

# Glossary of Terms Used in Ecosystem Services and Environmental Credit Markets

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The online glossary contains 532 terms related to ecosystem services and environmental credit markets.

The objective of this publication is to provide a glossary of definitions for a broad group of terms used in ecosystem services and environmental credit markets in order to facilitate consistency in terminology. This list of terms and definitions should result in better communication among people involved in these disciplines. This is an emerging and dynamic area of conservation strategy, and naturally, the words and definitions are subject to change through use and experience.

The glossary was a 2013 project of the NRCS Environmental Markets Working Group with definitions provided by other USDA programs and federal agencies involved in ecosystem services and environmental credit markets. Its content is within the Public Domain.

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### Abiotic condition

#### USDA Definition:

Climate, light, water, and other non-living factors within the environment that have a significant influence on the quality, resistance, and the resilience of habitat condition over time.

### Abiotic factors

#### USDA Definition:

Non-living factors in the environment include climate, light, water, and temperature.

### Accuracy

#### USDA Definition:

From inferential statistics, how well an estimate matches the true value of the particular parameter or quantity being estimated (e.g., population abundance), typically quantified using some measure of bias.

### Acid Rain Program

#### EPA Definition:

Employs a cap and trade framework to achieve sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) reductions under the Clean Air Act (CAA). The program is generally seen as a success; it has reduced emissions of these gases at a fraction of the costs that other means of control would have forced on energy consumers.

### Acreage diversion program

#### USDA Definition:

A historic approach to reduce commodity supplies by diverting acreage to non-crop uses. Examples include paid diversion, unpaid diversion, set-aside and acreage reduction programs. The 1996 Farm Bill (P.L. 104-127) eliminated authority for the USDA to implement annual acreage reduction programs. The Conservation Reserve Program pays farmers for the long-term conversion of fragile cropland to conserving uses and is not considered to be an acreage diversion program.

### Additional

#### USDA Definition:

In an environmental market, the ecosystem service (greenhouse gas sequestered, nutrient runoff prevented) that is generated and secured only through the market payments is deemed additional - and would not have been

generated absent the payment provided by the environmental market.

#### Additionality

##### USDA Definition:

If the conservation practices are implemented because of the environmental market incentive to generate offsets or credits for trade, then the ecosystem services that occur are considered "additional" and meet the criteria of "Additionality", and are eligible to participate in the environmental credit market. If the conservation practices would have been implemented, even in the absence of the market, they are considered "Business as Usual" and not "Additional", and are not eligible for credit generation for trade. Projects that go beyond "business as usual" are considered to be providing "additional" conservation benefit, and are eligible to generate the verified environmental offsets or credits for trading in an environmental market. Projects that are forced by regulation, or those that receive public cost-share funds, are not considered "additional", but there can be exceptions.

#### Afforestation

##### USDA Definition:

The establishment of a forest or stand in an area where the preceding vegetation or land use was not forest.

#### Aggregator

##### USDA Definition:

A person or institution that solicits, combines and/or markets verified environmental credits from multiple nonpoint sources or mitigation banks on behalf of the credit suppliers or mitigation banks. An aggregator facilitates and can administer the financial transactions between the buyers and sellers of credits. They may charge a fee for the service and may also be required to provide financial assurance or some type of insurance to the credit buyer if the credits fail for any reason, but the aggregator does not own the credits.

#### Agricultural pollution

##### EPA Definition:

Wastes, emissions and discharges arising from farming activities, including: runoff and leaching of pesticides and fertilizers; pesticide drift and volatilization;

erosion and dust from cultivation; and improper disposal of animal manure and carcasses. Some agricultural pollution is point source pollution, meaning that it is derived from a single discharge point, such as a pipe. Large feedlots are an example of an agricultural point sources, and they require permits under the Clean Water Act. Much of the pollution from agriculture is nonpoint source pollution, meaning that it derives from dispersed origins (e.g., blowing dust or nutrients leaching from fields, etc).

#### Agroforestry

##### USDA Definition:

The strategic incorporation of trees on farms for their economic and environmental benefits through the use of riparian forest buffers, windbreaks, alley cropping, silvopasture, and multistory forest farming.

#### Air pollution

##### EPA Definition:

Contamination of the atmosphere by substances that, directly or indirectly, adversely affect human health and social welfare (including effects on ecosystems). Air pollution results from human activities, including both point source pollution (e.g., from smokestacks) and nonpoint source pollution (area sources, e.g., as dust blown from streets or fields, leaky pipes, etc.), and from natural sources (including sea spray, volcanic emissions and pollen). Point sources of air pollution require permits under the Clean Air Act.

#### Alley cropping

##### USDA Definition:

Alleys of high-value managed working trees and shrubs of food, herbal (botanicals), and decorative products are integrated into crops, hay, or pasture.

#### Alternative fuels

##### EPA Definition:

Alternatives to petroleum sources of energy: mixtures containing 85% or more by volume of alcohol fuel, including methanol and denatured ethanol; natural gas (compressed or liquefied); liquefied petroleum gas (propane); hydrogen; coal-derived liquid fuels; fuels derived from biological materials; electricity (including electricity from solar energy); and 100% biodiesel (B100). Renewables are a subset of alternative fuels.

### Animal feeding operation

#### EPA Definition:

Facilities in which animals are kept and raised in confined situations. Clean Water Act regulations define animal feeding operations as those confining livestock or poultry for 45 days or more in a 12-month period in a facility that has no vegetative ground cover. When large enough, these facilities are designated as concentrated animal feeding operations (CAFOs) and they become subject to regulatory requirements to prevent point source pollution.

### Annex I Parties

#### USDA Definition:

The 40 countries plus the European Economic Community listed in Annex I of the United Nations Framework Convention on Climate Change (UNFCCC) that agreed to try to limit their greenhouse gas (GHG) emissions: Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, European Economic Community, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, The Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States.

### Anti-backsliding

#### EPA Definition:

A provision in the Clean Water Act (CWA) and National Pollutant Discharge Elimination System (NPDES) that requires a reissued permit to be as stringent as the previous permit with some exceptions.

### Antidegradation

#### EPA Definition:

Policies that ensure protection of existing designated uses and of water quality for a particular water body where the water quality exceeds levels necessary to protect fish and wildlife propagation and recreation on and in the water.

### Aquifer

#### EPA Definition:

An underground geological formation, or group of formations, comprised of porous materials, such as sand, gravel, or fractured rock, and filled with groundwater that

is capable of supplying wells or springs.

Army Corps of Engineers (ACE) or (USACE) or (CoE)

EPA Definition:

The United States Army Corps of Engineers (USACE or ACE or CoE) is a U.S. federal agency under the Department of Defense that is one of the world's largest public engineering, design, and construction management agencies in the world. ACE is involved in a wide range of public works,, responsible for dams, canals and flood protection in the United States, as well as the delineation and management of wetlands and wetland mitigation banking as described in the Clean Water Act.

Assessment endpoint

EPA Definition:

As used in ecological risk assessment, an explicit expression of the environmental value (i.e., something important to decision makers and/or stakeholders) that is to be protected, operationally defined by an ecological entity and its attributes. For example, salmon populations are valued ecological entities, and age class structure is one of their important attributes. Together, “salmon population age class structure” forms an assessment endpoint. An assessment endpoint involving an ecosystem service and its quality or quantity is called an “ecosystem service assessment endpoint.”.

Assimilative capacity

EPA Definition:

The ability of an ecosystem to cleanse itself and its capacity to receive waste waters or toxic materials without adverse ecological effects.

At-risk species

Fish & Wildlife Service Definition:

At-risk species – Species that are: 1) listed as endangered or threatened under the Endangered Species Act (ESA); 2) proposed for listing under the ESA; 3) candidates for listing under the ESA; 4) likely to become candidates for listing in the near future; 5) species listed as endangered or threatened (or similar classification) under State law; and 6) State species of conservation concern.

Atmosphere

EPA Definition:

The gaseous envelope surrounding the Earth. The dry atmosphere consists almost entirely of nitrogen (78.1% volume mixing ratio) and oxygen (20.9% volume mixing ratio), together with a number of trace gases, such as argon (0.93% volume mixing ratio), helium, radiatively active greenhouse gases (GHG) such as carbon dioxide (0.035% volume mixing ratio), and ozone. In addition the atmosphere contains water vapor, whose amount is highly variable but typically 1% volume mixing ratio. The atmosphere also contains clouds and aerosols.

#### Attainment area

##### EPA Definition:

An area considered to have air quality as good as or better than the National Ambient Air Quality Standards.

#### Attenuation

##### USDA Definition:

The degradation or diminishing of a pollutant through natural processes. It can be an important effect to account for in water quality trading when considering trades between watersheds and river basins rather just within a watershed or river basin. The greater the distance between credit supplier and buyer, more attenuation can reduce the value of water quality credit to a point source buyer, and may result in the need for a trading ratio to offset the effect of attenuation.

#### Auction

##### USDA Definition:

Generally, a process of buying and selling goods or services by offering them up for bid, taking bids, and then selling the item to the highest bidder. Auctions are used to publicly trade environmental credits in some markets.

#### Averted-risk offset or credit

##### USDA Definition:

Credited interventions which prevent future environmental harm from occurring. This is a type of environmental credit or offset.

#### Averted risk

##### USDA Definition:

The removal of a threat to an ecosystem service for which there is reasonable and credible evidence.

## Avoidance

### USDA Definition:

Measures taken to prevent environmental impacts from occurring, for instance by changing or adjusting the development project's location, scope, nature or timing. Point sources need to do all they reasonably can to prevent or avoid environmental impacts before resorting to the purchase of environmental credits or offsets.

## Bank sponsor

### Fish & Wildlife Service Definition:

The entity in charge of establishment and operation of a conservation or wetland mitigation bank. Bank sponsors are most often private individuals, companies, or Limited Liability Corporations; but may also be non-governmental organizations, tribes, states, local governments, or federal agencies. Aggregators of greenhouse gas projects and nutrient land trusts are similar.

## Barriers to the development of environmental credit markets

### USDA Definition:

Conditions preventing the formation of markets for ecosystem services. These conditions make it unacceptably costly for potential participants to enter the market. Some examples of barriers include the lack of defined property rights, inability to restrict access or use of the service, excessive transaction costs, risks to point sources not sufficiently addressed, and agreement on the product being traded.

## Baseline

### Fish & Wildlife Service Definition:

The pre-existing condition of a defined area of land that can be quantified by an appropriate metric to determine level of ecosystem service function or value and re-measured at a later time to determine if the same area has increased, decreased, or maintained the same level of function or value. A year, such as 2006, could be the baseline condition to which everything is compared. In environmental credit markets, the baseline is frequently the floor of ecosystem service function or pollution control to which that all nonpoint sources must comply before environmental credits can be generated for sale from "additional" conservation practices.

### USDA Definition:

A minimum level of conservation that must be in place

before additional practices may be eligible for trading.

#### Baseline-and- credit trading program

##### USDA Definition:

A credit trading program where a firm or entity that is not otherwise required to meet environmental performance improvements can earn credits to sell to a firm that is required to meet environmental reductions.

#### Baseline condition

##### EPA Definition:

A reference condition against which changes or trends are judged; often a set of conditions that exist at a particular point in time.

##### USDA Definition:

A description of existing conditions that provides a starting point against which change resulting from a project can be measured.

#### Baseline scenario

##### EPA Definition:

In environmental economics, a scenario in which current conditions (i.e., without any policy change) are projected into the future. The baseline scenario forms a comparative basis for one or more "policy scenarios" in which the effect of introduced policies are simulated into the future.

#### Best Available Technology Economically Achievable (BAT)

##### EPA Definition:

Technology-based standard established by the Clean Water Act as the most appropriate means available on a national basis for controlling the direct discharge of toxic and nonconventional pollutants to navigable waters.

#### Best Conventional Pollutant Control Technology (BCT)

##### EPA Definition:

Technology-based standard for the discharge from existing industrial point sources of conventional pollutants including biochemical oxygen demand, total suspended solids, fecal coliform, pH, oil and grease.

#### Best Management Practice (BMP)

##### EPA Definition:

Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from nonpoint sources.

#### Fish & Wildlife Service Definition:

Methods that have been determined to be effective, practical means of avoiding, minimizing or mitigating impacts to natural resources.

#### USDA Definition:

For point sources, BMPs are defined as schedules of activities, prohibitions of practices, maintenance procedures, and other treatment controls and pollutant removal devices (structural and nonstructural) to prevent or reduce the discharge of pollutants to waters of the United States. For nonpoint sources, BMPs are defined as methods, measures or practices selected by an agency to meet its nonpoint source control needs, many of which can be found in the NRCS Handbook of Conservation Practices. BMPs include, but are not limited to, structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters.

#### Best Practicable Control Technology Currently Available (BPT)

##### EPA Definition:

The first level of technology-based standards established by the Clean Water Act to control pollutants discharged to waters of the United States. BPT effluent limitations guidelines are generally based on the average of the best existing performance by plants within an industrial category or subcategory.

#### Bilateral negotiations

##### USDA Definition:

Trades characterized by one-to-one negotiations where a price is typically arrived at through a process of bargaining not simply observing an existing price on the market.

#### Biodiesel

##### EPA Definition:

An alternative renewable fuel, produced from vegetable oils or animal fats through a refinery process called transesterification. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend.

#### Biodigester

##### USDA Definition:

A collection of processes by which microorganisms break down biodegradable material in the absence of oxygen.[1] The process is used for industrial or domestic purposes to manage waste and/or to produce fuels. Anaerobic digestion is widely used as a source of renewable energy. The process produces a biogas, consisting of methane, carbon dioxide and traces of other 'contaminant' gases.[1] This biogas can be used directly as fuel, in combined heat and power gas engines[9] or upgraded to natural gas-quality biomethane. The nutrient-rich digestate also produced can be used as fertilizer.

### Biodiversity

#### USDA Definition:

In general, the variety and variation among living organisms from all sources, plants, animals and microorganisms, and among their ecosystems. Typically considered at three levels: ecosystem diversity, species diversity and genetic diversity. There is no regulated interest in biodiversity at this time (aside from FWS Conservation Banks described in that definition) although there are efforts to develop preserved habitats for "pre-listed" species as defined by the FWS in exchange for safe-harbor protections for the landowners. Landowners may be able to sell credits of the species if they become listed as endangered. There is also increasing discussion regarding the potential for voluntary markets to support pollinator habitats. Other important native species habitats could have value in voluntary markets.

### Biodiversity conservation

#### USDA Definition:

The deliberate management of biological resources to sustain key biodiversity components or maintain the integrity of sites so that they support characteristic types and levels of biodiversity. Conservation includes preservation, maintenance, restoration, and sustainable utilization of the natural environment.

### Biodiversity offsets or credits

#### USDA Definition:

To achieve no net loss and preferably a net gain of biodiversity in species composition, habitat structure, and ecosystem function.

### Biofuels or bioenergy

#### USDA Definition:

Fuels or electricity made from biomass, which, in the United States, largely include corn-based ethanol (blended into gasoline and called gasohol) and soybean-based biodiesel.

#### Biological integrity

##### USDA Definition:

The ability of an ecosystem to support and maintain a balanced, adaptive ecological community with a species composition, diversity and functional organization comparable to that of similar, undisturbed ecosystems.

#### Biomass

##### USDA Definition:

Any plant-derived organic matter. Biomass available for energy on a sustainable basis includes herbaceous and woody energy crops, agricultural food and feed crops, agricultural crop wastes and residues, wood wastes and residues, aquatic plants, and other waste materials including some municipal wastes. Biomass is a very heterogeneous and chemically complex renewable resource.

#### Biosphere

##### EPA Definition:

The part of the Earth system comprising all ecosystems and living organisms, in the atmosphere, on land (terrestrial biosphere) or in the oceans (marine biosphere), including derived dead organic matter, such as litter, soil organic matter and oceanic detritus.

#### Biotic factors

##### USDA Definition:

Environmental features resulting from the activities of living organisms.

#### BMP Efficiency Rates

##### USDA Definition:

Generally the percentage removal of a pollutant from water treated by a best management practice (e.g. a filter strip removes 60% of the nutrients from runoff leaving a farm field).

#### BMP verification

##### USDA Definition:

Procedures for ensuring that BMPs reduce nutrients and/or

sediments in compliance with the trading program's rules.

#### Brownfield site

##### EPA Definition:

Real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant.

#### Buffer strip or conservation buffer

##### USDA Definition:

A narrow area of perennial vegetation planted along the edge or the contour of a field to slow the flow of water or the velocity of wind and to trap sediment and other materials (nutrients, pesticides and certain pathogens) before they leave agricultural areas and become pollutants.

#### Built infrastructure

##### USDA Definition:

Human engineered and constructed structures and systems that may function to substitute for or partially replace ecosystem services, such as stormwater systems, levees, etc.

#### Bundling or stacking credits

##### USDA Definition:

The creation of unique environmental offset or credit (GHG, water quality, habitat, etc) types within the same land unit that allows landowners to market multiple ecosystem services at a single site, including those without specific geographic delineation.

#### Business as Usual

##### USDA Definition:

If the conservation practices would have been implemented, even in the absence of an environmental credit market, they are considered "Business as Usual" and the ecosystem services that occur are not considered "additional" and are not eligible for offset or credit generation for trading in a market.

#### California Air Resources Board (ARB)

##### USDA Definition:

CA Air Resources Board (ARB) is working to reduce greenhouse gas (GHG) emissions from multiple sectors of the economy, as part of the implementation of AB 32, the Global Warming Solutions Act. The agriculture sector can generate offset credits by reducing their on-farm GHG

emissions through management of their animals, crops, and forests under approved ARB protocols.

#### Candidate Conservation Agreement (CCA)

##### Fish & Wildlife Service Definition:

Candidate Conservation Agreement (CCA) – a formal agreement between the USFWS and one or more Federal or non-Federal parties to address the conservation needs of proposed or candidate species, or species likely to become candidates for listing under the Endangered Species Act, in which participants voluntarily commit to implementing specific actions that will remove or reduce the threats to these species, so that listing is no longer necessary.

#### Candidate Conservation Agreement with Assurances (CCAA)

##### Fish & Wildlife Service Definition:

A formal agreement between the USFWS or NMFS and one or more non-Federal parties who voluntarily agree to manage their lands or waters to remove threats to candidate or proposed species and in exchange receive assurances that their conservation efforts will not result in future regulatory obligations in excess of those they agreed to at the time they entered into the Agreement. The management activities included in the Agreement must significantly contribute to elimination of the need to list the target species when considered in conjunction with other landowners conducting similar management activities within the range of the species.

#### Candidate species

##### Fish & Wildlife Service Definition:

Species of fish, wildlife, or plant for which the USFWS has sufficient information on vulnerability and threats to support a proposal to list it as endangered or threatened under the Endangered Species Act, but for which preparation and publication of a proposal is precluded by higher-priority listing actions.

#### Cap-and-trade system

##### EPA Definition:

An approach to reducing pollution emissions and control costs by setting a regulatory cap on total emissions, allocating allowable emissions among permit-holders that sum to the total cap, and allowing trading of the emissions. Trading allows those with high pollution control costs to buy the excess pollution reductions from

those with low pollution control costs, thereby reducing overall costs of achieving the cap.

Fish & Wildlife Service Definition:

Refers to a credit trading program that is between permitted point sources where both parties are required to reduce their pollution impacts in which: 1) the cap is the limit on a particular emission (e.g., carbon dioxide), nutrient (e.g., nitrogen), or other pollutant or product that negatively affects the environment; and 2) the trade (credit exchanges) occurs between the point source that exceeds their individual cap, and another point source that does not exceed their individual limit.

