Regenerative Water Credit Classes

v03

waterDAO

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Disclaimer

This document has been prepared for informational and procedural purposes only. Its contents are not intended to constitute legal advice. Water Information Certification Systems DAO LLC, (waterDAO) maintains the right to amend or depart from any procedure or practice referred to in this guideline as deemed necessary.

Definitions

1. Approved Activities - the set of water treatment processes eligible activities for a given Water Credit Class.
2. Monitor - an individual or organization that is contracted to measure the benefits / indicators defined in a given Credit Class based on the requirements in the Approved Methodology.
3. Verifier - an individual or organization that is contracted to execute the verification requirements stipulated in a given Credit Class.
4. Project Proponent - the project developer or land steward that is applying to register a project on the registry.
5. Project Developer - the individual or organization that is in charge of managing the project and is the main point of contact with the waterDAO. The Project Developer can be the land steward or a third party.
6. Land Steward - the individual or organization that is performing the work on the ground. This can be a farmer, rancher, conservationist, forester, fisherman, etc.
7. Land Owner - the individual or organization that holds title to the land where the project is occurring. This can be the Land Steward or a third party that rents the land to the Land Steward.
8. Project Registration Date - the official date when a project commences.
9. Project Plan - the template that each project proponent fills out in order to register aproject on the registry.
10. Co-Benefit - the Intergovernmental Panel on Climate Change (IPCC) defines co-benefits of climate change mitigation as the positive benefits related to the reduction of greenhouse gases. We define it more broadly as a benefit that is achieved along with the main indicator tracked and promoted in a given credit - which need not be reduction of GHG necessarily. For example a biodiversity credit might mainly promote the protection of a certain species and at the same time offer co-benefits, such as protection of water resources.
11. Verification - a systematic, independent, and documented assessment by a qualified and impartial third party of the benefits' assertions for a specific reporting period.
12. Crediting Term - is the finite length of time for which a Project Plan is valid, and during which a project can generate credits.
13. Project Activity - the applied management or conservation practice that a project proponent is undertaking in order to improve the benefits tracked in a given Credit Class.
14. Project Initial Monitoring Date - the date when the baseline measurement was performed.
15. Program Guide - the main document specifying the rules and procedures of the Water DAO.
16. Established Registries - other credible registries in the carbon market that the waterDAO recognizes and accepts for certain purposes such as onboarding verifiers. These registries are:
    a. VCS (Verra)[1]

[1] https://verra.org/

Acronyms

- GHG - Greenhouse Gases
- IPCC - Intergovernmental Panel on Climate Change (IPCC) is an intergovernmental body of the United Nations that is dedicated to providing the world with objective, scientific information relevant to understanding the scientific basis of the risk of human-induced climate change
- WD - Water Information Certification Systems DAO LLC, the entity developing and operating the Water DAO
- SDG - the UN Sustainable Development Goals

1. Introduction

WaterDAO is a decentralized, web-3 based autonomous organization for certifying water generation and issuing water credits. WaterDAO is composed of water experts, technologists, engineers and advocates working towards a resilient water system.

The purpose of WaterDAO is to classify and certify new sources of water in a transparent information system according to their beneficial attributes.This ensures the generation of additional water has an established framework and can be properly valued, evaluated and verified.

100% of proceeds go towards research for further promoting water system sustainability, security and resiliency.

RH2O stands for Regenerative Water. It is a digital water contract representing the beneficial attributes of regenerative water sources.

Every RH2O water contract represents one cubic meter (1 m^3) of water and certifies that the water was generated by a qualified water generating facility.RH2O can only be created when a unit of qualified water is produced and every RH2O contract is backed by its corresponding unit of water.

Any holder of RH2O is the verified owner of the beneficial attributes of that unit of water and can use the contract as a water credit, similar to a renewable energy certificate (REC), in order to offset water from the water utility.

RH2O exists in one of two states; active or retired. An active contract can be transferred, traded or sold, however, once it is used to offset water it is permanently retired and recorded on the Regen blockchain.

