping, and youth employment standards affecting employees in the private sector and in Federal, State, and local governments.

**Forestland:** lands generally undeveloped land covering a minimum area of one (1) acre upon which the primary vegetative species are trees, including land that formerly had such tree cover and that will be regenerated and tree plantations. Tree covered areas in intensive agricultural crop production settings, such as fruit orchards or tree-covered areas in urban settings such as city parks, are not considered forestlands.

**Greenhouse gas (GHG) emissions:** releases of gases that trap heat in the atmosphere, contributing to climate change. These gases include carbon dioxide (CO2), methane, and chlorofluorocarbons (CFSs). Greenhouse gases (GHGs) are often measured in equivalents to carbon dioxide (CO2-e) as CO2 is the most prevalent GHG.

**Good Agricultural Practices:** Good Agriculture Practices or GAP refers to an evolving set of principles and technical recommendations to address human health, environmental protection, and the improvement of workplace conditions. In the absence of well-vetted science and well established production practices for biomass crops; Participants draw from the techniques developed over time to provide sustainable pathways for their biomass operations. Sustainable agricultural can be obtained through Good Agriculture Practices and specific methodologies, such as integrated pest management, integrated fertilizer management, conservation agriculture and worker/family health and safety protocols.

The GAP recognized by the FAO (http://www.fao.org/prods/gap/ rely on four principles:

- Economically and efficiently produce sufficient energy crops, safe production techniques and using environmentally sound principles;
- Sustain and enhance natural resources;
- Maintain viable farming enterprises and contribute to sustainable livelihoods;
- Meet cultural and social demands of society.

**Group certification:** an arrangement by which biomass production units owned or managed by a number of distinct legal entities (group members) may be evaluated and subsequently certified within the scope of a single certificate.

**Hypoxia:** the condition in water bodies in which dissolved oxygen falls below the level necessary to sustain most animal life.

**Important Wildlife Species (IWS)**: includes any species or community identified in state conservation plans (State Wildlife Action Plan or others) or identified as economically important or significant and is considered in addition to RTESC.

**Incidental areas:** idle lands that are not used for forage or crop production immediately adjacent to (e.g., hedgerows) or within (e.g., watercourses, wetlands) biomass production units.

**Indicators:** the quantitative or qualitative standard requirement assessed by the auditor (e.g. Indicator "1.1.1 Baseline Information"). The sum of related Indicators provides a means of judging whether biomass production complies with the requirements of a Criterion.

**Integrated Pest Management Plan:** progressive and holistic approach to biological crop damage involving periodic damage and pest/disease population assessments, monitoring, and control using biological, chemical, and/or mechanical means.

**Integrated Resource Management Plan:** a comprehensive and detailed plan that outlines management goals and objectives for a designated area of land, based on consideration of all of the resources on that land and that may be impacted by activities on that land, and that specifies the practices that will be used to achieve management objectives. See Principle 1 of the CSBP Standard.

**Invasive species:** plants, animals, and microbes not native to a region, which when introduced either accidentally or intentionally cause economic or environmental harm or harm to human health. (http://agclass.nal.usda.gov/)

**Life cycle assessment (LCA):** a suite of analytical techniques for compilation and evaluation of the inputs, outputs, and the potential environmental impacts of a product system throughout its life cycle. (ISO International Standard, 14040 Environmental Management – Life Cycle Assessment – Principles and Framework, 2006. 2nd Edition)

**Management component:** a specific part of agricultural management, including: input management, field/stand management, harvest, incidental area treatment, carbon cost, and field/stand access.

**Management objectives:** the specific aims a landowner or manager seeks to achieve through management plans and practices.

**Management options:** different practices or programs that may be used to achieve management objectives.

**Management practices:** specific activities, measures, courses of action, or treatments used to achieve management objectives.

**Mitigation:** 1. action taken to alleviate potential adverse effects of natural or human-caused disturbances 2. compensation for damage done – note in this usage, in-kind mitigation is replacement of a lost resource with one similar (stream for stream or species for species), while out-of-kind is replacement of one kind with another (lake for stream or one species for another).

**Narrow spectrum pesticide:** a selective pesticide (usually an insecticide) that is toxic to one or a few species or species groups —*synonym* selective pesticide. Contrast with broad-spectrum pesticide (a nonselective pesticide - usually an insecticide -that is toxic to many species).