USDA Definition:

Market system, where both the buyer and seller of credits are point sources under an obligation to improve their environmental performance. An example of this form of credit trading is the sulfur dioxide (SO<sub>2</sub>) and nitrous oxide (NO<sub>x</sub>) trading program that allows certain sulfur dioxide and nitrous oxide emitters to meet statutory requirements of reduced emissions either by reducing emissions from their own factories or by purchasing additional reductions from other companies whose factories have reduced their emissions below their individual requirement or allowance.

Carbon Capture

USDA Definition:

Experimental procedure that removes CO<sub>2</sub> from atmospheric emissions and purifies it. The trapped gas is then used for industrial purposes or stored in geological substrates. Although this process shows great promise for reducing GHG emissions, it is not yet an economically feasible means of keeping CO<sub>2</sub> from entering the atmosphere.

Carbon credits

USDA Definition:

Verified "additional" reductions in carbon dioxide equivalent emissions generated by non point sources that are eligible for trade to offset carbon dioxide equivalent emissions of permitted point sources elsewhere.

Carbon Dioxide (CO<sub>2</sub>)

USDA Definition:

CO<sub>2</sub> is a colorless, odorless, non-poisonous gas that is a normal part of the ambient air. water, a by-product of animal respiration, and a required compound for all

photosynthetic activity. Current atmospheric concentration is approximately 0.03%.

#### Carbon dioxide or carbon equivalent

##### USDA Definition:

The universal unit of measurement used to indicate the global warming potential (GWP) of each of the 6 greenhouse gases. It is used to evaluate the impacts of releasing (or avoiding the release of) different greenhouse gases. The quantity of carbon dioxide that would have the same global warming potential (GWP), when measured over a specified timescale (generally 100 years) as the gas being emitted.

#### Carbon sequestration

##### USDA Definition:

The reduction of carbon dioxide and other greenhouse gas (GHG) concentrations in the atmosphere by reducing emissions, or by sequestering carbon and GHG in soils, above ground biomass and the oceans into carbon and GHG sinks, or geological processes into underground reservoirs. Agriculture and forestry can sequester carbon and GHG by storing it in noncirculating plant and animal biomass, soils, corals and shells, peat, coal, oil, and carbonaceous rocks and sediments. Carbon and GHG can be sequestered in agricultural soils through changes in management practices such as the adoption of conservation tillage or through land use changes, such as switching from annual plants to perennial crops.

#### Carbon sink

##### USDA Definition:

Both the terrestrial biosphere and oceans can act as carbon sinks, removing more carbon dioxide equivalents from the atmosphere than it releases.

#### Certificate of Inclusion

##### Fish & Wildlife Service Definition:

Document used with a programmatic or umbrella Safe Harbor Agreement (SHA), Candidate Conservation Agreement with Assurances (CCAA), or Habitat Conservation Plan (HCP) certifying that the property enrolled by the individual landowner is included within the scope of a programmatic enhancement of survival permit that authorizes incidental take of a species.

#### Certification or Verification

#### USDA Definition:

A process whereby an independent third party confirms that an activity, product, project, or organization satisfies the requirements set by a performance standard.

#### Certified Emissions Reductions (CERs)

##### USDA Definition:

Reductions of greenhouse gases achieved by a Clean Development Mechanism (CDM) project. An emissions reduction becomes "certified" when it is approved for sale by the Clean Development Mechanism's Executive Board. A CER can be sold or counted toward Annex I countries' emissions commitments. Reductions must be additional to any that would otherwise occur.

#### Channelization

##### USDA Definition:

Modification of watercourses or waterways by straightening, widening or deepening them.

#### Clean Air Act (CAA)

##### EPA Definition:

Reduces outdoor, or ambient, concentrations of air problems; reduces emissions of toxic air pollutants that are known to, or are suspected of, causing cancer or other serious health effects; and phases out production and use of chemicals that destroy stratospheric ozone. Amendments were passed by the Congress and strengthened the ability of the EPA to set and enforce pollution control programs aimed at protecting human health and the environment which included provisions for Acid Rain Program.

#### Clean Development Mechanism (CDM)

##### USDA Definition:

The Kyoto Protocol requires that industrialized countries reduce their carbon emissions to five percent below 1990 levels, either by cutting/trading emissions domestically or via two so-called "mechanisms for flexibility." The option known as the Clean Development Mechanism (CDM) allows companies in industrialized countries to fund greenhouse gas (GHG) reduction projects in the developing world in exchange for carbon credits. The CDM is the Kyoto Protocol's primary means of involving developing countries in its attempts to reduce GHG emissions.

#### Clean Renewable Energy Bonds (CREBs)

#### USDA Definition:

Bonds issued to entities undertaking the construction of clean or renewable energy projects. There are a variety of projects that qualify for the issuance of bonds including biodigestors, wind power, and solar production. The program provides compensation for interest on the loans in the form of tax credits to the borrower.

#### Clean Water Act

##### EPA Definition:

Eliminating the release of high amounts of toxic substances and pollutants into water and ensuring that all surface and navigable waters would meet standards necessary for human sports and recreation.

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#### Clearinghouse

##### USDA Definition:

A transparent, publically available location, library or exchange for data, publications, or transactions.

#### Climate

##### USDA Definition:

The long-term average weather of a region including typical weather patterns, the frequency and intensity of storms, cold spells, and heat waves. Climate is not the same as weather.

#### Climate change

##### USDA Definition:

Although most greenhouse gases are naturally occurring and in ambient amounts contribute to proper climate regulation, scientific evidence increasingly supports the theory that human emissions of GHGs as a byproduct of fossil fuel burning and deforestation is contributing to global warming and climate change. Greenhouse gases include CO<sub>2</sub> (Carbon dioxide), NO<sub>x</sub> (Nitrous Oxides), O<sub>3</sub> (Ozone) and CH<sub>4</sub>(Methane). One of the major difficulties with climate control is that, with the exception of ozone, the gases that contribute to global warming are highly stable, meaning that once emitted into the atmosphere they are likely to remain there for a very long time. Atmospheric concentrations of CO<sub>2</sub> equivalents have increased by approximately 30 percent since the industrial revolution.

#### Co-benefit

#### EPA Definition:

An ancillary (or off-target) benefit that is produced as a result of an action taken to produce a different benefit.

#### USDA Definition:

An additional benefit from an action that is undertaken to achieve a particular purpose, and that is not directly related to that purpose.

#### Compensatory habitat or mitigation bank

##### Fish & Wildlife Service Definition:

A site, or suite of sites, that contain natural resource values that are conserved and managed in perpetuity for specified at-risk species expressly for the purpose of offsetting impacts occurring elsewhere to the same resource values. The establishment, operation and use of a conservation bank are governed by a conservation bank agreement.

#### Complementary goods and services

##### EPA Definition:

Inputs (usually built infrastructure or location characteristics) that allow an ecosystem good or service to be used by complementing the ecological condition. For example, complementary goods and services that allow a population of fish to become the ecosystem service of “fishable fish,” provide an opportunity for recreational fishing which includes aspects of site accessibility, such as road access, available parking and the presence of a fishing pier, all of which make fishing at the site possible and may enhance enjoyment of the activity.

#### Compliance markets & regulatory markets

##### USDA Definition:

Compliance markets, also known as regulatory markets, are markets in which buyers are required to participate in order to comply with regulatory limits on environmental destruction and/or pollution. The European Union Emissions Trading Scheme is, for instance, a compliance carbon market. And, because it is based on clearly defined government regulations, it is also a regulatory market. Sellers are nonpoint sources and are not required to participate, but are incentivized to participate through their voluntary generation of verified carbon offsets or credits in order to trade.

#### Compliance schedule

#### EPA Definition:

A schedule of remedial measures included in a permit or an enforcement order, including a sequence of interim requirements (e.g., actions, operations, or milestone events) that lead to compliance with the Clean Water Act and regulations.

#### Concentrated animal feeding operation (CAFO)

##### EPA Definition:

Generally, a facility within which large numbers of farm animals are confined, fed and raised, such as dairy and beef cattle feedlots, hog production facilities and closed poultry houses. EPA requires CAFO's that are potential sources of water pollution to obtain point source pollution discharge permits that specify the allowable levels of effluent from each of these places. The regulations define animal feeding operations as those confining livestock or poultry for 45 days or more in a 12-month period in a facility that has no vegetative ground cover.

#### Conceptual model

##### EPA Definition:

A written description, visual representation, or digital description of known, suspected, or predicted relationships among causes and effects. Conceptual models can be used to link any or all components in the causal chain between a management action and an outcome that matters to people (human actions, stressors, ecological entities, ecosystem services and human well-being). (generalized from US EPA, 1998).

##### USDA Definition:

A written description, visual representation and/or electronically-linked description of known, suspected or predicted relationships among causes and effects. Conceptual models can be used to link any or all components in the causal chain between a management action and an outcome that matters to people (human actions, stressors, entities, ecosystem services and human well-being).

#### Condition

##### USDA Definition:

The terms "condition" and "state" are often used interchangeably to describe the functionality of ecosystems. For example, condition might be measured as a fraction representing how much of the biodiversity expected to be present in natural, undisturbed circumstances is

actually observed to be present. Condition can be quantified by (a) species occupancy and (b) structural and functional attributes.

#### Conformity Assessment

##### USDA Definition:

The demonstration that specified requirements relating to a product, process, system, person, market, or body are fulfilled.

#### Conjunctive use

##### EPA Definition:

The practice of storing surface water in a groundwater basin in wet years and withdrawing it from the basin in dry years.

#### Connectivity

##### EPA Definition:

The spatial interrelationship between different areas of an original landscape, an ecosystem, or a habitat.

#### Conservation

##### EPA Definition:

The management of natural resources to provide maximum benefits over a sustained period of time.

#### Conservation Agreement (CA)

##### Fish & Wildlife Service Definition:

Formal agreement between two or more entities and the USFWS for the conservation of species and/or habitat entered into on a voluntary basis. There is no program standard that must be met such as the standards associated with Safe Harbor Agreements or Candidate Conservation Agreements with Assurances.

#### Conservation bank

##### Fish & Wildlife Service Definition:

A site, or suite of sites, that contain natural resource values that are conserved and managed in perpetuity for specified at-risk species expressly for the purpose of offsetting impacts occurring elsewhere to the same resource values. The establishment, operation and use of a conservation bank are governed by a conservation bank agreement.

##### USDA Definition:

A conservation bank is a parcel of land managed to restore

and/or maintain certain ecological conditions (e.g. functional wildlife habitat, presence of endangered species) for a set time period. The bank investor(s), who may or may not be the landowner(s), is allowed to sell the credits generated from the ecological conditions to parties who need them to compensate for their environmental impacts. The term "conservation bank" can refer to mitigation activity for both species and habitats and is analogous to habitat bank and biodiversity bank.

#### Conservation Bank Agreement (CBA)

##### Fish & Wildlife Service Definition:

Conservation Bank Agreement (CBA) – the legal document for the establishment, operation and use of a conservation bank. This contract may also be referred to as a Conservation Bank Instrument (CBI), Conservation Bank Enabling Instrument (CBEI), or Bank Enabling Instrument (BEI).

#### Conservation bank establishment

##### Fish & Wildlife Service Definition:

Conservation bank establishment – a bank is considered established or approved when all parties have signed the Conservation Bank Agreement and the bank sponsor has met the minimum requirements that allow for the release of credits by the approving agency(s). Establishment does not necessarily mean the bank has credits available for sale/trade.

#### Conservation bank establishment date

##### Fish & Wildlife Service Definition:

Generally the date on which the Conservation Bank Agreement is fully executed, even though all requirements, such as recordation of the conservation easement, may not have been met by that date. This date marks agency approval of the bank.

#### Conservation Banking

##### Fish & Wildlife Service Definition:

The application of the "mitigation" or "offset" approach to endangered species. When developers expect to harm an endangered species (whether listed at the federal or state level), they must "offset" or "mitigate" the damage through the creation of similar habitat elsewhere. Developers can mitigate by purchasing new property or modifying existing landholdings to support the impacted species. The

investment required was significant and onerous. Many developers would rather buy "mitigation credits" from "conservation bank" that has already achieved the mitigation and obtained approval from the Fish and Wildlife Service to sell these "mitigation credits."

#### Conservation credits

##### Fish & Wildlife Service Definition:

Credits for land that is set aside for conservation purposes. Credits may be traded when some activity may disrupt the habitat of endangered or threatened species.

#### Conservation easement

##### Fish & Wildlife Service Definition:

The acquisition of rights and interest to a property to protect identified conservation or resource values, using a reserved interest deed. The resource values of these properties are protected and land cannot be used for any purposes for the duration of easement. Conservation easements can range from permanent to a multi-year period, and are binding on future owners.

#### Conservation Framework

##### Fish & Wildlife Service Definition:

A USFWS document that synthesizes threats and management information within a species' range. It provides a structured process to identify and document the conservation needs of a listed species, as well as evaluate threats to these needs.

#### Conservation outcome

##### USDA Definition:

A conservation outcome is the result of a conservation intervention aimed at addressing direct threats to biodiversity that leads to conservation gains. Conservation outcomes are typically in the form of: (a) extinctions avoided (i.e. outcomes that lead to improvements in a species' national or global threat status); (b) sites protected (i.e. outcomes that lead to designation of a site as a formal or informal protection area or to improvement in the management effectiveness of an existing protected area); and (c) corridors created (i.e. creation of interconnected networks of sites at the landscape scale, capable of maintaining intact biotic assemblages and natural processes).

## Conservation plan

### USDA Definition:

A combination of land uses and farming practices to protect and improve soil productivity and water quality, and to prevent deterioration of natural resources on all or part of a farm.

## Conservation practice

### USDA Definition:

Method, measure, or practice selected by an agency to meet its non-point source control needs. Conservation practices include but are not limited to structural and nonstructural controls and operation and maintenance procedures. Conservation practices can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. Also called best management practices (BMPs).

## Conservation programs

### USDA Definition:

A program created in the Food Security Act of 1985 to retire from production up to 45 million acres of highly erodible and environmentally sensitive farmland. Landowners who sign contracts agree to keep retired lands in approved conserving uses for 10-15 years. In exchange, the landowner receives an annual rental payment, cost-share payments to establish permanent vegetative cover, and technical assistance.

## Conservation Reserve Program

### USDA Definition:

A federal program that pays a yearly rental payment in exchange for farmers removing environmentally sensitive land from agricultural production and planting species that will improve environmental quality.

## Conservation tillage

### USDA Definition:

Any tillage and planting system that leaves at least 30% of the soil surface covered by residue after planting. Land treated with conservation tillage experiences less soil disturbance than traditional cultivation, thereby reducing soil loss and energy use while maintaining crop yields and quality. Conservation tillage techniques include minimum tillage, mulch tillage, ridge tillage and no-till.

Conserve (conserving, conservation)

Fish & Wildlife Service Definition:

To use and the use of all methods and procedures which are necessary to bring any endangered or threatened species to the point at which the measure provided pursuant to this Act are no longer necessary.

USDA Definition:

Any technique or measure used to protect soil and water resources for which standards and specifications for installation, operation or maintenance have been developed. Practices can be structural or land management.

Consumer labeling markets

USDA Definition:

Consumer labels that communicate an environmental benefit or stewardship claim - Certified Organic, Forest Stewardship Council, Marine Stewardship Council, VerifiedGreen Beef, Local Labels (may boast fewer shipping/fuel miles). Life Cycle Analysis (LCA) is another tool being used to characterize a resource efficient or green operation, an industry, or entire supply chain.

Consumptive water use

USDA Definition:

Water removed from available supplies without return to a water resources system (e.g., water used in manufacturing, agriculture and food preparation that is not returned to a stream, river or water treatment plant).

Contextual value

USDA Definition:

Patch size, connectivity, and surrounding threats and stressors all affect the ability of any site to provide the supporting biodiversity functions needed for good habitat. Existing regional conservation strategies often synthesize this information into priority areas and actions for biodiversity.

Contingent valuation

USDA Definition:

A class of economic valuation methods used to generate demand data and estimate willingness to pay, usually from household surveys, when real markets do not supply reliable revealed preference data about demands for certain types of goods or services.

## Contract

### USDA Definition:

Written or oral agreement between the trading parties, separate from any applicable permit, in which the parties may address a variety of financial or legal considerations and contingencies, including what happens in the case of default by any party. Could also include how a commodity is to be produced and/or marketed, possibly including specifications for quantity, quality and price.

## Converted wetland

### USDA Definition:

A wetland that has been drained, filled, leveled, or altered and converted to another use. The Food Security Act and the Clean Water Act regulate these conversions differently depending on the new use.

## Cost

### USDA Definition:

In economics, the total money, time and resources associated with a purchase or activity.

## Cost-effectiveness

### EPA Definition:

A measure used to evaluate the least-cost way of achieving a given outcome, typically expressed as a ratio of cost to some biophysical measure of the desired outcome (for example, \$/kg nitrogen removed from a waste stream).

## Cost-share

### USDA Definition:

State or federal conservation programs that provides financial assistance or pays some, but not all, of the costs of private landowners for adopting and implementing conservation practices on their working and nonworking lands.

## Countertrade

### USDA Definition:

A trading transaction of goods and services without the exchange of money. Forms of countertrade include barter, buy-back or compensation, counter-purchase, offset requirements, swap or triangular trade.

## Covered species

### Fish & Wildlife Service Definition:

Species specifically included in a Habitat Credit Trading (HCT) system for which a commitment to achieve net species conservation benefit is made. This term is also used for species included in a This term is also used for species included in a Habitat Conservation Plan (HCP), Safe Harbor Agreement (SHA), Candidate Conservation Agreement (CCA), Candidate Conservation Agreement with Assurances (CCAA), or Recovery Crediting System.

#### Credit aggregator

##### USDA Definition:

An administrative and trading representative that can act on behalf of multiple participants in a trading program; assist in the development of credit generation projects for verification by third party credit verifiers; connect buyers and sellers; and also form contracts within the bounds of existing regulation.

#### Credit bundling/unbundling

##### USDA Definition:

A cataloguing method where various verified ecosystem service values, credits, or offsets, such as carbon tons, nitrogen pounds, or habitat acres are represented together under one definable unit, or separated out under multiple definable units. Unbundling separates these values into discrete units/credits.

#### Credit buyer

##### USDA Definition:

The purchaser of an offset or mitigation credit that is responsible for determining if the offset or mitigation credit conforms or satisfies their credit offset requirements. The credit buyer is the "second party" in a credit exchange or transaction.

#### Credit exchange

##### USDA Definition:

A centralized reserve of pollutant reduction credits administered by a third party who buys credits from point or nonpoint sources to sell to point sources in need of credits to comply with calculated Water Quality Based Effluent Limits (WQBEL)s. Exchanges can include brokers, aggregators, and verifiers.

#### Credit generator, provider, seller, or supplier

##### USDA Definition:

The person or organization responsible for a credit site and the generation of credits that conforms to requirements of the specific environmental market or markets. The credit supplier is the "first party" in the credit exchange or transaction.

#### Credit registration

##### USDA Definition:

The process of assigning a transparent registration number to verified credits to insure auditable tracking of credit trades and transactions.