2. Credit Class Overview

There are three Credit Classes of RH20 based on the recommended end use for the treated water as determined by the TDS of the water.

- Potable Water Class: TDS less than 400 ppm and sterilized
- Agriculture Class: TDS less than 700 ppm and healthy for the environment.
- Industrial Class: Water of any TDS with a pre-approved buyer or application.

2.1. Primary Indicator

The primary indicator that a unit of RH2O qualifies within one the three Water Credit Classes, by following the pre approved methodology for generating the RH2O.

2.2. Secondary Indicators

The secondary indicators are based on the ability of the methodology to meets sustainability thresholds based on the Water Treatment Parameter Scale (WTP) as defined in section 3.

3. Water Treatment Parameter Scale

3.1. **Water Quality Improvement**

(Max 30 Points)

This is the most important parameter and is therefore weighted higher than the rest. It seeks to value how far up the treatment scale the technology is able to move the water.
The water is categorized into eight types of fluid and assigned an index to each of the categories based on the TDS.

Index	Fluid Type	TDS Range
70	Produced Water	> 200,000 PPM
60	Ultrasaline	200,000 – 75,000 PPM
50	Hypersaline	75,000 – 35,000 PPM
40	Highly Saline (sea water)	35,000 – 10,000 PPM
30	Brackish Water	10,000 – 700 PPM
20	Agricultural Grade	700 – 400 PPM
10	Potable	< 400 PPM
0	Drinking Water	< 400 PPM and Sterilized

The assigned value to this parameter is the difference between the starting fluid's index and the treated water's index.

For example, if the producer starts with Highly Saline water, Sea water, for instance, and can output agricultural grade water, the value for this parameter would be calculated as:

	Index
Source Water: Highly Saline	40
Output Water: Agriculture	20
	−−
Parameter Value	20

3.2. **New, Novel or Advanced Technology**

(Max 20 Points)

This parameter seeks to reward innovative technology or new applications of existing technology. The value of this parameter would be adjusted once the technology matures and used for subsequent projects.

The rating will be subjectively assigned by the DAO evaluation committee.

3.3. Renewable Energy or Carbon Offset

(Max 10 Points + Bonus for Net GHG Reductions)

Considerations:

a) Amount of energy from renewable sources.

b) Amount of carbon credits purchased to offset the project's carbon footprint.

c) Projects that create a net decrease in non-renewable energy or greenhouse gases by replacing previous treatment processes may be eligible to use the difference as an offset credit for other projects they are involved with or be compensated by other companies within the WaterDAO needing to offset some of their emissions.

The rating is based on the percentage of treated renewable energy utilized..

3.4. Project Region and Environmental Impacts

(Max 20 Points)

This parameter rewards areas of greatest need and or used to alleviate water-related environmental stresses. There are three main components for this parameter.

a) **Project Region**
Is the project located in an area that has significant water issues.

b) **End User Produces Beneficial Environmental Impact**
Does the treated water produce an added environmental impact, such as restoring wetlands or creating a carbon sink? The benefit needs to be something more than just reducing the amount of water taken from an aquifer, as all projects should have that component.

c) **Uses existing Water Infrastructure or Distribution Networks**
Will the treated water be able to use existing water infrastructure or be co-located with the end user? If not, how far does the water need to be transported and by what means?

The rating will be subjectively assigned by the DAO evaluation committee.

3.5. Waste Stream Management

(Max 20 Points)

a) **Recovered Water** (Max 10pt)
The percentage of water that meets the RH2O class and therefore does not need to be disposed of as a waste product.

b) **Beneficial Byproduct from Treatment** (Max 10pt)
This parameter is designed to incentivize the innovator to extract value from the waste stream, such as commercially valuable Salts, Minerals and Metals.

c) **Toxic Elements Removed from the Environment** (Bonus)
The previous two categories can never be 100% but bonus points can be given for removing harmful or toxic elements from the environment, such as Arsenic, Barium, Cadmium, Chromium, Lead, Mercury etc.

4. Evaluation Results

4.1. Water Credit Score Chart

Once the applications have been evaluated, the totals will be calculated to determine the quality of the RH2O.