**Native Natural Grasslands**: undisturbed grassland ecosystems with a plant cover composed principally of undisturbed native grasses, grass-like plants, forbs, and suitable for grazing or browsing. (http://www.ers.usda.gov/AmberWaves/September11/Features/NativeGrassland.htm#box1**.** Grasslands are defined by land cover and use. Grasses are the dominant vegetation, but grasslands also include legumes, forbs, and other vegetation. Grassland use includes such activities as grazing, haying, and other forms of forage harvest. Native grasslands are also referred to as "native sod." Native grasslands are usually classified as rangeland based on native vegetation)

**Native Sod:** lands on which the plant cover is composed principally of native grasses, grass-like plants, forbs, or shrubs suitable for grazing and browsing, and lands that have never been tilled for the production of an annual crop as of January 1, 2008.

**Natural Heritage programs:** state-level programs that manage site-specific and species/ecosystem-specific information on priority species and ecosystems, Natural Heritage programs identify species and ecosystems are priorities for conservation effort; build and maintain a database for priority species and ecosystems; and share the information with others so that it can be used for environmental assessments and conservation planning purposes.

**Natural/native ecosystems and lands:** Vegetation where ecological processes primarily determine species and site characteristics; that is, vegetation comprised of a largely spontaneously growing set of plant species that are shaped by both site and biotic processes. Natural vegetative forms recognizable physiognomic and floristic groupings that can be related to ecological site features. Human activities influence these interactions to varying degrees (e.g., logging, livestock grazing, fire, introduced pathogens), but do not eliminate or dominate the spontaneous processes. (www.NatureServe.org)

**Natural Resources Conservation Service (NRCS):** a program of the U.S. Department of Agriculture to help America's private land owners and managers conserve their soil, water, and other natural resources. NRCS provides technical and financial assistance for many conservation activities. (www.nrcs.usda.gov)

**Natural Savannah:** ecosystems with a continuous native grasses and forbs layer with scattered native trees or shrubs. There are five discrete types in North America: pinyon (*Pinus cembroides*, *P. edulis*, *P. monophylla*), juniper (*Juniperus* sp.), pine (e.g. *Pinus ponderosa, P. palustris*), oak (*Ouercus* sp.), and mesquite (*Prosopis* sp.) types. Oak savannahs are divided into California, southwestern, and Midwestern oak savannahs.

**NatureServe :** a non-profit conservation organization whose mission is to provide the scientific basis for effective conservation action; represents an international network of biological inventories-known as natural heritage programs or conservation data centers-operating in all 50 U.S. states, Canada, Latin America, and the Caribbean. (www.natureserve.org)

**New Information Request (NIR):** a written request by a certification body to provide additional information to determine compliance with specific requirements. It is possible that a new non-conformity may result from the evaluation of new information submitted.

**Non-Conformity (NC):** receiving a non-conformity means that the program is not compliant with a specific requirement of the CSBP Standard.

**Nonforested Land:** land that is not forestland.

**Nutrient Management Plan:** the overall conservation system that addresses all aspects of an animal feeding operation to help ensure that both agricultural production goals and natural resource concerns dealing with nutrient and organic by-products and their adverse impacts on water quality are achieved. A CNMP incorporates practices to utilize animal manure and organic by-products as a beneficial resource.

(http://www.nrcs.usda.gov/technical/afo/pdf/CNMPFactSheet.pdf)

**Operation's Scale or Intensity:** the relative size and complexity of the operations considered for CSBP certification, including the use of technologies and sophistication when compared to similar Participants in the fuel shed or vicinity.

**Peatland:** ecosystems dominated by moss species, especially *Sphagnum* or *Carex* sp. as the principle life form, and in which the production of biomass exceeds its decomposition resulting in the accumulation of organic matter from plant debris. Peatlands are areas with or without vegetation, with a naturally accumulated peat layer at the surface.

**Prairie:** native grasslands of North America. Prairies can be roughly divided into tallgrass, mixed-grass, and shortgrass prairie, based on height and species of grasses.
(http://www.npwrc.usgs.gov/news)

**Primary Biomass Production Area**: See Biomass Production Area definition.

**Principle:** the highest organizational category of the Standard expressed as a key element of sustainable biomass production: Principles provide the framework for the Criteria and the respective Indicators of those Criteria in the Standard.

**Participants:** a biomass producer who enrolls in the CSBP program to achieve third-party certification for meeting the CSBP Standard for sustainable biomass production.

**Rare, Threatened, and Endangered Species and Communities (RTESC)**: species that are federally listed (e.g. by the U.S. Fish and Wildlife Service or National Marine Fisheries Service) or state listed (e.g. by state agencies or natural heritage programs) as G1-G3 and S1-S2. S3 species or communities that are listed as candidates for federal or state listing are also included. Other S3 species or communities may be considered rare based on the assessment by the landowner or manager in consultation with the appropriate state fish and wildlife agency.

**Renewable Fuel Standard (RFS2):** U.S. law that directs EPA to promulgate regulations ensuring that applicable volumes of renewable fuel are sold or introduced into commerce in the United States annually. RFS regulations apply to refiners, blenders and importers and set forth a phase-in for renewable fuel volumes beginning with 9 billion gallons in 2008 and ending at 36 billion gallons in 2022. The proportion of cellulosic biofuels that must be sold rises from 100 million gallons in 2010 to 16 billion gallons in 2022.
(www.epa.gov/oms/fuels/renewablefuels/regulations.htm)

**Restored lands:** lands that through human intervention or natural processes once again exhibit some or all natural ecosystem characteristics.

**RUSLE2 (T score)**: Revised Universal Soil Loss Equation, which estimates soil loss from rill and interrill erosion caused by rainfall on cropland (rill and interrill erosion is the removal of layers from the land surface by the action of rainfall and runoff); used to predict the long-term average rate of rill and interrill erosion for several alternative combinations of crop system and management practices. T score refers to soil loss tolerance, the amount of soil that can be replenished annually through soil forming processes, and usually varies from 1-5 tons per acre per year, depending on the soil type. RUSLE2 calculates the average annual soil loss (A) based on factors of climate, soil, slope length, slope steepness, cover management and support practice. This value is compared with T to determine whether the system is sustainable from a soil loss perspective. (http://www.ia.nrcs.usda.gov/news/factsheets/RUSLE2FactSheet.html)

**Secondary Biomass Production Area**: See Biomass Production Area definition.

**Self-assessment:** an evaluation of management practices against a set of criteria and indicators conducted by the landowner or land manager.

**Semi-natural vegetation/lands:** typically encompasses vegetation types where the species composition and/or vegetative growth forms have been altered through anthropogenic disturbances such that no clear natural analogue is known, but they are a largely spontaneous set of plants shaped by ecological processes.

**Socio-economic well-being:** the social and economic health, stability, and vitality of a community.

**Soil Capability:** the suitability of soils for numerous uses, including the sustained production of crops, rangelands, or pastureland and is dependent upon the texture, structure, drainage, slope, organic matter, acidity, nutrition, depth, bearing capacity, erodability, base saturation, etc. See also http://soils.usda.gov/technical/handbook/contents/part622.html

**Soil Conditioning Index (SCI):** a qualitative tool that predicts the effects of management systems on soil organic matter as one of three outcomes - organic matter decline, organic matter increase, or organic matter equilibrium. The index considers

organic material (biomass) produced and returned to the soil, the influence of climate on organic matter decay, the influence of tillage, and the influence of erosion. (www.nrcs.usda.gov)

**State Wildlife Action Plan:** One of the conservation planning documents written by a state, tribe, or territorial fish and wildlife agency (agency) to proactively conserve wildlife and their habitats to prevent wildlife from declining to the point of becoming endangered and more costly to protect. These plans assess the health of each state's wildlife and habitats, identify problems they face, and outline the actions that are needed to conserve them over the long term. While all SWAPs share a common framework of required elements, they are tailored to each state's circumstances, wildlife, habitats, and conservation needs. As such there is variability in scope, species lists, focus, habitats, actions, risks, threats and needs among state plans. These plans are written with public participation and must be updated every 10 years, although may be updated more frequently.

**Sustainability:** Adopting practices and developing products that are environmentally, socially, and economically sound, and that can meet present needs without compromising the ability of future generations to meet their needs.

**Untilled Prairie:** prairie lands that has never been tilled, or the Participant cannot substantiate that the ground has ever been tilled for crop production.

**Vegetation Category:** the determination of the primary type of vegetative cover present on biomass acres. Examples of vegetation categories include annual crops, perennial crops, native natural grassland, established grassland, natural savannah, semi-natural savannah, native sod, pastureland, prairie, and woodlots.

**Wetland:** lowland areas with hydric soils that are seasonally inundated or saturated sufficiently to support a prevalence of hydrophilic vegetation adapted for life in water-saturated soil conditions. (Food Security Act, as set forth in 7 C.F.R. Part 12, Section 12.2, 1985)