#### Credit registry

##### USDA Definition:

An institution that inventories and accounts for all of the different credits available within a market or a marketplace by documenting their generation, ownership, and trade. An exchange generally requires credit traders to pass some sort of legitimacy or competency test prior to participation.

#### Credit release

##### Fish & Wildlife Service Definition:

Final approval by agencies that are signatories to the Habitat credit trading (HCT) instrument to allow the registration of verified credits for commencement of credit trades or sales. Credits may be released in phases based on the successful achievement of criteria specified in the HCT instrument.

##### USDA Definition:

Release and registration of verified credits for trade under a permitted baseline and credit trading framework as offsets to point source environmental impacts.

#### Credit site, bank, land trust

##### USDA Definition:

The area of land that has implemented conservation measures and is subject to specific management practices in order to generate the credits verified for trade within an approved environmental market framework.

#### Credit stacking (stacking or ecosystem services stacking)

##### Fish & Wildlife Service Definition:

A process that allows a single unit of land to provide multiple credit types and/or trade credits under multiple market-based strategies, where all credits can be sold

independently. For example, a mitigation bank may have emergent marsh, giant garter snake and carbon credits for sale.

**USDA Definition:**

A cataloguing method where various verified ecosystem service values, credits, or offsets, such as carbon tons, nitrogen pounds, or habitat acres are generated by one conservation practice, and separated out, registered, and traded under their multiple definable units.

**Credit trading program**

**USDA Definition:**

In environmental credit markets, 'sellers' are landowners that provide clean air, clean water, wildlife habitat, carbon sequestration, healthy soil, and other goods and services by sustainably managing their land. 'Buyers' can be power plants, water treatment facilities, or developers that are regulated for and seeking to offset their impact with more cost and environmentally effective conservation practices than traditional "fixes". Regulated markets require verification of practices or performance, over an established baseline. Ecosystem services are quantified into a unit of exchange. Verified credits are registered as available for sale, and transactions are transparent and auditable. A monitoring system verifies that conservation practices are performing as designed over the credit term, or to the specifications of the verified retail market claim. Buyers can also be voluntary corporate stewards who purchase credits as a public benefit or to improve their corporate image.

**Credit verifier**

**USDA Definition:**

The third party person or organization that verifies that the credits generated by the credit supplier (the first party) conform to the environmental market requirements of the credit buyers, the second party, in an credit exchange or transaction. The third party verifier has no commercial interest in the credit supplier, the credit buyer, or their exchange.

**Credit, offset credit**

**EPA Definition:**

A unit used in ecosystem service trading markets or offset programs to measure the ecological equivalency of different actions in different locations.

#### Fish & Wildlife Service Definition:

A defined unit of trade related to habitat representing the accrual or attainment of habitat functions or value at a habitat offset site. A credit may be expressed as a measure of surface area (e.g., an acre or hectare), linear distance of constant width and/or depth, number of individuals or mating pairs of a particular species, stage of maturity of a particular habitat type, or other appropriate metric that can be consistently quantified and traded.

#### USDA Definition:

To offset their environmental impacts cost-effectively, a point source polluter can purchase verified units of pollutant reduction or change in ecosystem condition generated by a nonpoint source that has implemented conservation measures beyond a baseline condition when permitted within an approved credit trading framework, verification

#### Crediting protocol

##### USDA Definition:

A core document combining the chosen quantification methods with risk management approaches in a complete protocol for creating, buying, selling, and tracking credits.

#### Critical habitat

##### Fish & Wildlife Service Definition:

An area essential to the conservation of a listed species, although the area need not actually be occupied by the species at the time it is designated. Critical habitat must be designated for all threatened and endangered species under the U.S. Endangered Species Act (with certain specified exceptions).

##### USDA Definition:

Common elements found in critical habitat include threatened species; endemic or geographically restricted species; congregations of migratory and other species; assemblages that support key processes or services; and biodiversity of social, economic or cultural value.

#### Critical load

##### USDA Definition:

A quantitative estimate of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements or processes of an ecosystem do not occur according to present knowledge.

## Cropland

### USDA Definition:

Land used primarily for the production of close-growing row crops for feed, fiber, food, and fuel. It includes cultivated working and noncultivated non-working acreage, but not defined as hay, forest, or pasture and land not enrolled in the Conservation Reserve Program (CRP) .

## Cross-Pollutant Trading

### EPA Definition:

Trading across two different pollutant parameters when equivalent mass loads of the different parameters can be calculated and the water quality effects of those equivalent mass loads are similar (e.g., meeting an effluent limitation for biochemical oxygen demand by purchasing credits generated for reduction of a phosphorus load).

## Cultural services

### USDA Definition:

A category of “ecosystem services” as described by the Millennium Ecosystem Assessment. Cultural services include recreational, spiritual, educational, and aesthetic benefits that enrich and revitalize the human experience.

## Cumulative effects

### USDA Definition:

An umbrella term for effects that accumulate over space or time. Cumulative effects may derive from the impacts of a project, plan, program, or policy combined with other past, present, or reasonably foreseeable future plans and actions.

## Dead zone

### USDA Definition:

Generally, an area of an aquatic resource (ocean, estuary, lake, reservoir or river) where there is insufficient oxygen to support aerobic organisms such as fish and shellfish due to excess nutrient pollutants from point or nonpoint sources. Specifically, an area of depleted oxygen in the Gulf of Mexico off the mouth of the Mississippi River covering about 6,000 square miles.

## Debt instruments

### USDA Definition:

Debt-for-nature swaps, in which nonprofit organizations buy

debt from the governments of developing countries in exchange for conservation activities of those governments.

#### Delivery ratio

##### USDA Definition:

Factor applied to pollutant reduction credits when sources are directly discharging to a waterbody of concern that accounts for the distance and unique watershed features (e.g., hydrologic conditions) that will affect pollutant fate and transport between trading partners.

#### Demand

##### EPA Definition:

Generally, the amount of a particular good or service that a consumer or group of consumers will want to purchase at a given price. The level of demand for a good or service is determined by many different factors other than price, such as the availability and price of substitute and complementary goods and services. Along with supply, demand is one of the two key determinants of market prices. Since most ecosystem services are not bought and sold in markets, they are often not priced, and quantity demanded may not be readily observable. People may reveal their demand and value for non-market goods and services through their actions, or may express demand and value in responses to surveys.

##### USDA Definition:

In environmental credit markets, the buyers, or the demand side of the market, are the point sources with environmental impacts that are obligated to reduce or limit their impact to the extent possible. Point sources may offset some of their impacts under their permits through the purchase of verified environmental credits generated by nonpoint sources implementing specific conservation practices validated for their ecosystem service function.

#### Design flow

##### EPA Definition:

The average flow that a wastewater treatment plant is designed to treat in order to comply with effluent limitations.

#### Designated Uses

##### EPA Definition:

Water uses identified in state water quality standards that must be achieved and maintained as required under the Clean

Water Act. Uses can include cold water fisheries, public water supply, irrigation, etc.

#### Desired future condition

##### USDA Definition:

An expression of the future state of human well-being based on ecological, social and economic considerations.

#### Developer

##### USDA Definition:

Any individual or entity undertaking a project, including building a road, mining, constructing a house, expanding agricultural operations, and implementing a project for environmental market crediting.

#### Development easement

##### USDA Definition:

A legal agreement by which a landowner surrenders (in whole or in part) the right to develop a designated parcel of property. The resource values of this parcel is protected and land cannot be developed for the duration of easement. Development easements can range from permanent to a multi-year period, and are binding on future owners.

#### Direct area of influence

##### USDA Definition:

The area in which direct impacts on the environment occur which can be attributed to project activities . A project's area of direct influence may or may not coincide with the project footprint as it reflects effect distances' (the distance over which particular effects, such as noise, are felt) for project activities and emissions.

#### Direct or bi-lateral trading

##### USDA Definition:

Refers to when a buyer of a credit and the seller negotiate directly with each other or through a broker, come to an agreement, and present their credit agreement for approval by the appropriate trading authority.

#### Direct payments

##### USDA Definition:

Generally, payments (usually in cash but sometimes in commodity certificates) made directly to private land owners in conjunction with participation in commodity support programs, conservation programs, payment for

ecosystem services programs, and disaster assistance programs.

#### Discharge

##### EPA Definition:

In water resources, the flow of surface water in a stream or canal, or the outflow of ground water from a flowing artesian well, ditch, or spring. Also, refers to the outflow or release of pollutants.

#### Discharge limits

##### EPA Definition:

A maximum pollutant limits imposed on point sources, such as wastewater treatment plants and industrial facilities. These limits are either technology-based effluent limits (TBELs), which are determined by the treatment technology available for particular point sources, or are water quality-based effluent limits (WQBELs), which are based on state water quality standards. Total maximum daily limits (TMDLs) are established for a watershed or industry in a region.

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#### Discount rate

##### EPA Definition:

The rate at which future benefits and costs are discounted to reflect the opportunity costs of capital and preferences for consumption or enjoyment in the near term over future consumption or enjoyment. Most people demonstrate time preference in their own consumption behavior, but this may not be appropriate for society to demonstrate a similar preference when deciding between the well-being of current and future generations. As a result, the social discount rate, is generally considered to be the appropriate rate for evaluating costs and benefits of public policies, because it better reflects the time preferences of society as a whole. Discounting is used in Natural Resource Damage Assessment (NRDA) to scale restoration projects or to establish appropriate monetary compensation for ecological services lost in the future as a result of chemical releases or spills.

##### USDA Definition:

The rate at which a decision maker (or society as a whole) is willing to trade off present for future benefits.

#### Double-dipping

#### EPA Definition:

Collecting compensation twice for the same service. This concern is primarily under the Clean Water Act. Wetland mitigation banks include water quality and aquatic habitat benefits in the sale of their credits to offset wetland impacts by developers. Wetland Mitigation cannot also sell water quality credits if no additional mitigation has occurred. This would be considered "double-dipping", or getting paid double for the same ecosystem service. Wetland Mitigation Banks can convert some of their wetland mitigation credits to water quality credits.

#### Drainage basin

##### EPA Definition:

The area of land that drains water, sediment and dissolved materials to a common outlet or conveyance at some point along a stream channel.

#### Driving force

##### USDA Definition:

The social, demographic and economic developments in societies and the corresponding changes in life styles, overall levels of consumption and production patterns. Primary driving forces are technical and societal forces that motivate human activities (population growth, social structure, cultural attitudes, individual needs). Primary driving forces provoke changes in the overall levels of production and consumption. Through changes in production and consumption, the driving forces exert pressures on the environment. They induce developments in secondary driving forces, which are human activities triggering pressures and impacts (e.g. land use changes, urban expansion, industry and agricultural developments). Driving forces can originate and/or act globally, regionally or locally.

Driving Force-Pressure-State-Impact-Response (DPSIR) Framework (originally referred to as stressor-response model which is now considered obsolete)

##### USDA Definition:

The conceptual framework for describing the interactions between society and the environment adopted by the European Environment Agency (EEA). An extension of the Pressure-State-Response (PSR) model developed by the Organization for Economic Cooperation and Development (OECD) that considers driving forces, pressures, states, impacts and responses, and their linkages. The Driving Force - Pressure - State - Impact - Response Framework

(DPSIR) provides an overall mechanism for analysing environmental problems. Driving forces, such as industry and transport, produce Pressures on the environment, such as polluting emissions, which then degrade the State of the environment, which then Impacts on human health and eco-systems, causing society to Respond with various policy measures, such as regulations, information and taxes, which can be directed at any other part of the system.

#### Easement

##### USDA Definition:

A right to use a part of land which is owned by another person or organization for specified purposes under specified conditions (e.g. for access to another property). A conservation easement is a contract not to develop part of a property for some designated period of time. Conservation easements typically require landowners to make absolutely no changes to the land use of the property or to maintain some ecologically desirable aspect of the land. The acquisition from a landowner of rights and interest to a portion of the property for some purpose, usually in return for a payment or some other benefit. Easements can be permanent, or temporary for some specified period of time.

#### Ecological benefit

##### EPA Definition:

In the context of environmental policy and management, the term applies specifically to net improvements in social welfare that result from changes in the quantity or quality of ecosystem goods and services attributable to policy or environmental decisions.

##### USDA Definition:

The contribution to social welfare of ecosystem goods and services.

#### Ecological benefits assessment

##### EPA Definition:

A formal evaluation of the expected changes in social welfare resulting from policies and environmental decisions via changes in ecological processes; outcomes are quantified in relevant biophysical units or monetary terms when possible, or described qualitatively when quantification is not possible.

#### Ecological community

#### USDA Definition:

In the context of biodiversity offsets or credits, the term "community" is a naturally occurring, recognizable, and repeatable assemblage of plants and animals in which populations of different species share the same area or resources at the same time and are mutually sustaining and interdependent. A grouping of species that exhibit similar spatial distribution, temporal distribution, response to environmental factors, resource use, resource allocation, behavior, or combinations thereof.

#### Ecological economics

##### EPA Definition:

The field of research and analysis that aims to address the interdependence and co-evolution of human economies and natural ecosystems over time and space.

#### Ecological entity

##### EPA Definition:

A description of the type, quantity and interactions of natural features required to generate measurable ecological outputs. For a simple example, the biophysical characteristics of a coastal wetland (flooding regimes, salinity, nutrient concentrations, plant species abundance, prey and predator abundances, etc.) can influence the welfare-enhancing output of increased abundance of a population of watchable wading shorebirds (the ecological output).

##### USDA Definition:

A general term referring to readily observable characteristics of natural systems, including a species, a group of species, an ecosystem function or characteristic or a specific habitat. For example, a "salmon population" could be an ecological entity. In ecological risk assessment, an ecological entity is one component of an assessment endpoint.

#### Ecological goods and services

##### USDA Definition:

A dynamic complex of plant, animal, and microorganism communities and their non-living environment which interacts as a functional unit. A functions-based metric is interpreted with respect to who or what benefits from that function (e.g. a species benefiting from the ecosystem service of habitat provision or an urban area benefiting from the ecosystem service of flood storage and delay).

### Ecological or "Boyd" endpoint

#### USDA Definition:

A biophysical feature, quantity or quality that requires little further translation to make clear its relevance to human well-being (i.e., "public-friendly" measurements). Ecological endpoints, synonymous with "Boyd" endpoint, are the ecological inputs that, along with complementary goods and services inputs and demand by people, produce ecosystem services. For example, a population of watchable birds is an ecological endpoint, that when combined with complementary inputs such as transportation infrastructure and demand by birders, produce the ecosystem service of recreational bird watching.

### Ecological risk

#### EPA Definition:

The likelihood that adverse ecological effects or human health effects may occur or are occurring as a result of exposure to one or more stressors.

### Ecological risk assessment

#### EPA Definition:

A formal evaluation of the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors.

### Econometrics

#### USDA Definition:

The combination of economic theory with statistics to analyze and test economic relationships. Theoretical econometrics considers questions about the statistical properties of estimators and tests, while applied econometrics is concerned with the application of econometric methods to assess economic theories and test empirical hypotheses.

### Economic demand function

#### USDA Definition:

The relationship between the quantity of a good or service demanded and price of the good or service, described at either the individual or aggregate (market) level. The quantity demanded also can depend on characteristics of the good (quality and distinctiveness), characteristics of the individual (preferences), prices of substitute and complementary goods and services, and income.

## Ecoregion

### USDA Definition:

A relatively homogeneous, ecologically distinctive area which has resulted from a combination of geological, landform, soil, vegetative, climatic, wildlife, water, and human factors.

## Ecosystem

### EPA Definition:

The biotic community (including humans) and abiotic environment within a specified location in space and time.

### USDA Definition:

A dynamic complex of plant, animal, and microorganism communities and their non-living environment functioning as a cyclic interchange of materials and energy.

## Ecosystem approach

### USDA Definition:

An integrated terrestrial and aquatic management strategy that promotes conservation and sustainable natural resource use based on the best available science that encompass all essential processes, functions, and interactions among organisms and their environment.

## Ecosystem attributes

### EPA Definition:

A term often used in economic valuation studies to refer to the set of ecological outputs that, when combined, make up the necessary components that allow for enjoyment of a valued experience, such as a recreational or aesthetic experience (for example, a day of fishing) .

### USDA Definition:

The products of a functioning ecosystems that can include clean air and water, protection of water recharge areas and watersheds, detention of floodwaters, reduction of erosion and sedimentation, biotransformation of nutrients, production of topsoil, habitat for pollinators, and preservation of genetic diversity, among others.

## Ecosystem diversity

### USDA Definition:

Measure of the variety of biological communities and habitats important for ecological stability.

## Ecosystem function/process

#### Fish & Wildlife Service Definition:

The physical, chemical, and biological processes that occur in ecosystems.

#### USDA Definition:

A functions-based metric is interpreted with respect to who or what benefits from that function (e.g. a species benefiting from the ecosystem service of habitat provision or an urban area benefiting from the ecosystem service of flood storage and delay).

#### Ecosystem goods and services

##### EPA Definition:

Outputs of ecological processes that directly (“final ecosystem service”) or indirectly (“intermediate ecosystem service”) contribute to social welfare or have the potential to do so in the future. Some outputs may be bought and sold, but most are not marketed. Often abbreviated as ecosystem services.

##### USDA Definition:

The products of functioning ecosystems that benefit people. These services have been described in a number of ways, including the Millennium Ecosystem Assessment or MEA (MEA 2005) which classified ecosystem services into the four categories of provisioning, supporting, regulating, and cultural services. Provisioning services are familiar commodities such as food, fresh water, timber, fiber, and many pharmaceuticals for direct human use. Supporting services are the underlying processes that maintain the conditions for life on Earth, such as nutrient cycling, soil formation, and primary production. Regulating services are the benefits obtained from ecosystem impacts on natural processes, such as flood and disease control, water purification, climate stabilization, and crop pollination. Cultural services include recreational, spiritual, educational, and aesthetic benefits that enrich and revitalize the human experience.

#### Ecosystem service benchmark

##### USDA Definition:

A reference point against which ecosystem service impacts of point sources and ecosystem service benefits through nonpoint source project offset or credit generation can be quantified and compared consistently and transparently. It usually comprises a number of representative and characteristic attributes used to represent the type, amount and quality of ecosystem service which will be lost

or gained.

#### Ecosystem service benchmark attributes

##### USDA Definition:

The features of a ecosystem used to create a benchmark to represent the type, amount and quality of ecosystem service at a site. This may involve function of individual species, features of communities, or characteristics that operate at the landscape scale.

#### Ecosystem service benefit-cost analysis

##### EPA Definition:

A formal quantitative and sometimes qualitative evaluation of the benefits to be derived from a decision or action compared to the costs incurred by implementing that decision or action. Benefits and costs may include both market values and nonmarket values.

#### Ecosystem service benefit indicator or function

##### EPA Definition:

A non-monetary measure based on economic theory and empirical evidence of value that indicates a relative magnitude of value for ecosystem services.

##### USDA Definition:

The non-monetary measure of the beneficial attributes of an ecosystem that indicates a relative magnitude of value for the ecosystem services, such as greenhouse gas tons sequestered, nitrogen or phosphorus pounds retained, or acres of wetland or habitat created.

#### Ecosystem service benefit transfer

##### EPA Definition:

Technique to estimate values of ecosystem goods and services based on relevant valuation studies conducted elsewhere. Benefit transfer is conducted by either taking average values of existing studies or by using a transfer function to transfer values from primary studies (study sites) to new locations (policy sites). A transfer function is often developed through meta-analysis, which is a statistical (usually regression) technique to model differences in values among primary valuation studies. A transfer function allows values to be transferred from study sites to policy sites based on a set of independent variables that capture the degree of similarity between the study sites and policy sites.