Water Credit Classes - Conceptual Evaluation

Credit Class		POTABLE WATER		AGRICULTURAL		INDUSTRIAL	
Water Source	**Pts**	**Brackish**	**Sea Water**	**Brackish**	**Fracking**	**Mining**	**Fracking**
Water Improvement	**30**						
- Water Source Index		30	40	40	50	60	70
- Water Output Index		0	0	20	20	20	30
- Improvement Points		**30**	**30**	**20**	**30**	**30**	**30**
Novel Technology	**20**						
- New Technology		**0**	**2**	**2**	**5**	**2**	
- New Application		**2**			**3**		**8**
Renewable Energy	**10**						
- Percent Renewable		**6**	**5**	**8**	**6**	**7**	**10**
- Percent Offset		**2**	**5**		**4**	**3**	
- Net GHG Reduction							**5**
Region & Impacts	**20**						
- Project Region		**8**	**7**	**4**	**2**	**3**	**4**
- Distribution		**6**	**8**	**7**	**10**	**10**	**8**
- Beneficial Impact		**0**	**3**	**6**	**6**	**0**	**0**
Waste Management	**20**						
- Percent Recovered		**9**	**8**	**8**	**6**	**5**	**3**
- Beneficial Byproduct		**5**	**8**	**3**	**4**	**1**	**4**
Treatment Score	**100**	**68**	**76**	**58**	**76**	**61**	**72**

5. Project Eligibility

5.1. Eligible Project Activity

The project activity approved by these credit classes is water treatment. There are multiple applications and treatment possibilities; however, the overall objective is to improve the quality of a water source such that it meet one or both of these essential goals:

Healthy Water: Qualitative improvement to the water such that it is healthier for humans, animals or plants.
Examples:

- Brackish water to agricultural grade water.
- Habitat treatment to remove heavy metals or other pollutants.
- Potable water from seawater.
- Water enhancement to better crop yields.

Useful Water: Treating water of marginal utility to a place where it can be employed in an industrial or other application.

- Mining water treated for re-use.
- Sewage water treated for industrial applications.
- Any treatment that reduces groundwater sources for industrial use.

5.2. Eligibility Criteria 1: Ability the meet Credit Class Output Parameters

5.2.1. Potable Water Class:

- TDS less than 400 ppm
- Sterilized
- Suitable for human consumption

5.2.2. Agriculture Class:

- TDS less than 400 ppm
- Suitable for growing crops
- Healthy for the environment

5.2.3. Industrial Class:

- Industrial user willing to accept water

5.3. Eligibility Criteria 2: Ability to meet minimum point threshold

The project must pass the qualitative evaluation process and achieve a score of 60 points or more for the credit class applied for.

5.4. Adoption Date

Projects run under these credit classes will accept an adoption date that goes back up to 1 (one) year prior to Project Registration Date. In order to claim an Adoption Date before the Project Registration Date, the Project Proponent must have maintained clear historical records to that effect, as specified in the Approved Methodology.

5.5. Crediting Term

The crediting term for this credit class is 10 years with an option to renew. Each renewal period will be 10 years and there is no limit to the number of renewals.

6. Project Rules and Regulations

6.1. Approved Methodology

The approved methodologies for these Credit Classes are:

a. Ability to meet the water quality output requirements for the application credit class.
b. Ability to achieve a treatment evaluation score of 60 points or more.

6.2. Aggregate Projects

Aggregate Projects are permitted in this credit class. Rules and regulations outlining the approach to approve aggregate projects should be defined in the approved methodology.

6.3. Project Plan

Any project run using this Credit Class must have an aligned project plan.

7. Water Treatment Requirements

The credit class follows the [GHG accounting requirements defined in the Program Guide]. https://regen-registry.s3.amazonaws.com/Regen+Registry+Program+Guide.pdf

7.1. Additionality

Additionaltiy is required to be accounted for and specified in the approved methodology in this credit class.

The Approved Methodology specifies how the baseline and the water improvement is calculated. Baselines can be static, dynamic or both and additionality can be project or performance based.