## Ecosystem service market

### EPA Definition:

Any of the full spectrum of regulatory (e.g., cap-and-trade system) and voluntary mitigation markets, such as wetland mitigation banking, habitat/conservation banking, water quality trading, environmental water transactions and carbon markets.

### USDA Definition:

Markets for ecosystem services are based on the premise: 'Sellers' are landowners that provide clean air, clean water, wildlife habitat, and other goods and services by sustainably managing their forests, wetlands, and grasslands. 'Buyers' of these goods and services are power plants, water treatment facilities, developers, and others who invest in conservation – either by purchasing credits to offset air emissions, water discharges, or habitat/wetland destruction or as a good will gesture to improve the corporate image. Regulated environmental credit markets and consumer label markets require verification of conservation practices or performance, frequently over an established baseline. In an environmental credit market, ecosystem services are quantified into a unit of exchange. Verified credits are registered as available for sale, and transactions are transparent and auditable.

## Ecosystem service perspective

### USDA Definition:

A perspective that encourages natural resource managers to extend the classification of "multiple uses" to include a broader array of services or values; managing for water, wildlife, timber, seed dispersal, primary production, nutrient cycling, and pollination addresses the need to sustain "provisioning" services. Land managers are also stewards of regulating, cultural, and supporting services, all of which are critical to human health and well-being.

## Ecosystem service production function (ESPF)

### USDA Definition:

A description of the relationship between quality-adjusted ecological endpoints and the provision of ecosystem goods and services. This term differs from ecological production function because it includes both the biophysical functions and the non-ecological assessments that are needed to demonstrate a service. ESPFs evaluate four things: 1) how ecological endpoints combine with complementary (non-ecological) inputs to generate goods and services; 2)

whether the quality of ecological endpoints is sufficient to generate the service; 3) whether required complementary goods and services (trails, roads, homes) are available; and 4) whether demand exists for the service by location. For example, a quantitative or qualitative description of how a population of watchable birds (the ecological endpoint), when combined with complementary inputs such as transportation infrastructure and demand by birders, produces the ecosystem service of recreational bird watching.

### Ecosystem services

#### EPA Definition:

Shorthand notation for ecosystem goods and services.

#### USDA Definition:

The products of functioning ecosystems that benefit people. These services have been described in a number of ways, including the Millennium Ecosystem Assessment or MEA (MEA 2005) which classified ecosystem services into the four categories of provisioning, supporting, regulating, and cultural services. Provisioning services are familiar commodities such as food, fresh water, timber, fiber, and many pharmaceuticals for direct human use. Supporting services are the underlying processes that maintain the conditions for life on Earth, such as nutrient cycling, soil formation, and primary production. Regulating services are the benefits obtained from ecosystem impacts on natural processes, such as flood and disease control, water purification, climate stabilization, and crop pollination. Cultural services include recreational, spiritual, educational, and aesthetic benefits that enrich and revitalize the human experience.

### Ecotourism

#### USDA Definition:

A market-based economic incentive for private land owners to conserve and enhance habitat and other ecosystem attributes by providing personal enrichment to tourists while promoting environmental awareness through interpretation, education, and appreciation for nature.

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### Edge-of-segment ratio

#### EPA Definition:

A trading ratio accounting for the amount of each pound of pollutant that is naturally removed as it travels from the

geographic point where it is discharged to the boundary of a watershed model segment.

#### Effluent

##### EPA Definition:

Waste, usually liquid, released or discharged to the environment. Generally the term refers to point source pollution discharges of sewage or contaminated waste waters into surface waters.

#### Effluent Limitation

##### EPA Definition:

Any restriction imposed on quantities, discharge rates, and concentrations of pollutants that are discharged from point sources into waters of the United States, the waters of the contiguous zone, or the ocean.

#### Effluent Limitation Guidelines and Standards (ELGs)

##### EPA Definition:

A U.S.EPA regulation under section 304(b) of the Clean Water Act that establishes national technology-based effluent requirements for a specific industrial category.

#### Eligible Actions

##### EPA Definition:

The set of activities identified to improve ecosystem condition and/or counteract environmental damage from other projects.

#### Emergy

##### USDA Definition:

The available energy of one kind previously used-up directly and indirectly to make a product or service. Emergy is expressed in its own unit, the emjoule, which connotes the energy of equivalent quality (e.g., solar emjoules) used in the past to make a product or service (e.g., a wetland), as compared with the energy (J) content of the product or service.

#### Emergy accounting

##### USDA Definition:

Shorthand notation for environmental accounting using emergy.

#### Emissions Trading

##### EPA Definition:

A market mechanism that allows emitters (countries, companies, or facilities) to buy emissions from or, sell emissions to, other emitters. Emissions trading is expected to bring down the costs of meeting emissions targets by allowing those who can achieve reductions less expensively to sell excess reductions (e.g., reductions in excess of those required under some regulation) to those for whom achieving reductions is more costly. This is also called cap and trade and point-to-point trading.

#### End user

##### USDA Definition:

The person or group that uses data, information, tools, methods, models or systems developed under a conservation, wetland, water quality, or endangered species recovery program. Under certain circumstances, can be synonymous with stakeholder and decision maker.

#### Endangered species

##### Fish & Wildlife Service Definition:

Any species which is in danger of extinction throughout all or a significant portion of its range.

#### Endangered Species Act of 1973, as amended (ESA)

##### Fish & Wildlife Service Definition:

Federal law that provides a program to conserve threatened and endangered species and the ecosystems on which they depend.

#### Endangered Species Recovery Program (ESRP)

##### Fish & Wildlife Service Definition:

A federal program that works to stop the decline of an endangered or threatened species by removing or reducing threats. Recovery ensures the long-term survival of the species in the wild.

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#### Endowment

##### USDA Definition:

An endowment is a type of fund that spends only the interest earned from its investments and not its capital to finance agreed-upon activities. The capital is managed to exist in perpetuity.

#### Enhanced nutrient removal (ENR)

##### EPA Definition:

The technologies for wastewater treatment plants that can reduce average effluent concentrations to 3 mg/L TN and 0.3 mg/L TP.

#### Enhancement

##### Fish & Wildlife Service Definition:

Manipulation of existing habitat to heighten, intensify, or improve a specific resource function(s). Enhancement results in a gain of selected resource function(s), but may also lead to a decline in other resource function(s).

##### USDA Definition:

The improvement of a natural or degraded ecosystem's ability to function by implementing conservation measures such as alteration to the soils, vegetation, and hydrology. The term is sometimes used for restoration activities which enhance the environmental benefits provided by an ecosystem without restoring the ecosystem to some prior state.

#### Enhancement of survival permit

##### Fish & Wildlife Service Definition:

The enhancement permit and Agreements allow landowners to improve habitat for listed species without incurring additional restrictions if the size of the area occupied by the species increases or the species number increases.

#### Environmental accounting using emergy

##### USDA Definition:

The application of the standard methods of accounting using emergy as the measure of value. In this approach, an income statement and balance sheet are created for a system. When fully documented, the balance sheet contains a triple bottom line with environmental, economic, and social liabilities and assets documented with the same set of accounting books.

#### Environmental benefits index

##### USDA Definition:

An index that has been used by the USDA Farm Service Agency (FSA) since 1990 to rank farmers' requests to enroll land into the Conservation Reserve Program during each general sign-up period.

#### Environmental credit market

##### USDA Definition:

A general term that refers to a range of market-like transactions where an entity undertakes an activity that

provides environmental benefits in exchange for payment from another. For example, an agricultural producer who constructs a buffer around his corn field could be credited with generating water quality improvements. If a water treatment plant located in the same watershed as the farm field is allowed to meet its regulatory obligations by purchasing water quality improvements from an upstream farmer, then the treatment plant might find it cheaper to pay the farmer for his credits than to install onsite treatment technologies.

#### Environmental credit market broker

##### USDA Definition:

A licensed person or institution that buys and sells environmental offsets or credits, or facilitates financial transactions between the buyers and sellers of credits. Brokers can be directly involved in the chain of ownership of credits.

#### Environmental credit or offset buyer

##### USDA Definition:

An entity, frequently a point source polluter, that purchases verified ecosystem services or funds projects for a range of reasons, either as an offset to their specific impacts under a permit, or for general conservation purposes.

#### Environmental derivatives

##### USDA Definition:

Derivatives are financial instruments that derive their value from the value of an underlying security: e.g. futures, options. Some people use the term "environmental derivative" to refer to financial instruments whose underlying value is an environmental benefit or asset of some kind.

#### Environmental economics

##### EPA Definition:

A subfield of economics that undertakes theoretical or empirical studies of the economic effects of national or local environmental policy. Particular issues addressed include the benefits and costs of alternative environmental policies to deal with air pollution, water quality, toxic substances, solid waste and global warming and generally addressing market failures associated with public goods and externality problems.

#### USDA Definition:

A subfield of economics that undertakes theoretical or empirical studies of the economic effects of national or local environmental policy.

#### Environmental equity or justice

##### USDA Definition:

Equal protection from environmental hazards for individuals, groups or communities regardless of race, age, ethnicity or economic status. This applies to the development, implementation and enforcement of environmental laws, regulations and policies, and implies that no population of people should be forced to shoulder a disproportionate share of adverse impacts of pollution.

#### Environmental goods

##### USDA Definition:

A subset of goods associated with ecosystems and the environment which include clean air, clean water, biodiversity, scenic beauty, carbon sequestration, and wildlife habitat.

#### Environmental Impact Statement (EIS)

##### EPA Definition:

To meet National Environmental Policy Act (NEPA) requirements federal agencies prepare a detailed statement describing the environmental impacts of proposed actions and reasonable alternatives to those actions.

#### Environmental indicator

##### EPA Definition:

A numerical value derived from actual measurements of a pressure, state or ambient condition, exposure, or human health or ecological condition over a specified geographic domain, whose trends over time represent or draw attention to underlying trends in the condition of the environment.

#### Environmental Market

##### USDA Definition:

This broad term includes Environmental Credit Markets, Consumer Label Claims, Ecotourism type activities, or other market-like activities paying for ecosystem attributes. The environmental market could be in response to a regulated industry need for offsets or could be a voluntary market addressing a specific stewardship focused consumer niche.

### Equivalence ratio

#### USDA Definition:

Used to account for the differences in the environmental effects of different forms of a pollutant.

### Erosion

#### USDA Definition:

The wearing away of the land surface. Unconsolidated materials, such as soil, erode more rapidly than consolidated materials, such as rock. Rates of erosion vary widely across the landscape, depending on numerous physical factors.

### Error

#### USDA Definition:

A component of uncertainty, which results from the use of the wrong methods, models or data in analysis activities. Error can be corrected or minimized by rigorous attention to assessment quality.

### Establishment (creation)

#### USDA Definition:

The creation of a habitat on a site location that was historically was not a habitat.

### Estuary

#### USDA Definition:

Regions of interaction between rivers and near-shore ocean waters, where tidal action and river flow mix fresh and salt water. Such areas include bays, mouths of rivers, salt marshes and lagoons. These brackish water ecosystems shelter and feed marine life, birds, and wildlife, but also are sites where commerce and industry are concentrated.

### Ethanol

#### USDA Definition:

A colorless, flammable liquid produced by fermentation of sugars. Ethanol (CH<sub>3</sub>CH<sub>2</sub>OH) is used as a fuel oxygenate. Ethanol is the alcohol found in alcoholic beverages, but is denatured for fuel use.

### European Union Allowances (EUAs)

#### USDA Definition:

The currency of the EU Emissions Trading Scheme (ETS), the world's first mandatory carbon dioxide (CO<sub>2</sub>)

emissions-trading scheme.

### European Union Emissions Trading Scheme (EU ETS)

#### USDA Definition:

The world's largest mandatory carbon dioxide (CO<sub>2</sub>) emissions-trading scheme. It is also the world's first such scheme that operates at the multi-national level. It was created in response to the implementation protocols of the Kyoto Convention; the program uses market-based mechanisms to help parties curb CO<sub>2</sub> emissions and comply with regulations. Since 1 January 2005, the ETS has imposed CO<sub>2</sub> emissions targets on roughly 4,500 industrial companies across the 25 countries of the European Union.

### Eutrophication

#### USDA Definition:

The process by which a body of water acquires a high concentration of plant nutrients, especially nitrates or phosphates. This nutrient enrichment promotes algae growth that, when it dies, can lead to the depletion of dissolved oxygen, killing fish and other aquatic organisms.

### Exchange

#### USDA Definition:

An institution that inventories and accounts for all of the different credits available within a market or a marketplace by documenting their generation, ownership, and trade. An exchange generally requires credit traders to pass some sort of legitimacy or competency test prior to participation.

### Exchange market

#### USDA Definition:

Structure that allows buyers and sellers to meet in a public forum (e.g., online) where prices are observed and all products are equivalent.

### Existence value

#### EPA Definition:

A nonuse value based on a sense of stewardship leading to the desire to preserve ecosystem services, even though the individual has no direct interaction with them.

### External variable

#### USDA Definition:

A factor (such as climate change or market price) that

affects the decision making process that is beyond the control of decision makers and which provides the basis for uncertainty analysis. Also referred to as an “exogenous variable.”.

#### Externality

##### EPA Definition:

A consequence of an economic activity that is experienced by unrelated third parties. An externality can be either positive (such as a scenic view) or negative (such as pollution).

##### USDA Definition:

The term used to describe the unintended effects of the production or consumption of a good on another person. Pollution is a classic example of an externality as it is typically a by product of producing a good that creates harm.

#### Extinction

##### Fish & Wildlife Service Definition:

In biology and ecology, extinction is the end of an organism or of a group of organisms, normally a species.

#### Farmed wetlands

##### USDA Definition:

Under the USDA swampbuster program, wetlands that were partially drained or altered to improve crop production before swampbuster was enacted on December 23, 1985. Farmed wetland still meets the regulatory definition of wetland in the Food Security and Clean Water Acts.

#### Filter strip

##### USDA Definition:

A type of buffer strip that is an area of vegetation, generally narrow and long, that slows the rate of runoff, allowing sediments, organic matter and other pollutants that are being conveyed by the water to be removed by settling out. Filter strips reduce erosion and the accompanying stream pollution, and can be a best management practice.

#### Forecast

##### USDA Definition:

(verb) To describe the outcomes, trends or expected future behavior of a system, typically through the use of models.  
(noun) A description of the outcomes, trends or expected

future behavior of a system.

#### Forest health

##### USDA Definition:

Forest condition, characterized by attributes (e.g., insect and disease infestations, wildfires and related tree mortality) and risks of future problems (e.g., too many small-diameter trees due to overstocking, excessive biomass, an unnatural combination of tree species in mixed stands).

#### Forest or forested

##### USDA Definition:

Land that has been established or has natural stands of hardwood and/or conifer trees.

#### Forest plan

##### USDA Definition:

Land and resource management plans for units of the National Forest System under the Forest and Rangeland Renewable Resources Planning and the National Forest Management Acts.

#### Forest Stewardship Council (FSC)

##### USDA Definition:

A private internationally accredited third party verifier that certifies responsible management of the world's forests to. Frequently, wood and paper products will be marketed as FSC-certified which indicates that they have been produced and sourced in a manner that meets environmental and social standards set by the FSC.

#### Furrow irrigation

##### USDA Definition:

An irrigation system of small, shallow channels guide water across the surface of a leveled field. Crops are typically grown on a ridge or raised bed between the furrows. This is the major irrigation system that is based on gravity flow.

#### Future value

##### USDA Definition:

The value of a benefit or cost calculated for a specified date in the future.

#### General permit

##### EPA Definition:

A NPDES permit covering a category of dischargers rather than an individual facility. ACE also has general permits for construction sites impacting a wetland.

#### Genetic diversity

##### USDA Definition:

Measure of the variety of genes within a population pool in a given area.

#### Global warming

##### USDA Definition:

The progressive gradual rise of the Earth's average surface temperature thought to be caused in part by increased concentrations of GHGs in the atmosphere. The burning of fossil fuels and deforestation are believed to be the major causes of the increased concentration of GHGs in the atmosphere. Since emission of GHGs into the atmosphere could, paradoxically, lead to cooling of some parts of the world, most people now prefer to use the term "climate change" as opposed to "global warming".

#### Global Warming Potential (GWP)

##### USDA Definition:

The GWP is an index that compares the relative potential of the 6 greenhouse gases to contribute to global warming, or more precisely, climate change. The additional heat/energy impact of all other greenhouse gases are compared with the impacts of carbon dioxide (CO<sub>2</sub>) and referred to in terms of a CO<sub>2</sub> equivalent (CO<sub>2</sub>e). CO<sub>2</sub> has been assigned a 100-year GWP of 1 (i.e., the warming effects over a 100-year time frame relative to other gases). Methane has a GWP of 23. The latest officially released GWP figures are available from the IPCC in their publication Climate Change 2001: The Scientific Basis.

#### Green Gross Domestic Product (GDP)

##### USDA Definition:

An index of economic growth with the environmental consequences of that growth factored in.

#### Green House Gases (GHGs)

##### USDA Definition:

Gases in the Earth's atmosphere that reduce the loss of heat into space. Greenhouse gases include, but are not limited to, water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), chlorofluorocarbons (CFCs),

hydrochlorofluorocarbons (HCFCs), ozone (O<sub>3</sub>), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>).

#### Green infrastructure

##### Fish & Wildlife Service Definition:

An interconnected green space network (including natural areas and features, public and private conservation lands, working lands with conservation values, and other protected open spaces) that is planned and managed for its natural resource values and for the associated benefits it confers to human populations.

#### Green labeling

##### USDA Definition:

A environmental market system characterized by the use of a verification seal on the label informing buyers that the products met environmental stewardship standards in its production, processing, and/or transportation to market.

#### Green payment

##### USDA Definition:

A payment in which the government program pays landowners for environmental improvement. Actions taken by landowners may be using best management practices or setting aside working land.

#### Greenhouse Effect

##### USDA Definition:

The insulating effect of atmospheric greenhouse gases (GHG), such as water vapor, carbon dioxide, and methane, keeps the Earth's temperature about 60°F warmer than it would be otherwise by trapping radiant heat from the sun and contributes to proper climate regulation. Scientific evidence increasingly supports the theory that additional human emissions of GHGs as a byproduct of fossil fuel burning and deforestation is contributing to detrimental global warming and climate change. GHG include CO<sub>2</sub> (Carbon dioxide), NO<sub>x</sub> (Nitrous Oxides), O<sub>3</sub> (Ozone) and CH<sub>4</sub> (Methane). One of the major difficulties is that, with the exception of ozone, the GHG that contribute to global warming are highly stable, meaning that once emitted into the atmosphere they are likely to remain there for a very long time. Atmospheric concentrations of GHG have increased by approximately 30 percent since the industrial revolution.

## Greenhouse Gas Offsets & Carbon Credits

### USDA Definition:

Greenhouse gas (GHG) offsets or credits, are verified sequestered or avoided GHG emissions. Various physical, chemical or biological processes that prevent or delay GHG emission to the atmosphere by holding the respective GHG in a physical, chemical, or biological sink. Offsets or credits generated in one place may be used to offset excess GHG emissions anywhere in the world. GHG offsets and carbon credits are generally sold as tons of carbon dioxide (CO<sub>2</sub>) or carbon dioxide equivalent (CO<sub>2</sub>e), with each credit representing a pollution reduction of one ton worth of CO<sub>2</sub>. GHG include CO<sub>2</sub> (Carbon dioxide), N<sub>2</sub>O (Nitrous Oxide), O<sub>3</sub> (Ozone) and CH<sub>4</sub> (Methane).

## Habitat

### USDA Definition:

The particular abiotic and biotic conditions with which individuals or populations of the same species are typically associated. The place where a population (e.g., human, other animal, plant, microorganism) lives, characterized by physical features, dominant plants and other biophysical attributes. The term habitat is also often extended to refer to the circumstances in which populations of many species tend to co-locate.

## Habitat Conservation Plan (HCP)

### Fish & Wildlife Service Definition:

A conservation plan that specifies the anticipated effects of a proposed activity on the taking (see “Incidental take”) of federally-listed species and how those impacts will be minimized and mitigated. The HCP is submitted with an incidental take permit application to the USFWS or NMFS.

Incidental take permits are available to private landowners, State and local governments, Tribal governments and other non-Federal landowners through section 10 of the Endangered Species Act.

## Habitat credit bank

### Fish & Wildlife Service Definition:

The preservation, enhancement, restoration and/or establishment of habitat for at-risk species to compensate for unavoidable adverse impacts to the species or habitat elsewhere. Generally, it is a parcel of land or physical location identified by a legal description and locality map in a HCT instrument that is habitat for at-risk species and

represents habitat credits.

USDA Definition:

When developers expect to harm an endangered species (whether listed at the federal or state level), they are forced to "offset" or "mitigate" the damage through the creation of habitat for a similar number of plants and animals somewhere else. Traditionally, developers mitigated for the damages by purchasing new property or modifying existing landholdings to support the impacted species. The investment required to site these areas was significant and land management responsibilities were onerous. Many developers are now finding that they would rather buy "mitigation credits" from a so-called "conservation bank" that has already achieved the mitigation and has obtained approval from the Fish and Wildlife Service to sell these "mitigation credits.

Habitat credit trading (HCT)

Fish & Wildlife Service Definition:

A market-based system that facilitates the exchange between interested parties of credits that represent habitat that has been restored, enhanced, established, preserved or otherwise conserved for the purpose of offsetting losses of at-risk species habitat, habitat function or habitat value elsewhere with the goal of achieving net species conservation benefits.

USDA Definition:

A conservation of habitat in one location to offset or trade for the loss of habitat elsewhere. This requirement has the potential to act as an effective cap for the establishment of a credit trading program. The potential buyers of conservation credits are firms or government entities wishing to develop land or alter land use in ways that will adversely affect threatened or endangered species. Conservation banks permanently preserve and manage lands to mitigate the loss of listed species and their habitats at some other location. Criteria may include quantity, quality, species covered, conservation benefits and available or prospective resource values. Habitat that is used to mitigate lost habitat for an endangered species should provide the same, or superior, set of ecosystem services and functions and should support all of the same species as the mitigated site. Credits are typically assigned based on the amount of acreage of appropriate habitat and nest sites of the species of interest.

#### Habitat credit trading (HCT) agreement

##### Fish & Wildlife Service Definition:

The legal document for the establishment, operation and use of a HCT system or a participating HCT site in an existing USFWS-approved HCT system or program.

#### Habitat credit trading (HCT) review team

##### Fish & Wildlife Service Definition:

An interagency group of Federal, State, tribal and/or local regulatory and resource agency representatives that reviews documentation for, and advises the agency decision-makers on the establishment, management and monitoring of a HCT system.

#### Habitat credit trading (HCT) site

##### Fish & Wildlife Service Definition:

Conservation bank, mitigation bank, recovery crediting system site, or other habitat credit trading site.

#### Habitat credit trading (HCT) sponsor

##### Fish & Wildlife Service Definition:

Any public or private entity responsible for establishing, operating, managing and monitoring one or more HCT sites.

#### Habitat equivalence ratio

##### Fish & Wildlife Service Definition:

When applied to conservation banking, a habitat equivalence ratio may be established to account for the uncertainty associated with the effectiveness of establishing a habitat for an endangered or threatened species with the loss of habitat due to real estate development or road construction. It determines how much of compensation of impact achieved by a seller is permitted to be used to offset the habitat impact of a buyer in the form of a ratio. For example a HCT system for prairie dogs may use a 3:1 trading ratio in which 3 acres of prairie dog habitat will be restored and protected for every 1 acre of prairie dog habitat that is destroyed.

#### Habitat irreplaceability

##### USDA Definition:

This may occur if the habitat is spatially restricted or provides a resource to local communities that cannot be restored from elsewhere.

#### Habitat structure

#### USDA Definition:

The arrangement of biodiversity components in space with three major variables: complexity (the amount of variation attributable to absolute abundance of individual structural components), heterogeneity (the kinds of variation attributable to the relative abundance of different structural components), and scale (the first two components must be commensurate with the dimensions of the organisms being studied).

#### Habitat suitability index

##### USDA Definition:

A wildlife habitat suitability model providing habitat information for evaluating impacts on biota resulting from water or land use changes.

#### Healthy forests

##### USDA Definition:

Healthy forest ecosystems are ecological life-support systems. Forests provide a full suite of goods and services that are vital to human health and livelihood, natural assets we call ecosystem services.

#### Hedonic pricing

##### USDA Definition:

A method used to estimate economic values for ecosystem services that directly affect market prices. It is most commonly applied to variations in housing prices that reflect the value of local environmental attributes.

#### Human well being

##### EPA Definition:

Broadly, the condition of humans and society, defined in terms of the basic material and natural resource needs for a good life, freedom and choice, health, wealth, social relations and personal security. In economics, the term is often used interchangeably with utility (although the definition provided here is broader than the standard economic definition).

#### Hunting Leases and Ecotourism

##### USDA Definition:

Hunting Leases are essentially a habitat market with a specific consumer base. Private markets, such as birder or hiking leases, ecotourism tours (akin to historic house and garden tours, corn maizes) provide consumers with the first

hand opportunity to learn about stewardship practices, or interact with and enjoy the ecosystem services and benefits generated by the conservation practices being implemented on private lands.

### Hypoxia

#### USDA Definition:

Dropping oxygen levels in deep waters characterize an environmental event known as hypoxia. Hypoxia can occur naturally, but is more frequently caused by the human-driven contamination of surface waters. There are now at least 150 manmade hypoxic dead zones in global waters. North America, South America, Europe, and Asia all suffer from dead zones of varying severity, and some dead zones affect an underwater territory the size of a small country...or two.

### Hypoxic zone

#### USDA Definition:

An area of aquatic resource (ocean, estuary, lake, reservoir or river) where there is insufficient oxygen to support aerobic organisms such as fish and shellfish. Oxygen depletion can be caused by an excessive amount of nutrients that are washed downstream from inland sources.

### Ignorance

#### USDA Definition:

A component of uncertainty which represents a lack of knowledge about the true value of a parameter that can result from inadequate or imperfect measurement. Ignorance can be reduced with the collection of additional data and information.

### Impact

#### Fish & Wildlife Service Definition:

An adverse effect to habitat, individuals of a species, one or more populations, or a species.

#### USDA Definition:

Changes in environmental functions, affecting (negatively) social, economic and environmental dimensions, as caused by changes in state.

### Impact site

#### USDA Definition:

The area affected by the direct, indirect, and cumulative impacts attributable to the project.

### Impaired water

#### EPA Definition:

A water body is impaired when water quality standards are not being met, and EPA and state permitting agencies are required to develop total maximum daily loads (TMDLs) for the water body.

### Impervious urban

#### USDA Definition:

Parking lots, streets, roads, sidewalks and buildings.

### In-Kind

#### Fish & Wildlife Service Definition:

Habitat of a similar structural and functional type to the habitat impacted or individuals of the same species as those impacted.

### In-lieu Fee Program

#### Fish & Wildlife Service Definition:

A program involving the restoration, establishment, enhancement, and/or preservation of habitat through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for impacts to at-risk species or habitat. Similar to a mitigation bank, an in-lieu fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu program sponsor.

### In-lieu Fee Program Instrument

#### Fish & Wildlife Service Definition:

The legal document for the establishment, operation, and use of an in-lieu fee program.

### Incentive

#### USDA Definition:

An instrument that uses financial means to motivate polluters to reduce the risks posed by their facilities, processes or products, and to preserve and enhance the natural features and ecological processes that produce ecosystem goods and services. Incentives provide monetary and near-monetary rewards for polluting less and impose costs of various types for polluting more, thus supplying the necessary motivation to polluters.

### Incidental take

#### Fish & Wildlife Service Definition:

Take of listed species that results from, but is not the purpose of, carrying out an otherwise lawful activity (see “Take”). Incidental take may be authorized through section 7 or 10 of the Endangered Species Act.

### Index

#### USDA Definition:

A single number, mathematically derived by combining two or more variables, that is intended to simplify complex information.

### Indicator

#### USDA Definition:

A measurement that represents the status of one or many variables over time, often used as a proxy to assess progress relative to one or more objectives.

### Indicator class

#### USDA Definition:

A category that defines the broad grouping of attributes (indicators) used to measure biodiversity metrics.

### individual/agent/actor-based modeling

#### USDA Definition:

Models that consist of dynamically interacting rule-based agents. These agents are intelligent and purposeful, and situated in space and time. Agents’ interactions can result in equilibrium states or emergent patterns.

### Instrument

#### Fish & Wildlife Service Definition:

The legal document/agreement for the establishment, operation, and use of a conservation bank, mitigation bank, in-lieu fee program, or other habitat credit trading program.

### Intermediate ecosystem service

#### USDA Definition:

Components of nature that are not directly enjoyed, consumed or used to yield human well-being, but which are important for the production of final ecosystem services.

### Intrinsic value

#### EPA Definition:

The value of something in and for itself, independent of any use or function it may have in relation to someone or something else; a non-utilitarian value. As such, it does not provide a basis for evaluating social welfare.

USDA Definition:

The underlying, essential, inherent value that the environment and life forms have in their own right, and which is not derived from the human use they can or cannot be put to.

Joint production of ecosystem services

EPA Definition:

The simultaneous production of several distinct ecosystem services through land management practices or other policies (including no intervention).

Kyoto Mechanisms

USDA Definition:

The Kyoto Protocol creates three market-based mechanisms that have the potential to help countries reduce the cost of meeting their emissions reduction targets. These mechanisms are Joint Implementation (Article 6), the Clean Development Mechanisms (Article 12), and Emissions Trading (Article 17).

Kyoto Protocol

USDA Definition:

Landmark treaty agreement formed under the auspices of the United Nations Framework Convention on Climate Change intended to deal with the cause of climate change on an international scale. The convention sets targets for CO<sub>2</sub> emissions at 5% less than 1990 levels for developed countries. Owing to non-ratification by the and the divergent enforcement standards for developed and developing nations, the efficacy of the convention is a matter of controversy.

Land trust

USDA Definition:

A private nonprofit organization exempted from federal taxes that holds and accounts for lands under development or conservation easements with periodic self and third party monitoring and verification systems in place.

Land use plan

USDA Definition:

A coordinated collection of data, programs and activities related to existing and potential uses of land and resources within a defined area. Commonly associated with local units of government trying to anticipate and organize uses of space so as to meet defined goals. For producers, conservation plan are a type of land use plan.

#### Land Use, Land-Use Change and Forestry (LULUCF)

##### USDA Definition:

Land uses and land-use changes can act either as sinks or as emission sources. It is estimated that approximately one-fifth of global emissions result from LULUCF activities. The Kyoto Protocol allows Parties to receive emissions credit for certain LULUCF activities that reduce net emissions. The European Union Emissions Trading Scheme, on the other hand, does not currently allow the trading of credits generated by LULUCF activities.

#### Landfill Gas to Energy (LFGTE)

##### USDA Definition:

A method of energy generation whereby landfill gases are collected, purified, dehydrated, and then burned to produce energy. This reduces greenhouse gas emission in two ways, first in that it removes methane from the atmosphere. The process, which is a low GHG contributor, also offsets coal energy production.

#### Landscape

##### USDA Definition:

Visible features of an area of land, including physical elements such as landforms, living elements of flora and fauna; abstract elements such as lighting and weather conditions; and human elements, for instance the built environment. A landscape can be a watershed, a region defined by soil or vegetation type, or an ecologically cohesive space. For the ecologist, landscape may be the habitat and connecting corridors necessary for a species to survive. At the national level, landscape may mean an entire bioregion that crosses political boundaries and encompasses multiple watersheds, core protected areas, buffers, and corridors.

#### Landscape context

##### USDA Definition:

The context beyond the development project site that is likely to influence offset design and implementation,

including (a) strategies identified in regional conservation and development plans, including information on threats and targets; (b) issues of scale, including connectedness to other natural and human features; (c) the effect of other conservation activities already taking place across the landscape.

#### Landscape scale conservation

##### USDA Definition:

Designing, planning, financing, and managing projects with significant natural conservation value while incorporating the cultural and economic activities of people situated in the landscapes involved.

#### Leakage

##### USDA Definition:

A situation within which the actions of an individual or group to reduce pollution loads in one area creates perverse incentives for others to increase their loads, thereby offsetting the pollution load reductions. Could be unintended or intended, known or unknown.

#### Listed species

##### Fish & Wildlife Service Definition:

Species listed as threatened or endangered under the Endangered Species Act or under similar State laws that provide legal protection for species.

#### Load allocation

##### EPA Definition:

The portion of receiving water's loading capacity that is attributed either to one of its existing or future point or non-point sources of pollution or to natural background sources. Load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, point, natural and non-point source loads should be distinguished.

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#### Location ratio

##### EPA Definition:

Factor applied to pollutant reduction credits when sources are upstream of a waterbody of concern that accounts for the distance and unique watershed features between a

pollutant source and the downstream waterbody (e.g., bay, estuary, lake, reservoir) or area of interest (e.g., a hypoxic zone in a waterbody).

#### Mandated program

##### USDA Definition:

A system in which pollution point sources are mandated to reduce or mitigate their pollution impacts by government taxes, laws and regulations.

#### Margin of safety

##### EPA Definition:

The amount that a reduction in pollution is discounted to account for the uncertainty about its effect on the environment.

##### USDA Definition:

Many trading programs require that more than one pound of pollution reduction achieved by a nonpoint source be used to offset a one-pound increase in emissions from a point source.

#### Marginal change

##### EPA Definition:

A proportionally small addition or subtraction to the total quantity or quality of some variable, such as an ecological outcome or ecosystem service. The benefits and costs of any good or service are determined “at the margin,” meaning that the cost and benefit of adding one more unit (the “marginal unit”) is used to evaluate efficiency.

#### Marginal cost

##### USDA Definition:

Generally, the change in total cost that arises when the quantity produced changes by one unit.

#### Marginal unit

##### USDA Definition:

The difference made by one extra unit of something.

#### Marginal utility

##### USDA Definition:

The additional utility derived from consumption of an additional unit of a good or service. The value of an additional unit of a good or service.

#### Market

#### USDA Definition:

The organized exchange of goods, services or resources between buyers and sellers.

#### Market-based

##### USDA Definition:

A broad term used to refer to any number of components of public or private programs that have characteristics of a private market such as competition between sellers and/or buyers of a good or service. Environmental credit trading programs are one example of a market-based incentive. Consumer labels that communicate an environmental benefit or stewardship claim, such as Certified Organic, Forest Stewardship Council, Marine Stewardship Council, VerifiedGreen Beef, Local Labels (may boast fewer shipping/fuel miles), are a market-based environmental market. Life Cycle Analysis (LCA) is another tool being used to characterize a resource efficient or green operation, an industry, or entire supply chain.

#### Market value

##### USDA Definition:

The value (often in monetary terms) of a good or service as determined by markets.

#### Markets for ecosystem services

##### USDA Definition:

Refers to the market-like structures used to direct investments to landowners for improving ecosystem function. Some of these structures involve over-the-counter transactions involving one buyer and one seller, or multiple buyers and sellers. Landowners that restore, enhance, or avert harm to landscapes act as the "sellers," and "buyers" are the entities or individuals motivated to purchase credits for a variety of reasons, ranging from point sources under regulatory obligation to the philanthropy. Market-based mechanisms can provide flexibility to buyers in meeting their mitigation targets that may be more cost-effective. Point source compliance may be obtained by purchasing credits from other point sources in the regulated industry (cap and trade) that are reducing their impacts below their cap, or by purchasing verified offset credits generated by nonpoint sources that implemented approved conservation practices.

#### Marrakesh Accords

#### USDA Definition:

Final amendment to the Kyoto Convention decided in 2001; the Marrakesh provides for capacity building in developing nations without penalty, it also provides for the resolution of state-centered adverse effects associated with global warming. The Accord also clarified the guidelines for international emissions trading.

#### Maximum Extent Practicable (MEP)

##### EPA Definition:

The standard for municipal separate storm sewer system (MS4) compliance with National Pollutant Discharge Elimination System (NPDES) permits under the Clean Water Act (CWA). The states' definitions vary.

#### Measure (verb)

##### USDA Definition:

To directly quantify something, usually on a continuous scale, using validated equipment, equations, models, or formulas. Contrast this with estimate, which implies visually estimating, or using an indicator species or index of a condition.

#### Measurement system

##### USDA Definition:

A suite of activities including selection of a set of quantifiable indicators, using those indicators to produce a metric that communicates the overall quality and function of land for biodiversity, validating the scores produced by the metric, and for incentive programs, placing the metric into a program that reinforces validity of the metric.

#### Methane

##### EPA Definition:

A hydrocarbon that is a greenhouse gas with a global warming potential most recently estimated at 25 times that of carbon dioxide (CO<sub>2</sub>). Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

#### Metrics

##### USDA Definition:

A set of measurements that quantifies results. Metrics can

vary from very basic measures such as area, to sophisticated quantitative indices of multiple ecosystem components which may be variously weighted.

#### Midwestern Greenhouse Gas Reduction Accord

##### USDA Definition:

Comprised of Minnesota, Wisconsin, Illinois, Iowa, Michigan, and Kansas, and Ontario to reduce greenhouse gas emissions through a regional cap-and-trade program and other complementary measures. The program was designed and proposed as a Final Model Rule for adoption by the six states and Ontario. It is considered not dead, but sleeping.

#### Millenium Ecosystem Assessment (MEA)

##### USDA Definition:

The Millennium Ecosystem Assessment assessed the consequences of ecosystem change for human well-being. From 2001 to 2005, the MA involved the work of more than 1,360 experts worldwide with ties to the United Nations and other significant international non-governmental agencies and universities. Their findings provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide, as well as the scientific basis for action to conserve and use them sustainably. Ecosystem services are the benefits people obtain from ecosystems. Ecosystem services include the supportive services of soil formation, photosynthesis, and nutrient cycling that underlie the regulating services of climate, soil, air, and water quality, and disease; the provisioning services of food, water, timber, and fiber; and the cultural services of recreation, aesthetics, and spirituality.

#### Minimum Control Level

##### EPA Definition:

The lowest pollutant load that a point source buyer must first achieve before buying credits to meet the facility's baseline. This pollutant load is either the Technology-Based Effluent Limitation (TBEL) specified in a permit or the current discharge level, depending on which is more stringent.

#### Mitigation

##### EPA Definition:

Generally, a reduction in impacts. While used generically to refer to actions taken to reduce impacts, if the

regulatory program objective is no net loss, mitigation of impacts may occur on-site or the offset of impacts on an alternative or substitute site may be permitted. Mitigation under the National Environmental Policy Act (NEPA) includes: avoiding the impact altogether by not taking a certain action or parts of an action (averted risk); minimizing impacts by limiting the degree or magnitude of the impact on-site; rectifying the impact by repairing, rehabilitating, or restoring the affected environment on-site after the impact; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action on-site; or compensating for the impact by replacing or providing substitute resources or environments off-site.

Fish & Wildlife Service Definition:

A compensatory conservation bank or agreed upon conservation action used to offset unavoidable adverse impacts to at-risk species or habitat.

USDA Definition:

Measures which aim to minimize, reduce, or replace impacts to the point where they have no adverse effects. Examples of mitigation measures include avoidance of sensitive sites, not performing disruptive work at sensitive times (e.g. breeding seasons), translocation of species to temporary or permanent alternative sites, post-project site restoration, and the creation of similar habitats to offset residual impacts.

Mitigation Bank

Fish & Wildlife Service Definition:

A site, or suite of sites, where natural resources are restored, established, enhanced, and/or preserved for the purpose of providing compensatory mitigation for impacts to similar resources authorized by Federal or state permits. This general term is often used synonymously with more specific terms such as “wetland mitigation bank” or “conservation bank.”

USDA Definition:

An area of land conserved or restored to provide additional ecosystem services that is drawn on to compensate for adverse environmental impacts elsewhere.

Mitigation Banking Instrument

Fish & Wildlife Service Definition:

The legal document for the establishment, operation, and use of a wetland mitigation bank (formerly a Bank Enabling

Instrument or BEI).

#### Mitigation hierarchy

##### USDA Definition:

The ranking of methods that ensure a level of environmental performance relative to the status quo (e.g. no net loss) is maintained in the face of anthropogenic activities.

Generally, the hierarchy sequentially evaluates Avoidance, Minimization, Mitigation, and lastly, Compensation, choosing the action with least impact.

#### Mixed open

##### USDA Definition:

Land such as parklands, school recreation areas, and other large tracts without active agricultural operations and having permanent herbaceous vegetative cover that is predominately non-forested but is not otherwise defined cropland, hay, pasture, urban pervious, or urban impervious.

#### Model

##### USDA Definition:

A physical, mathematical or logical representation of a system of entities, phenomena or processes; an abstracted view of a complex reality.

#### Monetization

##### EPA Definition:

Valuation in monetary terms.

#### Multi-credit marketplace

##### USDA Definition:

A market that allows for the generation and trade of multiple ecological values or ecosystem services.

#### Multi-credit trading

##### USDA Definition:

The exchange of credits that reflect more than one type of environmental value (e.g., habitat protection, carbon sequestration, wetlands mitigation, water quality improvements).

#### Multistory forest farming

##### USDA Definition:

A mix of food, herbal (botanicals), and decorative perennial plants, shrubs and trees grown under the protection of a managed forest canopy.

### Municipal separate storm sewer system (MS4)

#### EPA Definition:

A defined stormwater area regulated under a National Pollutant Discharge Elimination System (NPDES) permit. Municipal separate storm sewer system (MS4) may be phase I (an urban area of 100,000 or more people) or phase II (a US Census–designated “urbanized area” with fewer than 100,000 people).

#### USDA Definition:

Food, herbal (botanicals), and decorative products are grown under the protection of a managed forest canopy.

### National Ambient Air Quality Standards

#### EPA Definition:

Health based standards for a variety of pollutants set by the EPA as a part of the 1990 Amendments to the Clean Air Act that must be met nationwide. Air borne pollutants are divided into primary and secondary categories with those in the primary category are directly linked to adverse effects on human health. Secondary pollutants are linked to a decrease in population welfare.

### National Environmental Policy Act (NEPA)

#### EPA Definition:

Requires federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of proposed actions and reasonable alternatives to those actions.

### National Pollutant Discharge Elimination System (NPDES)

#### EPA Definition:

The national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under the Clean Water Act. National Pollutant Discharge Elimination System (NPDES) permits regulate discharges of pollutants from point sources to waters of the United States. Such discharges are illegal unless authorized by a NPDES permit. The use of water quality trading of nutrient offset credits as mitigating the nutrient discharges of point sources, such as water treatment facilities, commercial or subdivision development, or highway construction must be authorized and verified as compliant under the NPDES permit of the point source.

#### USDA Definition:

Permits governing the discharges and mitigation activities of point sources, individually or as a group. Can explicitly allow for credit or offset trading as a method of mitigation.

#### Natural capital

##### EPA Definition:

An extension of the economic concept of capital (manufactured means of production) to ecosystem goods and services. Natural capital is thus the stock of natural ecosystems that yields a flow of valuable ecosystem goods or services into the future.

##### USDA Definition:

The idea of natural capital is closely related to that of ecosystem services. Natural capital includes the core and crust of the earth, the full complement of the world's ecosystems, and the upper layers of the atmosphere. Just as economic capital provides steady financial return, natural capital provides steady environmental returns in the form of ecosystem services.

#### Natural feature

##### USDA Definition:

A readily observable characteristic of natural systems such as type of vegetation and arrangement of land use.

#### Natural infrastructure

##### USDA Definition:

Natural features that provide the basis/framework for human activity.

#### Natural processes

##### USDA Definition:

Processes existing in or produced by nature (rather than by the intent of human beings); the act of natural forces. Includes weathering (chemical or physical), erosion, deposition, nutrient cycling, volcanic eruptions, landslides, earthquakes, floods, fire, climate, plate tectonics, etc.

#### Natural restoration

##### EPA Definition:

The reconstitution of a pre-existing ecological condition, or range of conditions. The site or condition may involve site manipulation, vegetative plantings, and system management to stimulate natural processes.

## Net-species conservation benefit or net gain

### Fish & Wildlife Service Definition:

The actual gain in habitat function or value to an at-risk species covered by a habitat credit trading system above baseline conditions and after deductions for impacts. When habitat credit trading is practiced in conjunction with other voluntary landowner conservation programs, net species conservation benefit is the gain in habitat function or value to the species above and beyond that resulting from the landowner conservation program contract in either duration or scope, or both.

## Nitrogen oxides

### EPA Definition:

Nitrogen oxides (NO<sub>x</sub>) consist of nitric oxide (NO), nitrogen dioxide (NO<sub>2</sub>) and nitrous oxide (N<sub>2</sub>O) and are formed when nitrogen (N<sub>2</sub>) combines with oxygen (O<sub>2</sub>). Their lifespans in the atmosphere range from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide.

## No-till farming

### USDA Definition:

A method of agriculture that avoids tillage (shaping and furrowing soil, tilling for weed control, and other types of large-scale soil disturbance) and improves soil health, prevents compaction, increases organic matter, reduces water/irrigation needs, and limits soil erosion.

## No net loss

### EPA Definition:

A policy in which every acre of wetland to be converted must be offset by the creation of an acre of wetland in another location.

### USDA Definition:

Every impact to biodiversity and/or environmental resources (such as wetlands) are offset with an equivalent replacement. The replacement may replace functions and values, or equivalent acres, or both. Often the replacement ratio required to offset the impacts will be greater than 1:1. Where the gain exceeds the loss, the term "net gain" or "net-species conservation benefit" may be used instead of "no net loss".

## Nonmarket goods and services

#### USDA Definition:

Goods and services that are not defined, provided and priced by conventional markets.

#### Nonmarket value

##### USDA Definition:

Value recognized by people but not usually expressed in monetary prices.

#### Nonpoint Sources (NPS)

##### EPA Definition:

Diffuse pollution sources, such as nutrients or greenhouse gases without a single point of origin or not introduced into a receiving stream from a specific outlet. For example, nutrient pollutants (nitrogen or phosphorus) are generally carried off the land by stormwater and deposited into lakes, rivers, wetlands, and other water bodies.

Common nonpoint sources include runoff from agriculture, forestry, urban environments, land disposal, and saltwater intrusion.

#### Nonrenewable resource

##### USDA Definition:

A resource that does not naturally replenish itself within time limits that permit sustained yield (e.g., minerals and hydrocarbons, such as phosphate rock, limestone, petroleum).

#### Nonsignificant point source (NPS)

##### EPA Definition:

The approximately 4,700 wastewater treatment plants that collectively emit substantially less pollution than do significant wastewater treatment plants. Some nonsignificant plants thus do not face nutrient load limits.

#### Nonstructural conservation practice

##### USDA Definition:

A measure or management practice that does not require physical construction used to improve runoff quality.

Examples of nonstructural conservation practices include irrigation water management, nutrient management, conservation crop rotation, and field strip cropping.

#### Nonuse value

##### EPA Definition:

The value people hold for a service that they do not use in any tangible way. Sometimes referred to as "passive use

value.” Early literature in environmental economics split nonuse value into three components: existence value, option value and bequest value. Nonuse values are theoretically distinct from use values.

USDA Definition:

The value people hold for a service that they do not directly use.

normative modeling

USDA Definition:

Modeling with explicit goal functions, as in optimization.

Nutrient (nitrogen, phosphorus, sediment) pollution

USDA Definition:

Contamination by excessive input or runoff of nutrients (nitrogen, phosphorus, sediment) from point or nonpoint sources.

Nutrient management plan

USDA Definition:

A farm conservation plan developed by the Natural Resources Conservation Service (NRCS) for a landowner that describes how nutrients will be stored, used, and disposed of to minimize environmental problems such as water pollution.

Nutrient Trading

USDA Definition:

Nutrient trading is a type of environmental credit trading. Regulated nutrient runoff point sources (wastewater treatment plants or construction project developers) must prevent or mitigate the nutrient runoff under their NPDES or stormwater management permit, and may be permitted to purchase verified nutrient credits or offsets generated by nonpoint sources that implement prescribed conservation practices. For example, an agricultural producer who constructs a buffer around his corn field could be credited with generating water quality improvements. If a water treatment plant located in the same watershed as the farm field is allowed to meet its regulatory obligations by purchasing water quality improvements from an upstream farmer, then the treatment plant might find it cheaper to pay the farmer for his credits than to install onsite treatment technologies.

object-oriented modeling

USDA Definition:

A method for specifying models that conforms to the object-oriented paradigm in software engineering.

#### Off-Site

##### Fish & Wildlife Service Definition:

An area that is neither located on the same parcel of land as the impact site, nor on a parcel of land contiguous to the parcel containing the impact site.

#### Offset (noun) or credit, or offset credit

##### EPA Definition:

A quantied and verified unit of measurable ecosystem service used to compensate or offset for impacts on the environment in trading systems between point sources or nonpoint sources. Used by companies, governments or other entities in compliance markets to comply with regulatory caps. Offset credits are often called mitigation credits.

##### USDA Definition:

A verified unit of ecosystem service generated by a nonpoint source polluter eligible for trade under specific environmental market trading rules. A point source polluter that is mandated to correct their environmental impacts to the extent that is reasonably possible, and is permitted to buy verified offsets or credits to mitigate impacts that cannot be technologically or economically achieved.

#### Offset (verb)

##### USDA Definition:

The act of compensating for environmental impacts.

#### Offset activity

##### USDA Definition:

Offset activities are the set of activities identified to counteract the environmental damage of the development project concerned. A very broad range of activities may be suitable and can involve one or all of the following: undertake conservation management interventions to restore an area, stop degradation or threats, reintroduce native species; reduce or remove current threats or pressures by protecting areas where there is imminent or projected environmental loss; enter into agreements such as contracts or covenants with individuals in which they forego the right to convert land or harvest resources in the future in return for payment or other benefits received now; and compensate local stakeholders affected by the development

project and offset, so they benefit from the presence of the project and offset and support these initiatives.

#### Offset ratio

##### USDA Definition:

The offset 'ratio' is the area occupied by an offset divided by the area affected by a project's impact. The offset area is often larger than the area impacted (i.e. offset ratio >1), since the offset gains per unit area may be lower or less certain than the impact site losses per unit area. For example, an offset ratio of 2:1 would require 2 units of replacement for every 1 unit of loss (i.e., acres of land).

#### Offsets & Mitigation

##### USDA Definition:

Offsets and mitigation are both used to describe the idea that environmental restoration or pollution reductions in one place can compensate for environmental degradation or pollution elsewhere. The principle in play is that environmental improvements in site A can "offset" or "mitigate" environmental loss in site B.

#### On-Site

##### Fish & Wildlife Service Definition:

An area located on the same parcel of land as the impact site, or on a parcel of land contiguous to the impact site.

#### Opportunity cost

##### USDA Definition:

The cost of something in terms of an opportunity forgone (and the benefits which could be received from that opportunity), or the most valuable forgone alternative (i.e., the second best alternative).

#### optimization modeling

##### USDA Definition:

A modeling approach in which the purpose is to find a best or optimal solution, given some constraints. With quantitative data, the methods of operations research such as linear programming are usually used.

#### Option value

##### EPA Definition:

The value stemming from the desire to preserve a natural system or its services in order to retain the option for

future use.

#### Out of Kind

##### Fish & Wildlife Service Definition:

Habitat of a different structural and functional type from the impacted habitat or individuals of a different species than those of the species impacted.

##### USDA Definition:

When the ecosystem services conserved through the offset differs from the ecosystem services impacted by the project. The option of 'trading up' to an out-of-kind offset may be advisable where an offset arising from project impacts on a common or widespread component of ecosystem service may serve to benefit a more threatened or rare component. For example, the replacement of prairie pothole wetland with a riverine wetland, or an ephemeral inundated wetland with a permanently inundated wetland.

#### Overdrafting

##### USDA Definition:

Removing more groundwater from an aquifer than is naturally replenished, which can result in a dropping water table, increased pumping costs, land subsidence (which reduces the future recharge capacity), saltwater intrusion, reduced stream flows in interconnected ground- and surface-water systems and exhaustion of groundwater reserves.

#### Overlay Permit

##### EPA Definition:

A National Pollutant Discharge Elimination System (NPDES) permit issued to a group of point source dischargers that supplements individual permits by establishing permit limits and other requirements for one or more pollutant of concern that are not addressed in the existing individual permits.

#### Ozone

##### EPA Definition:

The triatomic form of oxygen (O<sub>3</sub>), is a gaseous atmospheric constituent that is created by photochemical reactions involving gases resulting both from natural sources and from human activities (photochemical smog). Depletion of ozone, due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet (UV-) B radiation.

## Partner

### USDA Definition:

Generally, a person or group that is united or associated with another in an activity or a sphere of common interest.

## Party- first, second, and third (verification)

### USDA Definition:

The first party in a transaction is the seller. The second party in a transaction is the buyer. The third party in a transaction is independent of both the first and second parties. The third party verifier can be called in by either the buyer or the seller to verify the conformity of the products sold as well as the transaction.

## Payments for ecosystem services (PES)

### USDA Definition:

An umbrella term often applied to a wide variety of programs in which the beneficiaries, or users, of ecosystem services pay the stewards, or providers, of ecosystem services. It frequently acts as a descriptor for programs that do not rely upon a formal market, but rather rely upon a continual series of payments to rural landowners who agree to steward ecosystem services. Through conservation incentives, tax credits, and subsidies, the government may compensate private landowners for protecting, enhancing, or restoring an ecosystem service. Businesses and conservation groups may provide payments to landowners for philanthropic, public relations, ethical reasons, or to protect investments. An interest group may pay for hunting leases on private land. A bottled water company may protect its water source by paying upstream landowners to implement good management practices.

## Performance-based standard

### Fish & Wildlife Service Definition:

Observable or measurable physical, chemical, or biological attributes that are used to determine if a compensatory mitigation project meets the agreed upon objectives.

### USDA Definition:

An approach for achieving environmental improvement that focuses on the level or concentration of a measurable outcome such as the quantified emission level or emission concentration rather than the specific methods or practices used to achieve the objectives.

## Permanence (in perpetuity)

#### USDA Definition:

Many point-to-nonpoint trading systems expect some or all offset credits (greenhouse gases, nutrients, conservation and wetland banks) to function permanently or in perpetuity as offsets to impacts.

#### Permitting Authority

##### EPA Definition:

A permitting authority for a state is either the EPA, a Regional Administrator of the EPA, or an authorized representative. Under the Clean Water Act, most states are authorized to implement the NPDES permit program.

#### Persistence

##### EPA Definition:

The amount that industrial pollutants and their by-products can remain or persist in the environment (i.e. DDT).

##### Fish & Wildlife Service Definition:

A measure of ongoing existence; the opposite of extinction. In the context of biodiversity, persistence implies absence of threats and an expectation of continued existence over the timeframe under consideration. Threat status categories (e.g. the IUCN Red List) are one important way of describing expectations of persistence. Indices of susceptibility to loss' offer a continuous description of persistence expectation. In conservation biology, persistence' is often expressed as a probability.

#### Persistence probability

##### Fish & Wildlife Service Definition:

A measure of the likelihood that a specified component of biodiversity (usually a species or species' population) will exist after a defined time interval. Increased persistence probability is the primary goal of threatened species, community and ecosystem conservation efforts. Net conservation gain implies increased persistence probability for affected biodiversity components.

#### Point-to-point trading

##### USDA Definition:

Point sources, such as utilities, water treatment facilities, etc are mandated to reduce the pollutants that they emit, discharge, or release into the air, water or atmosphere under an assigned maximum daily load or cap within a specific jurisdiction (waterbody, watershed, municipality, State). If permitted by the permitting

authority of the jurisdiction, point sources unable to reasonably reduce their pollutants under the load or cap may be able to purchase verified emission or load offsets or credits from those point sources that discharge or emit below the cap or load within the same jurisdiction.

#### Point source pollution

##### EPA Definition:

There are two types of non-natural polluters – point sources and non-point sources. Point sources are industrial enterprises that emit nutrients (i.e., pollutants) directly into a watershed from a single pipe or point. Non-point sources, on the other hand, are agricultural or municipal polluters whose pollution washes into a watershed over a diffuse area. For a variety of political, social, economic, and logistic reasons, point sources usually are regulated, while non-point sources are not.

#### Point sources

##### EPA Definition:

A point source is a facility with permitted wastewater discharges, such as any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

#### Pollutant/pollution

##### EPA Definition:

Under the Clean Water Act (CWA), the dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. Under the Clean Air Act (CAA), the physical, chemical, biological, radioactive (including source material, special nuclear material, and byproduct material) substance or matter which is emitted into or otherwise enters the ambient air.

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##### USDA Definition:

Alteration of the environment, as through the introduction of hazardous or detrimental substances, heat, noise or other stressors whose nature, location or quantity produces adverse ecological effects or human health effects.

#### Practice-based standard

##### USDA Definition:

An approach for achieving an environmental improvement that focuses on the type and quantity of technologies or practices being used.

#### Precision

##### USDA Definition:

From inferential statistics, the amount of variation among multiple estimates made of a particular parameter or quantity, usually expressed using some measure of scatter.

#### Prediction

##### USDA Definition:

A statement or claim that a particular event will occur in the future in more certain terms than a forecast.

#### Present value

##### EPA Definition:

The current (discounted) value of a future benefit or cost.

##### USDA Definition:

The value of future or past benefits or costs in the present time period.

#### Preservation

##### Fish & Wildlife Service Definition:

Maintenance or retention of existing habitat with specific resource function(s) for covered species. This term usually implies legal protection of the habitat, for example a parcel of land protected under a conservation easement.

#### Press disturbance

##### USDA Definition:

An environmental impact driven by constantly increasing pressures on atmospheric and ecological systems, such as atmospheric CO<sub>2</sub> baseline of pre-industrial concentrations.

#### Pressure

##### USDA Definition:

Anthropogenic (human) factors (e.g., the release of

substances, physical and biological agents and other potential stressors; changes in the use of resources; changes in the use of land) that induce environmental change (impacts).

#### Prior converted wetland

##### USDA Definition:

Under the USDA swampbuster program, these are wetlands that were converted to cropland before swampbuster was enacted on December 23, 1985, and no longer meet wetland criteria for saturated soils, wetland hydrology and water-loving plants on that date.  
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#### Private Equity

##### USDA Definition:

The creation of private equity funds that use environmental attributes or performance as an investment criteria is a growing, non-government sanctioned tool to promote conservation.

#### Private goods

##### USDA Definition:

Goods that when purchased by an individual are enjoyed primarily by that individual and not by others who did not share in the cost of providing it.

#### procedural modeling

##### USDA Definition:

A method for specifying models in which the system being modeled is described by a set of instructions for the sequence of actions between objects in the model. Contrast with declarative modeling.

#### Programmatic Instrument

##### Fish & Wildlife Service Definition:

A voluntary conservation agreement that is developed at a scale above that of an individual landowner or sponsor, and which allows multiple individual landowners or sponsors to participate by entering into a subcontract (individual HCT instrument), thereby agreeing to the conditions specified in the programmatic instrument. Generally, these agreements cover large areas and may involve permits and/or regulatory assurances, such as a HCT that functions in concert with a countywide or Statewide HCP.

## Projection

### USDA Definition:

A forecast of outcomes, trends or expected future behavior of a system if all things were held constant other than the variable(s) of interest.

## Proposed species

### USDA Definition:

Any species of fish, wildlife, or plant that is proposed in the Federal Register to be listed under Section 4 of the Endangered Species Act.

## Provisioning services

### Fish & Wildlife Service Definition:

### USDA Definition:

A category of “ecosystem services” as described by the Millennium Ecosystem Assessment. Provisioning services are familiar commodities such as food, fresh water, timber, fiber, and many pharmaceuticals for direct human use.

## Public good

### USDA Definition:

Goods, that once provided, can be enjoyed by many people, including those that did not help pay for them.

## Public lands

### Fish & Wildlife Service Definition:

As defined in the Federal Land Policy and Management Act, any land and interest in land outside of Alaska owned by the United States and administered by the Bureau of Land Management.

## Publicly Owned Treatment Works (POTW)

### EPA Definition:

Under the Clean Water Act, a treatment works which is owned by a state or municipality.

## Pulse disturbance

### USDA Definition:

An environmental event that occur once or at periodic intervals, such as fire and extreme climatic events.

## Quantification

### USDA Definition:

The expression of entities or their attributes, ecological

endpoints or ecological benefits in numerical units (metrics).

#### Quantification Tools

##### USDA Definition:

Tools used to quantify, enumerate, or index an ecosystem service - carbon tons sequestered, total pounds of nitrogen or phosphorus captured, percent of organic matter, soil loss erosion tons prevented, degrees cooled, acre feet of water, population numbers of species, habitat acres for species, carbon footprint. Examples of USDA tools would be: RUSLE(2), NRI, APEX Model, NTT, COMET-VR 2.0 & COMET-FARM, Rapid Carbon Assessment, Water Quality Index.

#### Quantify conditions

##### USDA Definition:

Quantifying current conditions and predicting future outcomes.

#### Reactive nitrogen (Nr)

##### USDA Definition:

All biologically, chemically, and radiatively active nitrogen compounds in the atmosphere and biosphere.

#### Reclamation

##### USDA Definition:

The process of rehabilitating disturbed lands, or converting unproductive lands to productive uses.

#### Reconciliation period

##### USDA Definition:

The period of time during which the seller generates trading credits and a buyer may use those credits to offset its pollutant discharge load.

#### Recovery

##### USDA Definition:

The rate and extent of return of a population, community or ecosystem to some aspect(s) of its previous condition.

#### Recovery crediting system

##### Fish & Wildlife Service Definition:

A specific program established to implement recovery actions on non-Federal lands for specific species while creating a reserve of credits that a Federal agency may use to offset the effects of its actions. A Federal agency may

develop and store credits to be used at a later time to offset particular adverse effects of its actions. The overall system must provide a net benefit to recovery for the specific species covered by the RCS.

#### Reference condition

##### USDA Definition:

A set of selected measurements or conditions of an unimpaired or minimally impaired ecosystem characteristic of an ecosystem type in a region.

#### Reference resources or reference domain

##### Fish & Wildlife Service Definition:

A set of natural resources that represent the full range of variability exhibited by a regional class of resources as a result of natural processes and anthropogenic disturbances.

#### Reforestation

##### USDA Definition:

The act of planting tree seeds or young trees in an area where there used to be a forest and is a conservation practice important to the generation of carbon, water quality and habitat credits.

#### Regional Clean Air Incentives Market (RECLAIM)

##### USDA Definition:

Cap and trade market established in the greater Los Angeles region of California to alleviate a severe smog problem. RECLAIM includes cap and trade programs for NO<sub>x</sub> and SO<sub>2</sub>.

#### Regional Greenhouse Gas Initiative (RGGI)

##### USDA Definition:

The Regional Greenhouse Gas Initiative (RGGI) which was initially comprised of ten States (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont) voluntarily agreed to a power plant GHG emission step-down plan in 2002. New Jersey dropped out in 2008. Overall emission Cap benchmark (baseline) starts from 2002 and a state-by-state percentage formula has been established for each state allowance. Cap has dropped 43% since adoption and is currently at 93 million tons. Step-down on GHG emissions has not yet been steep enough to compel power plants to seek offsets for GHG allowances, but this is expected to change as the GHG emission allowances become stricter over time. Starting in 2014, RGGI emission cap will drop 2.5% per year, a total of

an additional 15%, landing at 68% from the original 2002 benchmark by 2020. This cap drop rate is expected to be revisited in 2016.

#### Regulated markets

##### USDA Definition:

Point sources, such as utilities, water treatment facilities, etc are mandated to reduce the pollutants that they emit, discharge, or release into the air, water or atmosphere to the maximum extent practical (MEP) or under an assigned maximum daily load or cap within a specific jurisdiction (waterbody, watershed, municipality, State). If permitted by the permitting authority of the jurisdiction, point sources unable to reasonably reduce their pollutants under the load or cap may be able to purchase verified emission or load offsets or credits from other point sources that discharge or emit below the cap or load, or from nonpoint sources that generate credits with the implementation of specific conservation practices with quantifiable benefits within the same jurisdiction.

#### Regulating services

##### USDA Definition:

A category of “ecosystem services” as described by the Millennium Ecosystem Assessment. Regulating services are the benefits obtained from ecosystem impacts on natural processes, such as flood and disease control, water purification, climate stabilization, and crop pollination.

#### Regulatory Assurances

##### Fish & Wildlife Service Definition:

Generally refers to assurances provided by USFWS to a private landowner or other non-Federal property owner in association with a permit for a conservation agreement pursuant to section 10 of Endangered Species Act. Regulatory assurances generally include a commitment by USFWS that if changed circumstances occur that are not provided for in the Agreement, the USFWS will not require any conservation measures or restrictions on the use of land or other resources in addition to those provided for in the Agreement without the consent of the permittee.

#### Renewable Energy

##### EPA Definition:

Renewable, or green, energy sources produce energy without many of the associated ills – pollution, waste and risk –

that plague more traditional sources of energy. Consequently, millions of industrial and residential consumers are now showing they are willing to pay more for green power sources such as wind, solar, and biomass resources.

#### Renewable Energy Credits (RECs) & Green Tags

##### EPA Definition:

Represent the environmental attributes of a unit of electricity generated from renewable fuels and are known as tradable renewable certificates, or green tags . In a typical REC scheme, the government determines a renewable energy target and then allocates responsibility for meeting it to the energy suppliers under its jurisdiction.

Utilities then can meet their respective targets by either generating green energy themselves, or by buying RECs from elsewhere. While traditional carbon emissions trading programs promote low-carbon technologies by increasing the cost of emitting carbon, RECs incentivize carbon-neutral renewable energy by providing a subsidy to electricity generated from renewable sources. This system allows RECs – essentially the "greenness" of the renewable energy" – to be sold separately from the electricity itself. Thus, RECs are flexible and can easily be traded on regional scales, encouraging the most efficient development of renewable energy sources.

#### Renewable fuel

##### EPA Definition:

Broadly, a fuel made from replenishing feedstocks (such as biomass, sunlight, wind, water and waste products) in contrast to exhaustible (nonrenewable resource) feedstocks (such as petroleum and coal).

#### Renewable resources

##### EPA Definition:

A natural resource, sometimes called a "flow resource," that replenishes itself within time limits that permit sustained use (e.g., timber, livestock forage, renewable fuel, wildlife and fish), in contrast to a nonrenewable resource.

#### Reserve ratio

##### USDA Definition:

A trading ratio that allocates a portion of each credit into a reserve pool as insurance against credit failure.

## Resilience

### USDA Definition:

The ability of an ecosystem to recover and maintain diversity, integrity and ecological processes following the cessation of a disturbance,.

## Resistance

### USDA Definition:

The opposition of an ecological system to change as a result of exposure to a stressor.

## Response

### USDA Definition:

Actions taken by groups (and individuals) in society and government to prevent, compensate, ameliorate or adapt to changes in the state of the environment.

## Restoration

### Fish & Wildlife Service Definition:

To return a site to its natural/historic habitat type with the same or similar functions.

### USDA Definition:

To put back to its natural condition and functions that existed prior to a disturbance.

## Retirement Ratio

### EPA Definition:

Factor applied to pollutant reduction credits to accelerate water quality improvement. The ratio indicates the proportion of credits that must be purchased in addition to the credits needed to meet regulatory obligations. These excess credits are taken out of circulation (retired) to accelerate water quality improvement.

### USDA Definition:

A trading ratio that discounts each credit to ensure that a trade results in a net improvement of water quality. The states' definitions vary.

## Reverse auction

### USDA Definition:

A type of auction in which the role of the buyer and seller are reversed, with the primary objective to drive purchase prices downward.

## Riparian

#### USDA Definition:

Pertaining to or situated on or along the bank of a stream or other body of water.

#### Riparian buffer

##### USDA Definition:

A strip of vegetation along the bank of a body of water which slows the rate of flow of runoff from adjoining uplands, causing sediment and other materials to fall out onto the land before the runoff enters and pollutes the body of water.

#### Riparian forest buffer

##### USDA Definition:

Land that has been established or has natural stands of hardwood and/or conifer trees along waterways.

#### Riparian rights

##### USDA Definition:

The entitlement of a land owner to certain uses of water on or bordering the property, including the right to prevent diversion or misuse of upstream waters (generally a matter of state law).

#### Risk

##### USDA Definition:

The likelihood that adverse ecological effects or human health effects may occur or are occurring as a result of exposure to one or more stressors.

#### Risk-benefit analysis

##### EPA Definition:

When risks and benefits are expressed in monetary terms, this is effectively a benefit-cost analysis.

##### USDA Definition:

A formal comparison of the short- and long-term risks to the overall societal benefits of an activity, chemical use or technology.

#### Risk and Viability

##### EPA Definition:

The process of deciding whether and how to manage risks. Risk management requires consideration of legal, economic and behavioral factors, as well as ecological, human health and welfare effects of each decision/management alternative. Management may involve regulatory and

non-regulatory responses.

**USDA Definition:**

A site's likelihood to continue supporting ecosystem service benefits over time. In a world of invasive species, land conversion, and climate change, the long-term viability of a particular project is paramount. Risk and viability can be assessed by looking at surrounding road densities, population growth rates, legal protection of the land, disease, genetic diversity, etc.

**Risk management**

**EPA Definition:**

A formal comparison of the short- and long-term risks to the overall societal benefits of an activity, chemical use or technology.

**USDA Definition:**

The process of deciding whether and how to manage risks.

**Safe Harbor Agreement**

**Fish & Wildlife Service Definition:**

A formal agreement between the USFWS or NMFS and one or more non-Federal landowners in which landowners voluntarily manage land for listed species for an agreed amount of time providing a net conservation benefit to the species at the end of the time period and, in return, receive assurances from the Federal agency that no additional future regulatory restrictions will be imposed. Under the Safe Harbor Policy, "net conservation benefit" is defined as contributing to the recovery of the listed species covered by the SHA.

**Seller**

**USDA Definition:**

Nonpoint sources (or can be point sources in some cases) that reduce pollution above and beyond their baseline requirements, can generate credits that can be sold to point sources, if their permits allow, that exceed their cap and cannot reasonably reduce their impact further.

**Service Area**

**Fish & Wildlife Service Definition:**

The geographic area within which habitat credit trading occurs; the geographic area within which impacts to covered species' habitat can be offset at a particular habitat offset site as designated in the Instrument.

**USDA Definition:**

The area within which habitat or species loss can be offset by a credit from a specific location. It is determined by the type of resource that is being protected, any physical limitations for creating offsets, and administrative/political boundaries.

#### Silvopasture

##### USDA Definition:

Alley cropping integrated into working pasture that is grazed by domestic animals.

#### simulation modeling

##### USDA Definition:

A type of dynamic modeling in which the behavior of a system of interacting components is observed over time.

#### Single-credit market

##### USDA Definition:

A market that allows for the generation and trade of one credit type.

#### Site Selection

##### USDA Definition:

Prioritize and rank the best places to implement conservation projects and avoid impacts.

#### Smart growth

##### EPA Definition:

Relating to human society and its members.

##### USDA Definition:

Generally, public policies that selectively use financial and other public incentives to influence the density and pattern of new development. The goal of Smart Growth is to encourage development in specified areas (typically where infrastructure, such as roads, schools and public utilities, are already in place) and discourage (not prohibit) it in other areas.

#### Social benefit

##### USDA Definition:

Relating to human society and its members.

#### Social network or welfare

##### EPA Definition:

Human well being, measured at some aggregate level. In the typical economic context, the sum of individual benefit

measures within a benefit-cost framework, where individual welfare is often measured by a person's willingness to pay.

USDA Definition:

A decision support framework for representing the people involved in a decision making process and the relationships between them (stakeholders), such as who has authority to make decisions and with whom they work or interact. Social relationships typically are depicted in terms of nodes (individuals within networks) and ties (relationships between the individuals).

Social welfare function

USDA Definition:

A function that establishes criteria under which efficiency and equity outcomes are transformed into a single metric, making them directly comparable. A potential output of such a function is a ranking of policy outcomes that have different aggregate levels and distributions of net benefits. A social welfare function can provide empirical evidence that a decision/management alternative yielding higher net benefits, but a less equitable distribution of wealth, is better or worse than a less efficient alternative with more egalitarian distributional consequences.

Society

EPA Definition:

A group of people having a distinctive cultural and economic organization, as well as the manner or condition in which they live together for their mutual benefit. By extension, society denotes the people of a region or country, sometimes even the world, taken as a whole.

Soil conservation district

USDA Definition:

A legal subdivision of state government, with a locally elected governing body, responsible for developing and carrying out a program of soil and water conservation within a geographic boundary, usually coinciding with county lines. The nearly 3,000 districts in the United States have varying names (soil conservation districts, soil and water conservation districts, natural resources districts, resource districts, resource conservation districts).

Soil health markets

#### USDA Definition:

No specific "Good Soil Stewards" appear to be active as their own market, but certainly soil management is key to any other environmental market. With all of the soil health indices and tests available, it is important not to rule out the possibility of an environmental credit market or label specifically addressing soil health has been developed or is under development. Soil health management practices could be developed to generate water quality or greenhouse gas offset credits.

#### Sole-source offsets

##### USDA Definition:

Structure where sources are allowed to increase pollution at one point if they reduce pollution elsewhere (either on-site or off-site).

#### spatial modeling

##### USDA Definition:

Modeling in which spatial units are explicitly included. Modeling with geographic information systems (GIS) is by definition spatial modeling.

#### Species

##### Fish & Wildlife Service Definition:

Includes any species, subspecies of fish, or wildlife, or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.

#### Species-based metrics

##### Fish & Wildlife Service Definition:

There are two general types of species-based metrics. In the first, most species-based metrics focus on the ecosystem characteristics that define ideal or optimum habitat for one or more target species.

#### Species attributes

##### Fish & Wildlife Service Definition:

Many metrics start with an umbrella or keystone species (or group of species) and define optimal habitat for those species. In addition to the indicators already described, species-specific indicators may look at presence/absence of a particular species, population numbers, and features such as nesting structures or refugia that support species viability.

## Species Conservation Plan

### Fish & Wildlife Service Definition:

A plan developed by Federal, state, tribal, and/or local government agencies or appropriate non-governmental organizations, in consultation with relevant stakeholders, for the specific goal of conserving one or more at-risk species. A species conservation plan addresses the status, needs and threats to a species and usually includes recommended conservation measures for the conservation/recovery of the species. Examples of species conservation plans include conservation frameworks (see “Conservation Framework” above) and conservation plans developed as part of a Habitat Conservation Plan.

## Species diversity

### USDA Definition:

An ecological concept incorporating both the number of species in a particular sampling area and the evenness with which individuals are distributed among the various species.

## Stacked services or credits

### EPA Definition:

Stacking is when credits for multiple services are generated from a single site and sold in separate markets (e.g., carbon, nutrients, habitat credits).

### USDA Definition:

Payments for multiple ecosystem services provided by a given land area wherein the land owner is paid separately for different services, sometimes from different programs. Stacking often allows land owners to maximize income from conservation.

## Stakeholder

### EPA Definition:

Generally, an individual, group or organization with an interest in, or potentially impacted by, the outcome of a policy or management choice.

## Stakeholder perception

### USDA Definition:

A stakeholder’s knowledge or beliefs about an issue.

## State

### EPA Definition:

A State department of environmental quality or protection

and often the agent of the EPA when implementing the CWA and CAA.

Fish & Wildlife Service Definition:

A State department of fish and wildlife or natural resources and often the agent of the Fish & Wildlife Service when implementing the ESA.

USDA Definition:

A State department of agriculture or forestry and works closely with private landowners to implement conservation practices to generate credits and offsets in a market.

State species of conservation concern

Fish & Wildlife Service Definition:

Species identified by State fish and wildlife agencies in State Wildlife Action Plans or other State agency conservation plans that include species identified as being in greatest need of conservation. (The criteria for identifying such species vary across States; consult individual State Wildlife Action Plans for specifics.).

stochastic modeling

USDA Definition:

Modeling in which there is randomness in some aspect of the model.

Stream Mitigation Banking

EPA Definition:

Works much like wetland mitigation banking (see above) except that the banks and credits are associated with stream restoration projects rather than wetland restoration projects. And instead of acres of wetlands created, enhanced, or restored, mitigation is measured in "linear feet" of stream banks "created, enhanced, or restored".

Stressor

EPA Definition:

A physical, chemical, or biological by-product of human activity that can impact entities, their attributes or ecological processes adversely (see adverse ecological effect), including past activities that leave ecosystems in a degraded condition.

stressor-response model (now considered obsolete and replaced by DPSIR Framework)

USDA Definition:

An empirical or model-based description of the relationship

between the strength, magnitude or other quantity of a stressor and some characteristic of an ecological system. Typically, a stressor-response function is used to describe expected changes in the response of an ecological system to changes in the stressor.

#### Structural conservation practice

##### USDA Definition:

A constructed facility or measures used to help control runoff quantity and improve runoff quality. Examples include storage structures, vegetative filter strips, irrigation tail-water recovery systems, and sediment control basins.

#### Subsidy

##### USDA Definition:

A direct or indirect payment or other benefit granted by a government for the production or distribution (including export) of a good or to supplement other services. Generally, subsidies are thought to be production and trade distorting, resulting in an inefficient use of resources.

#### Substitutability

##### USDA Definition:

The degree to which two or more goods (or services) can be substituted for one another.

#### Substitute goods and services

##### EPA Definition:

Goods or services that can be substituted for a particular good or service, to fulfill the same or similar function. For example, similar sites may serve as substitutes for a particular recreational use; or technological solutions, such as water purification systems, may serve as substitutes for purification of water by forests.

#### Sulfur dioxide (SO<sub>2</sub>)

##### USDA Definition:

One of a group of highly reactive gasses that are known as "oxides of sulfur." The largest sources of SO<sub>2</sub> emissions are from fossil fuel combustion at power plants (73%) and other industrial facilities (20%). Smaller sources of SO<sub>2</sub> emissions include industrial processes such as extracting metal from ore, and the burning of high sulfur containing fuels by locomotives, large ships, and non-road equipment. SO<sub>2</sub> is linked with a number of adverse effects on the

respiratory system. Sulfur dioxide is a colorless gas with a pungent, irritating odor and taste, and is highly soluble in water forming weakly acidic sulphurous acid. When sulfur dioxide combines with the oxygen (O<sub>2</sub>) in the air some sulfur trioxide is slowly formed. Sulfur trioxide rapidly combines with water to produce sulfuric acid. The lifespan of sulfur oxides in the atmosphere is from 4 to 10 days.

## Supply

### EPA Definition:

Generally, the total amount of a good or service available for purchase (or use for nonmarket goods and services). Along with demand, supply is one of the two key determinants of market prices.

## Supporting services

### USDA Definition:

A category of “ecosystem services” as described by the Millennium Ecosystem Assessment. Supporting services are the underlying processes that maintain the conditions for life on Earth, such as nutrient cycling, soil formation, and primary production.

## Surface runoff

### USDA Definition:

Precipitation, snow melt, or irrigation water in excess of what can infiltrate the soil surface and be stored in small surface depressions; a major cause of erosion and transporter of nonpoint source pollution.

## Sustainable agriculture and forestry

### USDA Definition:

A land management system that reduces pollution, optimizes financial sustainability, and improves efficiency by enhancing natural resource processes (such as nutrient cycles, nitrogen fixation and pest-predator relationships) and improving the match between cropping, agronomic, water use management, and agroforestry practices on the one hand and the productive potential and natural features of the land on the other.

## Sustainable development

### EPA Definition:

Development which meets the needs of the present without compromising the ability of future generations to meet their own needs.

### Sustained yield

#### USDA Definition:

An output of renewable resources that does not impair the productivity of the resource; it implies a balance between harvesting and incremental growth or replenishment.

### Swampbuster program

#### USDA Definition:

A provision of the Food Security Act that withholds Federal farm program benefits from any person who converts or modifies wetlands for agricultural purposes.

### system dynamics modeling

#### USDA Definition:

An approach to understanding the behavior of complex systems over time using stocks and flows of substances, and feedback loops and time delays that affect the behavior of the entire system.

### Take

#### Fish & Wildlife Service Definition:

As defined in the Endangered Species Act (ESA), means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect a federally listed species, or to attempt to engage in any such conduct.

### Target load

#### USDA Definition:

The amount of pollutant or physical condition that will not result in a water quality violation.

### Technology-Based Effluent Limitation (TBEL)

#### Fish & Wildlife Service Definition:

A minimum level of treatment required in an NPDES permit based on available treatment technologies. For industrial (and other non-municipal) facilities, technology-based effluent limits are derived by: A) using national effluent limitations guidelines and standards established by EPA, and/or B) using best professional judgment (BPJ) on a case-by-case basis in the absence of national guidelines and standards. For municipal facilities, technology-based effluent limits are derived from national secondary treatment standards.

#### USDA Definition:

A permit limit for a pollutant that is based on the

capability of a treatment method to reduce the pollutant to a certain concentration.

### Temporal Loss

#### Fish & Wildlife Service Definition:

The time lag between the loss of habitat functions caused by project impacts and the replacement of habitat function at the habitat offset site. Higher trading ratios may be needed to account for temporal loss in some habitat credit trading systems.

### Third parties

#### USDA Definition:

Those entities other than government agencies and market participants—such as aggregators, consulting firms, soil and water districts, and environmental organizations—that help administer trading programs.

### Threat status

#### USDA Definition:

A simple but highly integrated indicator of vulnerability. It contains information about past loss (of numbers and / or habitat), the number and intensity of threats, and current prospects as indicated by recent population growth or decline. One much used example of a threat status classification system is the IUCN Red List of Threatened Species.

### Threatened Species

#### Fish & Wildlife Service Definition:

Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Can be a state or federal designation.

### Threshold (or tipping point)

#### EPA Definition:

An abrupt change in ecological, social or economic systems in space or time, often not easily reversed (and sometimes never reversible) and often with persistent consequences.

#### Fish & Wildlife Service Definition:

Boundary conditions between two or more different states. In the context of biodiversity offsets, one of the key thresholds' considered is the level beyond which impacts on biodiversity may no longer be capable of being offset.

## Total economic value (TEV)

### EPA Definition:

The sum of all relevant use values and nonuse values for ecosystem goods and services resulting from a change in a given ecosystem (i.e., the full social benefits). This is distinct from the asset value (sometimes referred to as "total value") of an entire ecosystem (e.g., the value of an entire wetland). Instead, it is the total value of a marginal change to that ecosystem.

## Total Maximum Daily Load (TMDL)

### EPA Definition:

The sum total of individual waste load allocations (WLAs) for point sources and load allocations (LAs) for non-point sources and natural background. If the receiving water body has only one point source discharger, the TMDL is the sum of that point source's WLA plus the LAs for any non-point sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per unit time, toxicity, or other appropriate measure. If conservation practices or other non-point source pollution controls make more stringent load allocations practicable, then waste load allocations can be made less stringent. TMDL process provides for non-point source control tradeoffs .

### USDA Definition:

A TMDL specifies the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards and allocates pollutant loadings among point and nonpoint pollutant sources. A TMDL is the sum of the individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background with a margin of safety.

## Trade Agreement

### EPA Definition:

Document that specifies the overall trading policies that trading parties must follow to participate in trading. The NPDES permitting authority would approve the trade agreement and could either reference the terms of the trade agreement in the NPDES permit or include the trade agreement as part of the permit for each point source participating in a trade.

## Trading Limit

### EPA Definition:

Level of control on the pollutant discharge the point source seller chooses to achieve, through technology or BMPs, beyond that facility's baseline.

#### Trading ratio

##### USDA Definition:

A ratio that accounts for the distance between buyer and seller, the different forms of pollutant discharged from buyer and seller (e.g. nitrogen and organic nitrogen), and the uncertainty associated with conservation practice effectiveness in establishing habitats, wetlands, controlling pollutants. It determines how much of a reduction in pollution or compensation of impact achieved by a seller can be used to offset the pollution or impact by a buyer.

#### Tragedy of the commons

##### USDA Definition:

When privately held natural resources are exhausted by rational, utility-maximizing individuals rather than conserved for the benefit of all.

#### Transaction costs

##### USDA Definition:

Costs associated with verifying and registering, the credits generated by the nonpoint sources, finding the buyers and/or sellers of the credits, facilitating and securing the transactions, and tracking the retirement of the credits sold.

#### Triple bottom line

##### USDA Definition:

An accounting system that considers more than the traditional financial bottom line, such that in addition to financial outcomes, an organization's performance is measured against its social and environmental impacts and responsibilities.

#### True-up period

##### USDA Definition:

The designated time period when point sources may purchase credits to meet the previous year's obligations.

#### Uncertainty

##### EPA Definition:

A limit to knowledge where it is impossible to describe an

existing state or future outcome exactly. Uncertainty has three primary components: 1) variability (also called “heterogeneity” or “stochasticity”), a component of all biological systems, which represents actual differences in the value of a parameter or attribute among units in a (statistical) population; 2) ignorance, which represents a lack of knowledge about the true value of a parameter that can result from inadequate or imperfect measurement; and 3) error, which results from the use of the wrong methods, models or data in analysis activities.

#### Uncertainty ratio

##### USDA Definition:

Trading ratios that account for the variability in nutrient removal efficiencies for agricultural BMPs that may be based on scientific uncertainty or random weather fluctuations.

#### United Nations Framework Convention on Climate Change (UNFCCC)

##### USDA Definition:

A treaty signed in 1992 by 165 countries (including the ); it took effect March 1994. The Convention set a target of stabilizing greenhouse gas concentrations in the atmosphere to a level that would prevent dangerous anthropogenic interference with the climate system. A framework was established whereby specific actions could be agreed to by the signatories.

#### United States Climate Action Partnership (USCAP)

##### USDA Definition:

Partnership between several energy industry leaders that has taken the unprecedented step of lobbying the Federal government to take decisive legislative action to implement plans on reducing GHG emissions.

#### Upland forest

##### USDA Definition:

Land that has been established or has natural stands of hardwood and/or conifer trees in upland areas of the landscape.

#### Urban area

##### USDA Definition:

As defined by the U.S. Census Bureau, an area with more than 1.5 people per acre.

## Use value

### EPA Definition:

The value of a good or service derived from its direct or indirect use (as opposed to nonuse value).

## Utility

### EPA Definition:

The satisfaction of wants and needs obtained from the use or consumption of goods and services (including “passive” uses).

## Validation

### USDA Definition:

The process through which a project developer receives confirmation that their project is eligible to track benefits and potentially sell credits or offsets.

## Validator

### USDA Definition:

An individual or agency authorized to validate projects as eligible for credit or offset generation.

## Valuation

### EPA Definition:

Generally, the process of estimating the worth, merit or desirability of something. Specifically with respect to ecological benefits, the quantification of those benefits.

## Value

### EPA Definition:

Generally, the worth, merit, or desirability of something assessed in terms of how much of one good or service a person is willing to give up to gain more of another good or service. It can be expressed quantitatively (for example, in monetary terms) or qualitatively.

## Value system

### USDA Definition:

The set of cultural and moral values (in the general sense) held by a person or a group.

## Variability

### USDA Definition:

Represents actual differences in the value of a parameter or attribute among units in a (statistical) population and can contribute to uncertainty.

## Vegetative condition

### USDA Definition:

Vegetation is often one of the most visible indicators of the quality of habitat. Attributes such as percent cover, species composition, age classes of different strata, and other factors provide a lot of information about habitat condition. Most vegetation indicators are benchmarked to optimal or desired conditions (e.g. historic vegetation or current reference condition).

## Verification

### USDA Definition:

The act of reviewing, inspecting, testing, checking, auditing, or otherwise establishing and documenting whether items, processes, services, or documents conform to specified requirements. In the case of a biodiversity offset, verification could involve establishing that the planned and predicted biodiversity outcomes of the offset have been achieved. Verification is often undertaken by a third party (an independent institution or individual).

## Verified Emissions Reductions (VERs)

### USDA Definition:

Verified Emissions Reductions (VERs) are reductions in emissions of greenhouse gases that have been officially verified by a third-party verifier; usually verifiers approved by CDM Executive Board. VERs are often seen as the currency of the voluntary carbon market, as opposed to CERs (Certified Emissions Reductions), which are the currency of the Kyoto Protocol's Clean Development Mechanism and EUAs (European Union Allowances), which are the currency of the EU ETS.

## Verifier

### USDA Definition:

A person or institution that confirms actions taken produce the desired ecosystem services necessary for credit or offset generation.

## Voluntary Markets

### USDA Definition:

Voluntary markets are markets in which buyers and sellers engage in transactions on a voluntary basis (i.e., not because they are forced to trade by regulation). Generally businesses and/or individual consumers engage in voluntary

markets for reasons of philanthropy, risk management, and/or in preparation for participation in a regulatory market. Point sources and other commercial interests are increasingly anticipating that they may be regulated at some future point for their environmental impacts that are not currently captured under existing federal or state laws. Many are deciding that it is cost-effective to invest in private conservation measures now. It may prevent the need for future regulation, and they may reap greater public relations benefits through their voluntary investments. These commercial interests work in partnership with environmental non-governmental organizations (NGOs) to identify and verify the sources of environmental credits. Federal and state agencies frequently collaborate on these projects.

#### Vulnerability

##### USDA Definition:

Susceptibility to injury and attack. When considering the resilience and vulnerability of ecosystems and habitats, the likelihood of and strategies for addressing extreme weather events and changes, pests, diseases, exotic and invasive species, development pressures, and uses on contiguous parcels need to be factored into conservation plans.

#### Waste load allocation

##### USDA Definition:

The proportion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution.

#### Water Quality Based-Effluent Limitation (WQBEL)

##### EPA Definition:

An effluent limitation determined by selecting the most stringent of the effluent limits calculated using all applicable water quality criteria (e.g., aquatic life, human health, wildlife, translation of narrative criteria) for a specific point source to a specific receiving water for a given pollutant or based on the facility's wasteload allocation from a TMDL.

#### Water Quality Criteria (WQC)

##### EPA Definition:

Elements of state water quality standards, expressed as constituent concentrations, levels, or narrative

statements, representing a quality of water that supports a particular use. When criteria are met, water quality will generally protect the designated use.

#### Water Quality Standard (WQS)

##### EPA Definition:

Provisions of state or federal law that consist of a designated use or uses for the waters of the United States, water quality criteria for such waters based on such uses, and an antidegradation policy.

#### Water quality trading

##### USDA Definition:

Water quality trading is a type of environmental credit trading that includes nutrient and sediment trading, and is sometimes used synonymously. Sediment trading can be mandatory, but harbor managers could work cooperatively with land managers to pay them for sediment control rather than paying for periodic dredging.

#### Water quantity banking or water banking

##### USDA Definition:

The practice of foregoing water deliveries during certain periods, and banking either the right to use the foregone water in the future, or saving it for someone else to use in exchange for a fee or delivery in kind. Usually used where there is significant storage capacity to facilitate such transfers of water. Water banking is typically regulated and managed at the state level.

#### Watershed

##### Fish & Wildlife Service Definition:

A land area that drains to a common waterway, such as a stream, lake, estuary, wetland, or ultimately the ocean.

##### USDA Definition:

A geographic area in which water, sediments, and dissolved materials drain to a common outlet, such as a point on a larger stream, a lake, an underlying aquifer, an estuary, or an ocean. Watershed boundaries can transcend local, state, and national political boundaries.

#### Weighting

##### USDA Definition:

The fractional values used to reflect the relative importance of each of several attributes. In the context of biodiversity offsets, weights are used to ensure the

various attributes (proxies) measured, when combined, better reflect the health of the overall ecosystem. Attributes reflecting many important ecological processes (e.g. light, water use, temperature, food, shelter) for many species will be strongly weighted. Attributes that only influence one or a few processes (e.g. food) affecting one or a few species should be weighted less. The individual weights for all attributes should add up to 1 (or 100%).

#### Wellhead protection area

##### EPA Definition:

A surface and subsurface land area regulated to prevent contamination of a well or well-field supplying a public water system.

#### Western Climate Initiative (WCI)

##### USDA Definition:

Comprised of Arizona, California, New Mexico, Oregon, and Washington, these states have signed an agreement directing their respective states to develop a regional target for reducing greenhouse gas (GHG) emissions, participate in a multi-state registry to track and manage GHG emissions in the region, and develop a market-based program to reach the target. The WCI Partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. In November 2011, the WCI formed Western Climate Initiative, Inc. (WCI, Inc.), to provide administrative and technical services to support the implementation of participating state GHG trading programs. It also includes the Canadian provinces of British Columbia, Ontario, Quebec and Manitoba. They are working together to develop and harmonize their emissions trading program policies.

#### Wetland

##### EPA Definition:

An area of predominantly hydric soils that can support a prevalence of water-loving plants, known as “hydrophytic vegetation.” Transitional between terrestrial and aquatic systems are wetlands typified by a water table at or near the surface, or the land is covered by shallow water at least part of the year. Types of wetlands are distinguished by water patterns (the frequency and length of flooding) and location in relation to upland areas and water bodies. Wetlands perform many functions including wildlife and fish

habitat, storage and conveyance of flood waters, sediment and pollution control, and recreation.

USDA Definition:

Under the Food Security Act of 1985, land that - (A) has a predominance of hydric soils; (B) is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions; and (C) under normal circumstances does support a prevalence of such vegetation.

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Wetland banks

USDA Definition:

Wetlands that have been created, restored, enhanced, or preserved, and act as potential offsets for wetlands that will be converted to other purposes.

Wetland mitigation banking or trading

EPA Definition:

Whenever a developer wants to build on or near a wetland, they must obtain a permit from the US Army Corps of Engineers (ACE). Before issuing the permit, the ACE assesses whether the damage is necessary. If the damage is necessary, ACE requires that the developer minimize any potential harm to the wetland, and where damage is unavoidable, the developer is required to compensate (or mitigate) for this damage. Developer can restore a former wetland, enhance a degraded wetland, create a new wetland, preserve an existing wetland, buy "wetland credits" from a mitigation bank, or pay an in-lieu fee provider to undertake the mitigation.

Fish & Wildlife Service Definition:

A site, or suite of sites, where aquatic resources (e.g., wetlands, streams, riparian areas) are restored, established, enhanced, and/or preserved for the purpose of providing compensatory mitigation for impacts to similar resources authorized by Department of Army Corps of Engineers (ACE) permits. In general, a wetland mitigation bank sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the wetland mitigation bank sponsor. The operation and use of a wetland mitigation bank are governed by a mitigation banking instrument.

USDA Definition:

There are two main drivers to wetland trading (banking).

The first is Section 404 of the CWA under an ACE permit that requires the restoration or creation of wetlands to offset the wetlands that will be destroyed. The second driver is the Swampbuster provision of the Farm Bill, which mandates that farmers obtain valid wetland offsets for any wetland acreage they begin to farm in order to retain eligibility for agricultural program payments. Producers that require wetland offsets are potential buyers of wetland credits. These drivers along with the national goal of “no net loss” of wetlands effectively impose a cap on wetland loss.

#### Wetland mitigation banking or trading ratio

##### EPA Definition:

When applied to wetland mitigation banking, a trading ratio may be established to account for the uncertainty associated with the effectiveness of establishing a wetland with the loss of wetlands and wetland function due to real estate development or road construction. It determines how much compensation of impact achieved by a seller is permitted to be used to offset the wetland impact of a buyer in the form of a ratio.

#### Wilderness

##### USDA Definition:

An area of pristine federally-owned public lands where the impact of humans is largely unnoticeable, and which is managed to minimize any impacts. Federal land managed as wilderness often has been designated by Congress as a unit in the Wilderness Preservation System.

#### Wildland-urban interface (WUI)

##### USDA Definition:

Lands within and adjacent to (usually within ½ mile from) communities that abut or are surrounded by wildlands potentially subject to wildfires.

#### Wildlife corridor

##### USDA Definition:

A relatively narrow passage between two larger areas that provide habitat for wildlife.

#### Willingness to accept

##### USDA Definition:

The amount of money (or other goods) that a person must be paid in order to accept the loss of something else.

Willingness to pay

USDA Definition:

The amount of money (or other goods) that a person is willing to give up to get something else.