7.2. Leakage

Leakage is required to be accounted for and specified in the approved methodology in this credit class.
A complete accounting of all waste materials needs to be submitted.

7.3. Permanence Period

This credit class requires a 25-year permanence period.

7.4. Permanence Approach

This credit class allocates an additional 5% of each credit issuance to cover the risks associated with permanence.

7.5. Buffer Pool

A buffer pool is required for this credit class. The buffer pool required for this credit class is the default set by the program guide.

The Water DAO will apply a default contribution of 10% of each credit issuance (as quantified by the latest monitoring report) to the Buffer Pool. This will be used as an insurance premium for failure to meet their RH2O standards. The buffer funds can be used for, but not limited to:

- Refunding money for tokens that didn't meet the advertised criteria
- Paying for environmental remediation for failures by the producer that cause ecological harm.

Producers are obligated to pay back any funds taken from the buffer pool for any part in which they are liable.

7.6. Verification

Verification is required for this credit class. Verification requirements for the measurement of the primary and secondary indicators must be outlined in the approved methodology.

8. Co-Benefits

Three co-benefits are included in this credit class. The following are approved co-benefits, but alternative co-benefits can be accepted and appended. ...as long as the minimum of three is reached. Each of these co-benefits is monitored by a specific set of indicators which are defined within the methodology for each co-benefit. The list of co-benefits will be continuously reviewed and updated, in order to account for the most relevant indicators assessing the changes in the ecological state in the project area.

8.1. Animal Welfare

The American Veterinary Medical Association defines Animal Welfare as the means by which "an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well-nourished, safe, able to express innate behavior, and if it is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling, and humane slaughter."

8.2. Ecosystem Health

Improve and/or maintain the health of the grasslands ecosystem. Ensure that the project activity is supporting the health of the grasslands in comparison to the surrounding region.

8.3. Soil Health

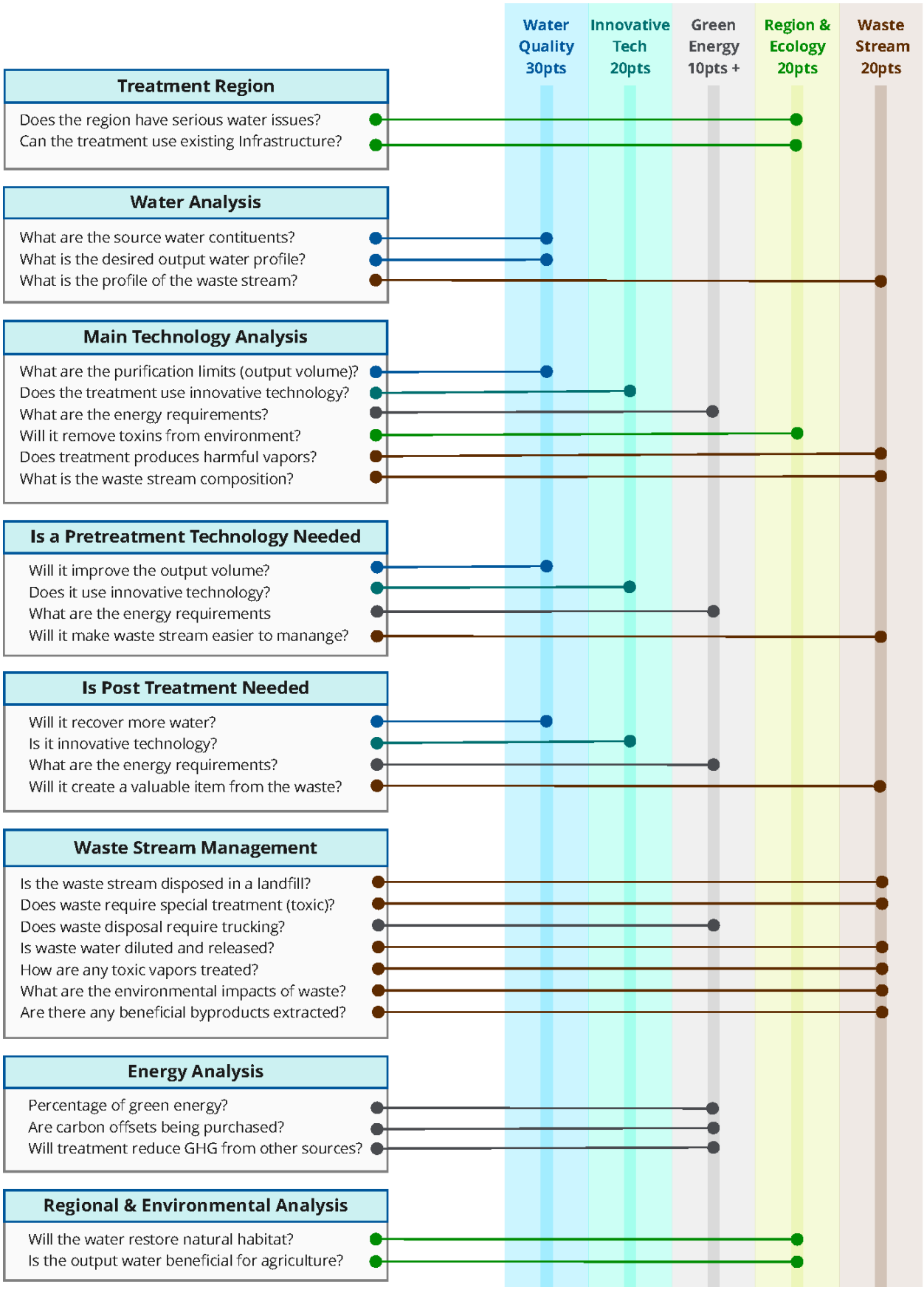
Improve and/or maintain the health of the soil soil health as a result of good land management practices. Healthy, productive soils can positively support a variety of ecosystem services, some of which include improving water infiltration, improving soil structure, reducing potential for soil erosion, and increasing availability of nutrients for plant growth.

9. Methodology

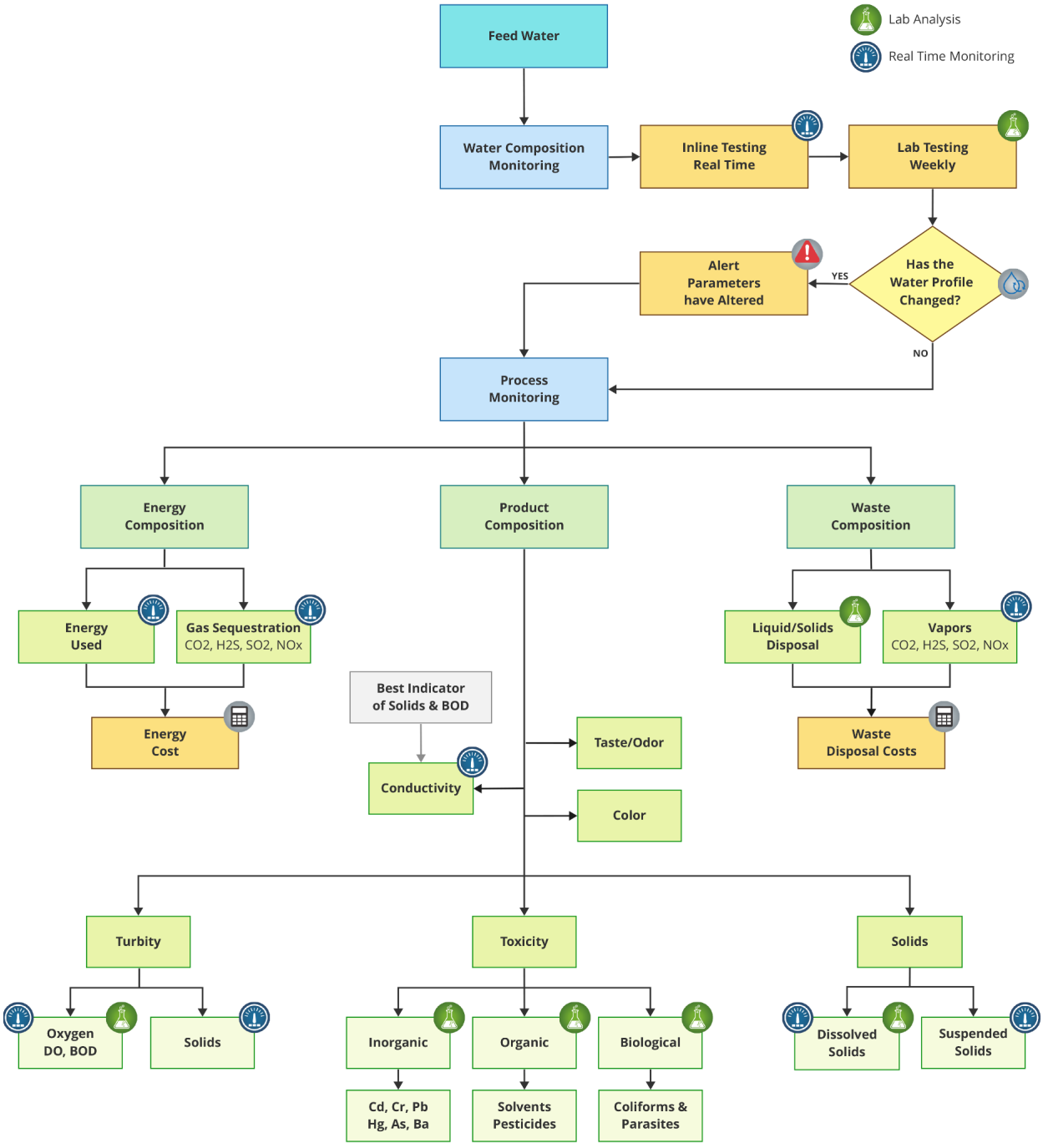
9.1. **Methodology Creation**

When creating the methodology document producers should use the analysis chart on the following page to determine the effectiveness of the treatment and where to focus their energies to achieve a better water treatment score.

WaterDAO Methodology Analysis



Monitoring & Verification Flowchart



Metadata Breakdown

Project Eligibility
Water Output Standard: *Potable, Agricultural, Industrial*
Primary Indicator: *water treated*
Number of Secondary Indicators: *3*
Credit Unit: *1 cubic meter (m^3) water treated*
Water Source:
Water Discharge:
Waste Stream:
Adoption Date:
Crediting Term:

Project Rules and Regulations:
Approved Methodologies: Methodology for Regenerative Water
Aggregate Projects: Permitted
Project Plan: Required [Insert link to project plan here]

Co-benefits:
Approved Co-benefits: soil health, ecosystem health, animal welfare

GHG Accounting:
Percentage of Green Energy:

Verification
Water Volume Verification: Required

Waste Stream Verification: Required

Green Energy Verification: Required

APPENDIX I: Program Guide

Note: If a Regen Program Guide for water hasn't been written it should include these amendments to the GHG one.

https://regen-registry.s3.amazonaws.com/Regen+Registry+Program+Guide.pdf

Additionality

Additionality is a requirement that the project improves water quality for project activities that would not have "happened anyway." For example dilution through rainfall.

Leakage (Background Water Harm?)

Leakage is a decrease in water quality outside the project boundaries that occurs because of the project's actions. These may include inability or failure of third-party to safely dispose of the waste stream.

Each Credit Class shall define the appropriate procedures to address leakage.

Over time, if certain water treatment activities have consistently been found to create substantial leakage across multiple projects, Regen Registry will remove those activities from the approved list of practices.

Monitoring and Verification:
Acceptable devices to measure inflows and outflows:

Acceptable monitoring devices for input and output:

We want something that will interact with the blockchain to provide real time data on chain.

Ideas so far:

https://www.hackster.io/ashwini-kumar-sinha/urban-water-quality-minitor-e360c3

https://www.crowdsupply.com/iotex/pebble-tracker

Measuring water quality input and output: