Developing a Water Quality Trading Framework for the Laguna de Santa Rosa Watershed

(Deliberative Draft – For Stakeholder Use)

Introduction

North Coast Regional Water Quality Control Board (Regional Water Board) staff proposes to develop a new water quality trading (WQT) framework for the Laguna de Santa Rosa watershed, and to bring the framework to the Regional Water Board for approval by resolution in December 2017.

The Laguna de Santa Rosa is listed under section 303(d) of the Clean Water Act as impaired for multiple pollutants as further described below. The purpose of establishing a WQT framework for the Laguna watershed is to augment existing regulatory tools (e.g., National Pollutant Discharge Elimination System (NPDES) permits) with a mechanism by which to direct compliance expenditures efficiently toward the most environmentally beneficial activities. In the case of the Laguna de Santa Rosa, and as will be fully described in Total Maximum Daily Loads (TMDLs) that are currently under development, controlling pollutant sources through discharge permit restrictions alone will address a relatively small fraction of the diverse set of controllable factors causing the current impairments. Of greater importance to the recovery of the beneficial uses of the Laguna will be the restoration of key ecosystem functions. The new WQT framework proposed by staff is designed to achieve the following goals: 1) expand the use of WQT beyond the City of Santa Rosa to include the Town of Windsor, 2) test a set of new program elements that can be expanded to greater scale once the TMDLs are adopted, and 3) promote restoration actions that will improve the Laguna's ability to assimilate the pollutants of concern.

The purpose of this scoping document is to provide interested parties with a basic understanding of the proposed project; the historical, environmental and regulatory context in which the project is being undertaken; and the relative importance of WQT to current and future water resource protection efforts in the Laguna de Santa Rosa watershed. This document also features staff's recommendations for WQT framework elements that may be of particular interest to the Regional Water Board and project stakeholders. Staff is seeking feedback from interested parties on these recommendations and all aspects of staff's work throughout the framework development and public review process.

This document includes the following sections:

1. **Background**, including a description of the watershed setting, current TMDL development and beneficial use recovery efforts, and the regulatory setting/history of WQT in the Laguna.
2. **Project Timing and Scheduling**, including discussion of a proposed "2nd Generation" WQT framework to be utilized in the Laguna de Santa Rosa in advance of TMDL completion, and a proposed schedule for bringing the framework to the Regional Water Board for approval by resolution in December 2017.

3. **Water Quality Trading Fundamentals**, including an introduction to foundational references, guiding principles for WQT programs, and common elements of WQT programs.
4. **Proposed Framework Recommendations**, including staff's recommendations for the following WQT framework elements: trading area, credit characteristics, trading eligibility and baseline criteria, managing uncertainty with trading ratios, and opportunities for pre-TMDL program expansion.
5. **Attachments**, including a timeline of historical events related to WQT in the Laguna, and list of foundational reference materials (with hotlinks).

Background

Watershed Setting

The Laguna de Santa Rosa is the largest tributary to the Russian River, draining approximately 254 square miles of watershed area in Sonoma County, California. The watershed consists of three primary sub-basins (the Laguna de Santa Rosa, Santa Rosa Creek, and Mark West Creek) and contains densely populated urban areas, recreational areas and economically important agricultural lands. The watershed also contains the largest freshwater wetland complex on the northern California coast and is home to a variety of threatened and endangered plant and animal species, including threatened steelhead trout and endangered coho salmon. A map of the Laguna watershed is provided in Figure 1.

The physical setting of the Laguna de Santa Rosa is unique. The mainstem Laguna consists of a series of slow-moving, low-gradient channels and wetlands that developed along the western edge of a tectonic depression formed between two tilting crustal blocks (the Santa Rosa and Sebastopol blocks). Over geologic time, titling, uplift, and erosion of these blocks resulted in erosion of the higher elevations in the watershed with deposition in alluvial fans on the Santa Rosa Plain to the east of the Laguna de Santa Rosa, as well as some deposition in the Laguna floodplain. (Tetra Tech 2015a)

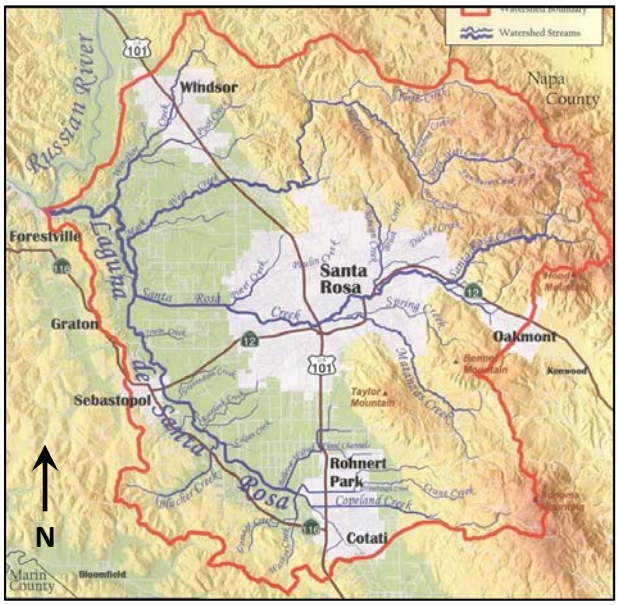

Figure 1. Map of the Laguna de Santa Rosa Watershed [1]

Since the arrival of European settlers in the mid-1800s, the lands and waterways of the Laguna watershed have been subject to major alterations, such as deforestation, channel creation and realignment, draining and filling, and agricultural and urban

[1] Map modified from: *Laguna de Santa Rosa: Resource Atlas and Protection Plan*, prepared for the California State Coastal Conservancy by the Sonoma Land Trust and Laguna de Santa Rosa Foundation, 2003.

development. Over the years, these alterations and associated land uses have led to declines in ecosystem functions and water quality.

Today, the beneficial uses of the Laguna de Santa Rosa are impaired due to a variety of interconnected pollutants and controllable factors, including but not limited to: excess sediment and nutrients, high water temperatures, low dissolved oxygen levels, indicator bacteria, mercury, and the spread of invasive macrophytes. The author of recent studies of sediment and nutrients in the Laguna watershed summarizes the relationships between these impairments as follows:

> Impairments in the Laguna are in part driven by ongoing external loads of nutrients, sediment, and oxygen-demanding material. However, there is also a significant role played by internal recycling, including regeneration of nutrients from the sediment and creation of biomass (and associated oxygen demand) by plant growth within the Laguna. Infestation of the Laguna by the exotic emergent macrophyte *Ludwigia* spp. [also] plays an important role here… All of these individual factors contribute to exceedances of the Basin Plan narrative criterion for biostimulatory substances, and all are ultimately related to excess loads of sediment, much of which was delivered under past conditions in the watershed. These sediment loads store and release nutrients and oxygen-consuming organic material and cause shallowing that encourages the growth of *Ludwigia*. (Tetra Tech 2015b)

<u>TMDL Development and Beneficial Use Recovery Efforts</u>

Regional Water Board staff is currently developing TMDLs for nitrogen, phosphorus, dissolved oxygen, temperature, and sediment to address many of the factors contributing to ongoing water quality degradation and beneficial use impairment in the Laguna de Santa Rosa. Preliminary TMDL analyses suggest that recovery of the beneficial uses of water in the Laguna cannot be achieved via source controls alone. Rather, a combination of source controls and restoration actions will be required to bring function and equilibrium back to the Laguna ecosystem, and ultimately to provide supporting conditions for sensitive species.

Consequently, Regional Water Board staff envisions a program of TMDL implementation for the Laguna de Santa Rosa that relies on a comprehensive suite of initiatives, such as those illustrated in Figure 2 below. These initiatives, including point and nonpoint source controls, restoration planning and implementation actions, and regionally-coordinated monitoring, are integrated through an adaptively managed watershed stewardship framework.

One important and promising element of staff's comprehensive vision for Laguna TMDL implementation is a WQT program that allows for regulated entities (such as NPDES permit holders) to meet their compliance obligations by investing in priority source control and ecosystem restoration actions in lieu of less effective (and more expensive) facility upgrades. More about the evolution of this initiative, and staff's recommendations for a WQT program in the Laguna de Santa Rosa watershed can be found in subsequent sections of this document.

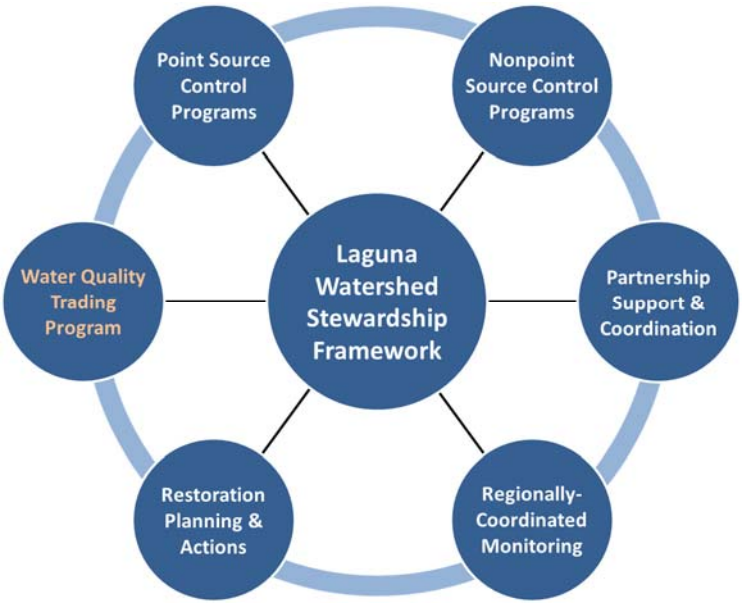

Figure 2. Comprehensive Beneficial Use Recovery / TMDL Implementation Plan for the Laguna de Santa Rosa

Regulatory Setting / History of Water Quality Trading in the Laguna

While TMDLs for the Laguna de Santa Rosa have yet to be completed, Regional Water Board permitting actions and program development efforts related to WQT have been in effect and underway since 2006. The recent history of regulatory actions in the Laguna de Santa Rosa and key advances in WQT program development are illustrated in the timeline provided in Attachment 1. The following narrative describes several of the items featured on that timeline.

In 2006, due to recognized exceedances of water quality standards in the Laguna de Santa Rosa, the Regional Water Board adopted "no net loading" effluent limitations for nitrogen and phosphorus into an NPDES permit for the City of Santa Rosa (Order No. R1-2006-0045). The permit covered discharges to the Laguna de Santa Rosa from the City's wastewater treatment facility. One of the compliance options made available to the City to meet those effluent limitations was the use of off-site nutrient load reductions carried out according to an approved nutrient offset program.

Subsequent to the adoption of its NPDES permit, the City of Santa Rosa worked with Regional Water Board staff to develop the Santa Rosa Nutrient Offset Program, which was approved by resolution of the Regional Water Board two years later (Order No. R1-2008-0061). Under the program, the City has the option to offset its facility's nitrogen and phosphorus discharges by conducting work that either prevents or removes equal (or greater) amounts of those nutrients from unregulated sources elsewhere in the watershed. Regional Water Board staff has approved three projects under this program to date: two on low-lying dairy properties and one on an upland nature preserve. More information about these projects can be found on the Regional Water Board's Nutrient Offset Program webpage.

In 2013, the Regional Water Board renewed the City of Santa Rosa's NPDES permit with the same "no net loading" effluent limitation for phosphorus that appeared in the City's 2006 permit,[2] and incorporated identical requirements into another NPDES permit for the Town of Windsor (Order Nos. R1-2013-0001 and R1-2013-0042, respectively). Again, one of the compliance options made available to the City and the Town to meet these effluent limitations was to utilize an approved nutrient offset program. However, to date only the Santa Rosa Nutrient Offset Program has been approved by the Regional Water Board, which does not explicitly apply to the Town of Windsor.

Given the nature of the Regional Water Board's regulatory actions in 2006 and 2008 (as described above), and realizing that local property owners could benefit from nutrient reduction projects carried out on or adjacent to their lands, the Sonoma and Gold Ridge Resource Conservation Districts (RCDs) applied for a Conservation Innovation Grant (CIG) from the U.S. Department of Agriculture (USDA) to develop locally-appropriate recommendations for an expanded and improved WQT framework for the Laguna de Santa Rosa watershed.

The CIG was granted in 2012. Over the next three years, the RCDs facilitated a focused, collaborative effort to explore opportunities for streamlining the project approval process, and to identify local preferences for key WQT framework elements. Contributors to this effort included national WQT experts; federal, state, and local agency partners; local resource conservation experts; working land managers; and environmental interest groups. Regional Water Board staff supported and contributed to this effort for its duration, and voiced staff's intent to incorporate the group's recommendations into future proposals to the Regional Water Board. Those recommendations were made available in a final report released by the RCDs in 2015 (hereinafter referred to as the "Local Stakeholder Recommendations"). (Kieser & Associates 2015) The authors of the report acknowledged that before any of the Local Stakeholder Recommendations can officially be implemented, they must first be put into effect via some action by the Regional Water Board – a perspective that has been confirmed by Regional Water Board legal counsel.

As local endeavors to make WQT a lasting and viable water resource protection tool proceeded in the Laguna, two especially helpful products were developed and released for use at the national level. First, in June 2015, the National Network on Water Quality Trading (National Network) released a comprehensive reference guide called *Building a Water Quality Trading Program: Options and Considerations* (hereinafter referred to as the "National Network's *Options and Considerations* document"). (NNWQT 2015) This document serves as a reference on common elements of WQT programs, and the range of options available to program designers for each of those elements.

Second, in August 2016, the national Association of Clean Water Administrators (ACWA) and Willamette Partnership released the *Water Quality Trading Toolkit*. (ACWA and Willamette Partnership 2016) The toolkit contains several templates designed to help state

[2] The previous "no net loading" effluent limitation for nitrogen was dropped from the City of Santa Rosa's 2013 permit due to Regional Water Board staff's recent finding that phosphorus (not nitrogen) was the nutrient limiting harmful biostimulatory responses in the Laguna. (Fitzgerald 2013)

and regional agencies develop WQT program documents tailored to their individual needs. Document templates are provided for five products: rule, guidance, trading framework, NPDES permit, and annual report – all of which are organized to follow the National Network's *Options and Considerations* document. Regional Water Board staff intends to use the trading framework template from the *Water Quality Trading Toolkit* (hereinafter referred to as the "ACWA Trading Framework Template") as the basis for its proposed WQT framework for the Laguna de Santa Rosa.

Project Timing and Scheduling

As previously mentioned, Regional Water Board staff proposes to bring a new WQT framework for the Laguna de Santa Rosa to the Regional Water Board for approval by resolution in December 2017. The new framework will be a revised, expanded, and improved version of the existing Santa Rosa Nutrient Offset Program, which was approved by the Regional Water Board in 2008. The proposed framework will replace the existing program and will apply to not only the City of Santa Rosa, but the Town of Windsor as well. The following sub-sections feature a discussion about the proposed timing of this project, as well as the proposed project schedule.

Project Timing

Regional Water Board staff recommends developing a new WQT framework at this time, rather than waiting until the Laguna de Santa Rosa TMDLs are adopted. The primary strategic advantage of this approach is that the new program can be used to demonstrate proof-of-concept for the expanded use of WQT in staff's comprehensive vision for beneficial use recovery / TMDL implementation in the Laguna watershed (see Figure 2).

Other reasons for proceeding now with staff's proposal to develop a new WQT framework for the Laguna include:

- The existing Santa Rosa Nutrient Offset Program is out-of-date, and lacks desired clarity, process efficiencies, and transparency.
- The Town of Windsor is in need of an approved offset program for complying with the "no net loading" effluent limitation for phosphorus in its 2013 NPDES permit.[3] The existing Nutrient Offset Program applies only to the City of Santa Rosa.
- Locally-appropriate recommendations for WQT in the Laguna watershed were recently developed through a focused, three-year, collaborative process facilitated by local RCDs. Those recommendations (and desired program improvements) require an official action of the Regional Water Board to implement.

[3] According to the compliance schedule in the Town of Windsor's current NPDES permit, the Town could need nutrient offset credits as soon as 2018. However, process changes and other nutrient reduction strategies employed by the Town at its wastewater treatment facility could potentially prolong the need for nutrient offset credits until 2019 or 2020.

- New guidance and templates developed by national WQT experts are now available. Staff can use these resources to make the proposed WQT framework consistent with other programs across the country.
- Revising the existing Nutrient Offset Program at this time allows the Regional Water Board options for expanding the scope of WQT activities in the Laguna de Santa Rosa watershed prior to the adoption of the Laguna TMDLs. Expansion could include opening the program to participation by NPDES storm water dischargers, or soon-to-be-regulated agricultural operators. Further discussion of this topic is provided in the "Opportunities for Pre-TMDL Program Expansion" section below.
- Multiple related initiatives led by local partners will enhance and/or benefit from the new WQT framework. Those initiatives include:
    1. Proposition 1-funded master restoration planning for the Laguna watershed by the Sonoma County Water Agency and San Francisco Estuary Institute;
    2. Development of credit calculation methods for instream restoration by The Freshwater Trust and City of Santa Rosa;
    3. Proposition 1-funded storm water resource management planning for the Russian River watershed by the Russian River Watershed Association; and
    4. Discretionary contract-funded regional monitoring program development for the Russian River watershed by the Regional Water Board and San Francisco Estuary Institute.

Figure 3 illustrates staff's understanding of the expected build-out, or evolution of WQT programs in the Laguna de Santa Rosa, beginning with the existing Santa Rosa Nutrient Offset Program in 2008, continuing with the proposed (i.e., 2nd Generation) WQT framework in 2017, and ending with a future (i.e., 3rd Generation) version of a WQT program specifically designed to be consistent with the Laguna TMDLs once they are adopted.

Figure 3. Evolution of Water Quality Trading Programs in the Laguna de Santa Rosa Watershed

Proposed Project Schedule

The proposed WQT framework will be subject to public review and comment, and brought before the Regional Water Board for adoption during a public hearing. Key dates in the proposed project schedule are listed in Table 1.

Table 1. Proposed Schedule for WQT Framework Development

Activity	Deadline
Project Scoping	February - May 2017
Public Draft Release / Begin Public Comment Period	June 14 , 2017
Regional Board Workshop	June 29, 2017
End Public Comment Period	July 14, 2017
Regional Board Hearing	December 13, 2017

Water Quality Trading Fundamentals

The following sub-sections highlight important reference materials and fundamental guidance upon which Regional Water Board staff will rely to develop the proposed WQT framework for the Laguna de Santa Rosa.

Foundational References

Staff's proposed WQT framework will be based on the following foundational references:

- U.S. Environmental Protection Agency *Water Quality Trading Policy*, dated January 13, 2003. (a.k.a. 2003 U.S. EPA Trading Policy)
- *Building a Water Quality Trading Program: Options and Considerations*; a product of the National Network on Water Quality Trading, dated June 2015. (a.k.a. National Network's *Options and Considerations* document)
- *Water Quality Trading Framework for the Laguna de Santa Rosa Watershed*; technical report prepared for Sonoma Resource Conservation District by Kieser & Associates, LLC, dated September 2015. (a.k.a. Local Stakeholder Recommendations)
- *The Water Quality Trading Toolkit*; created by the Association of Clean Water Administrators and Willamette Partnership, dated August 2016. (a.k.a. ACWA Trading Framework Template)

Additional references upon which staff may rely throughout the framework development process are listed in Attachment 2.

Guiding Principles for Water Quality Trading Programs

The National Network's *Options and Considerations* document suggests that a successful WQT program should be consistent with the 2003 U.S. EPA Trading Policy, federal and state water quality laws, and the following guiding principles:

1. Accomplish regulatory and environmental goals;
2. Be based on sound science;
3. Provide sufficient accountability, transparency, accessibility, and public participation to ensure that promised water quality improvements are delivered;
4. Produce no localized water quality problems;
5. Be consistent with the Clean Water Act regulatory framework; and
6. Include appropriate compliance and enforcement provisions to ensure long-term success. (NNWQT 2015, Introduction)

Staff intends to rely on the above principles, as well as a set of similar principles outlined in the Local Stakeholder Recommendations to guide its development of the proposed WQT framework.

Common Elements of Water Quality Trading Programs

Staff's proposed WQT framework will utilize the ACWA Trading Framework Template, which is organized in a manner consistent with the National Network's *Options and Considerations* document. The latter provides an exhaustive description of 11 key elements for WQT programs, presents available options and relevant considerations for each element, and provides citations to existing programs across the U.S. where different options are currently being employed.

According to the National Network, the elements that should be considered in the design of a new trading program include:

1. Identifying and establishing regulatory instruments to support trading;
2. Defining who is eligible to trade, where trading can occur, and what is being traded;
3. Determining eligibility for participants in the trading program;
4. Quantifying water quality benefits;
5. Managing risk and uncertainty in the trading program;
6. Defining credit characteristics;
7. Establishing project implementation and assurance guidelines;
8. Establishing procedures for project review, certification, and tracking;
9. Ensuring compliance and enforcement;
10. Establishing adaptive management guidelines for ongoing program improvement and performance tracking; and
11. Defining roles, responsibilities, transaction models, and stakeholder engagement processes." (NNWQT 2015, Introduction)

Proposed Framework Recommendations

The following sub-sections feature Regional Water Board staff's recommendations and supporting rationale for certain elements of the proposed WQT framework for the Laguna de Santa Rosa. Staff is seeking feedback from interested parties on these recommendations and all aspects of staff's work throughout the framework development and public review process.

Trading Area

Amongst the important considerations for developing a WQT framework is the definition of the trading area. According to the National Network's *Options and Considerations* document:

> Trading areas define the geographic boundaries within which buyers and sellers can conduct trades with each other. The 2003 U.S. EPA Trading Policy states that trading areas should be defined to "coincide with a watershed or TMDL boundary," resulting in, "trades that affect the same waterbody or stream segment and [help] ensure that water quality standards are maintained or achieved throughout the trading area and contiguous waters." A trading area usually has a defined point of concern where water quality goals must be met. The point of concern may be an impaired lake, estuary, or other water body, and is generally the most downstream point within the trading area…
>
> Trading areas may be small or large. Larger trading areas facilitate more trading as they will tend to include more potential buyers and sellers. Whatever the size of the trading area, it should be defined so there is a clear link between the credited pollution reduction and the permitted discharger ultimately using those credits.
>
> Legally, trades must be conducted in a manner that ensures that regulated discharges do not cause or contribute to an exceedance of applicable water quality standards. To this end, some trading programs restrict the trading area for buyers based on their location. For instance, to ensure that trades do not result in temporary exceedances above water quality standards, a trading program may require that buyers purchase credits only from upstream sources. (NNWQT 2015, Section 2.3)

Staff recommends designating the Laguna watershed (which includes all areas drained by the Laguna de Santa Rosa, Mark West Creek, and Santa Rosa Creek) as the trading area for the proposed WQT framework. This choice is consistent with the trading area established under the existing Santa Rosa Nutrient Offset Program, as well as the area proposed in the Local Stakeholder Recommendations. Arguments in favor of staff's recommendation, especially in a pre-TMDL environment, include the following:

- The trading area coincides with the boundaries of a watershed for which TMDLs are currently being developed.
- Due to its geographic location and physical setting, the Laguna de Santa Rosa conveniently represents a downstream point of compliance *and* a water

quality point of concern. Consequently, designating the Laguna watershed as a trading area for the proposed program is consistent with the U.S. EPA guidance cited above, and upholds the principle that a WQT program should produce no localized impacts.

- Due to its pollutant trapping and cycling characteristics, which are well documented in recent sediment and nutrient analyses (Tetra Tech 2015a and 2015b), the Laguna as a trading area also lends itself well to relatively long credit lives and compliance determination periods. This increases operational flexibility for program participants, as described in the "Credit Characteristics" section below.
- Extensive water quality monitoring, modeling, and analysis efforts performed to date by Regional Water Board staff (and others) in the Laguna de Santa Rosa watershed provide the necessary basis for developing a WQT program. Such information supports: making findings of no assimilative capacity to facilitate permit development, establishing a meaningful WQT currency, estimating future credit supplies and demands, and linking discharges to credit projects.

Credit Characteristics

The National Network's *Options and Considerations* document advises that every WQT program must clearly define the essential characteristics of pollution credits, including how they will be treated from an accounting standpoint. (NNWQT 2015, Section 6) For purposes of the proposed WQT framework for the Laguna de Santa Rosa, Regional Water Board staff uses the following terms to characterize credits:

Credit Life: The period during which a credit may be used to offset a pollutant discharge, typically beginning with the credit's "effective date" and ending with its "retirement date."

Project Life: The period over which a project generates usable credits (often spanning several consecutive credit lives), after which the project may "expire" or be "renewed."

Compliance Determination Period: The period over which a permittee's compliance with pollutant offset requirements will be determined, which may span multiple credit lives if supported by science.

Based on the above definitions, and in keeping with the existing Santa Rosa Nutrient Offset Program, staff recommends that the proposed WQT framework account for pollutant discharges and offsets on an annual basis (i.e., a one-year credit life), that project lives be allowed to vary based on project type, and that permit compliance be determined using a three-year averaging period. Additional commentary on these and other recommendations regarding credit banking is provided below.

Many WQT programs across the U.S. account for discharges and credits on an annual basis and require credits to be used within the same year as the discharges they are meant to

offset. In these programs, the credit life and the compliance determination period share the same duration. Although the existing Santa Rosa Nutrient Offset Program does require nutrient offsets to be tracked and accounted for on an annual basis, it uniquely allows for permit compliance determinations to be made based on the average of the most recent three years of discharges and credits. For example, in 2017 the City of Santa Rosa's compliance with its "no net loading" effluent limitation for phosphorus will be determined by comparing the average of the City's phosphorus discharges in 2015, 2016 and 2017 to the average of the City's offset credits for those years. While most programs prohibit such an accounting practice, staff feels that the choice of a three-year averaging period is appropriate in this case due to the unique environmental setting of the Laguna (i.e., a low-lying, lake-like receiving water subject to ongoing sediment aggradation and significant internal nutrient recycling). (Tetra Tech 2015a and 2015b) Furthermore, the extended compliance determination period provides much-needed flexibility to NPDES permit holders who are subject to annual offset requirements, but who cannot easily predict the timing and volume of precipitation events that cause discharge volumes to be higher than expected in some years.

Another important consideration for any WQT framework is whether unused pollution credits may be "banked" beyond their credit lives (e.g., from one year to the next). Few (if any) WQT programs in the country allow banking because such a practice violates the following premise: In order to avoid localized water quality impacts, credits generated in one time period must be used to offset impacts from pollutants discharged during the same time period. The Local Stakeholder Recommendations do not support credit banking for WQT in the Laguna beyond the three-year compliance determination period. Staff likewise recommends that the current practice of retiring any unused credits after three years remain in effect under the proposed WQT framework. Retiring credits in this manner preserves operational flexibility, results in net benefits to the Laguna, and does not violate core WQT principles.

<u>Trading Eligibility and Baseline Criteria</u>

Many elements of WQT programs are designed in part to answer questions regarding the eligibility and/or appropriateness of a particular trading scenario or crediting action. For the proposed WQT framework in the Laguna de Santa Rosa, Regional Water Board staff are particularly interested in the following three questions, each of which are accompanied by staff's preliminary recommendations.

> *1. Under what regulatory or legal circumstances will a project proponent be allowed to generate pollution offset credits?*
>
> Under the existing Nutrient Offset Program, the general rule of thumb for determining whether a proposed project is eligible to generate nutrient offset credits is this: A project is eligible to generate credits as long as it is not otherwise required. That is, any action already required by law, regulation, permitting instrument, enforcement action, or any other legally binding agreement is not eligible to generate credits. On the contrary, actions taken voluntarily are eligible. Staff recommends that this rule remain in effect under the proposed WQT framework. This recommendation is generally

consistent with the Local Stakeholder Recommendations and with the 2003 U.S. EPA Trading Policy.

2. How will specific project types or practices be determined eligible for generating pollution offset credits?

Under the existing Nutrient Offset Program, project eligibility is determined on a case-by-case basis, which requires the permittee to provide extensive and unique documentation to Regional Water Board staff for each nutrient offset proposal. This approach results in relatively high costs and processing time for each crediting action. To improve these circumstances, staff recommends that the proposed WQT framework establish a list of pre-authorized credit-generating practices. Regional Water Board staff will maintain the list, and practices may be added to it over time through a well-defined public review and approval process. In order for a practice to appear on the list, comprehensive documentation will be required, including approved design criteria, installation standards, baseline requirements, credit quantification and accounting methods, verification procedures, and monitoring protocols. This recommendation is generally consistent with the Local Stakeholder Recommendations and with other WQT programs across the U.S.

3. How will baseline requirements be defined for credit generating activities?

In the context of WQT, baseline is defined as the "minimum level of effort or level of implementation that must be achieved before the project or landowner is eligible to generate credits." (NNWQT 2015, Section 3.2.1) Under the existing Nutrient Offset Program, baseline requirements are determined on a case-by-case basis, but generally correspond to the minimum requirements of any applicable laws or regulatory requirements. For the proposed WQT framework, staff recommends that baseline requirements be defined specifically for each practice on the pre-authorized list described in the section above. Where practices take place on lands subject to regulatory requirements, those requirements will be added to the defined baseline for that practice. Where no regulatory requirements are in place, the defined baseline will be the default. This recommendation is generally consistent with the Local Stakeholder Recommendations and with other WQT programs across the U.S.

<u>Managing Uncertainty with Trading Ratios</u>

According to the National Network's *Options and Considerations* document:

> In building WQT programs, many decisions are focused on addressing and mitigating various forms of uncertainty: scientific or biophysical uncertainty (i.e., inaccuracies in quantification, variability in performance), regulatory risk (i.e., risk that regulations will change in the future), market uncertainty (i.e., risk that there will not be adequate credit supply and/or credit demand), and buyer risk (i.e., risk that purchased credits will not be delivered as promised). Combinations of

> eligibility policies, approved credit-generating actions, credit quantification methods, and trading ratios can be integrated to successfully address these uncertainties, and when constructing a program, WQT managers can tailor each component to consider policy objectives, watershed goals, economic feasibility, and acceptable levels of risk or uncertainty. (NNWQT 2015, Section 5)

Regional Water Board staff intends to utilize several of the measures listed above to address risk and uncertainty associated with WQT activities in the Laguna watershed. However, the balance of this section focuses in particular on staff's recommendations for the use of trading ratios. Again, according to the National Network's *Options and Considerations* document:

> A trading ratio is a numeric value used to adjust available credits for a seller or credit obligation of a buyer based on various forms of risk and uncertainty. Ratios can be used to ensure that the environmental benefit of a credit-generating project is equivalent to or greater than the reduction that would occur if the buyer installed treatment technology on site…
>
> WQT programs generally develop one or more types of trading ratios that are applied (either individually or as a lumped factor) to estimated pollutant reductions and/or credits. Trading ratios are frequently used to mitigate risk and uncertainty associated with the quantification of nonpoint source load. They can also be used to set aside credits for purposes like net water quality benefit or insurance against project failure. (NNWQT 2015, Section 5.1)

Typical types of trading ratios employed by WQT programs include:

> *Uncertainty ratio*: A ratio that reduces the estimated pollution reduction or estimated credit amount in order to compensate for scientific uncertainty, including potential inaccuracies in estimation methods and/or variability in project performance. Sometimes, the uncertainty ratio is used to compensate for lack of scientifically derived attenuation factors.
>
> *Reserve ratio*: A ratio that sets aside a portion of the estimated credits into a reserve pool to insure against unforeseen credit losses due to project failure.
>
> *Retirement ratio*: A ratio applied to the estimated credits, which sets aside a portion of credits for net environmental benefit. The purpose of this ratio may be seen as a way to accelerate water quality improvements and demonstrate environmental gains. In other cases, it is used as a hedge against potential environmental degradation. (NNWQT 2015, Section 5.1)

Staff's recommended trading ratios for the proposed WQT framework are presented in Table 2, along with supporting rationale.

Table 2. Recommended Trading Ratios for the Proposed WQT Framework

Ratio Type	Multiplier	Rationale
Uncertainty	2.0	A minimum factor of 2.0 is recommended to account for all potential sources of variability and uncertainty, including the following factors that may affect credit estimation:† - Average site conditions - Meteorological phenomena - BMP efficiency rates - BMP maturation rates - Pollutant equivalencies - Pollutant transport, delivery, and attenuation characteristics
Reserve	n/a	No factor is recommended. Under the proposed framework, unforeseen credit losses due to project failure are ultimately considered the responsibility of the credit buyer/user.
Retirement	0.5	A minimum factor of 0.5 is recommended to ensure that all trades generate a net water quality benefit.
TOTAL	**2.5 : 1**	

† Note: Uncertainty associated with pollutant discharge estimates is not explicitly accounted for in this ratio because discharges from wastewater treatment facilities are assumed to be sufficiently accurate.

In addition to the use of trading ratios specified in the table above, staff recommends that the Regional Water Board consider including special provisions in the proposed WQT framework that authorize the use of increased or reduced trading ratios under certain circumstances. Options include, but are not limited to the following:

- Reduced retirement ratio for preferred project types (such as ecosystem restoration);
- Reduced retirement ratio for projects that enhance environmental values on permanently protected lands; and/or
- Reduced uncertainty ratio for projects that include direct measurement of pollutant reductions.

The uncertainty ratio specified in Table 2 above is consistent with the Local Stakeholder Recommendations, but the retirement ratio is not. Despite general stakeholder agreement on the guiding principle that the recommended WQT program must result in net water quality benefits, the Local Stakeholder Recommendations do not propose the use of a retirement ratio or specify another means by which to ensure this principle is upheld. Consequently, staff recommends including the retirement ratio specified above to increase water quality benefits associated with trading activities in the Laguna de Santa Rosa. This recommendation is consistent with other, active WQT programs in the Ohio River Basin, Maryland, and Pennsylvania. (NNWQT 2015, Section 5.1.4)

Opportunities for Program Expansion

Under current conditions, the only dischargers required to offset their phosphorus loads to the Laguna de Santa Rosa are the City of Santa Rosa and the Town of Windsor wastewater treatment facilities. At present rates, nutrient offset projects implemented by these entities represent a relatively low level of WQT activity when compared to total phosphorus loads in the watershed. In fact, a recent analysis of nutrient loading and transport phenomena in the Laguna watershed suggests that average annual discharges from the two facilities named above account for only 1-4% of all current phosphorus loads. (Tetra Tech 2015b) In order for WQT to be a viable beneficial use recovery strategy for the Laguna watershed, higher levels of trading activity will ultimately be required (i.e., a greater percentage of total loads in the watershed will need to be subject to nutrient offset requirements.)

The Regional Water Board may wish to expand levels of WQT activity in the Laguna de Santa Rosa watershed prior to the adoption of the Laguna TMDLs. For instance, the Board may wish to include pollutant offset requirements for NPDES storm water dischargers, or add new tradable currencies (such as sediment), or establish baseline requirements and credit-generating opportunities for nonpoint source dischargers subject to emerging or expanding permit programs, such as grazing or vineyard operations.

Therefore, staff recommends including language in the proposed WQT framework specifically explaining how pre-TMDL program expansion may be accomplished. Staff is currently considering two options for facilitating program expansion. The first option is to allow the proposed WQT framework to be used as a compliance option by any permit approved by the Regional Water Board that explicitly authorizes it. The second option is similar, but would additionally require that the WQT framework itself be re-opened alongside the permit (if for no other reason than to add the names of new permittees), and that both be subject to public review and approval by the Regional Water Board.

Once the Laguna TMDLs are adopted, staff anticipates any further expansion of the WQT framework will be accomplished through the Regional Water Board's Basin Plan Amendment process. For instance, specific language addressing expansion of the Laguna WQT framework can be incorporated into the Action Plan for the Laguna TMDLs, which will be subject to public review and Regional Water Board approval.

Attachments

1. Laguna Water Quality Trading / Nutrient Offset Program Timeline
2. List of Laguna Water Quality Trading / Nutrient Offset Program Foundational Reference Materials (with hotlinks)

Questions or Comments?

If you have any questions or comments about the contents of this scoping document, please contact David Kuszmar, Regional Water Board staff and Laguna TMDL project lead, by phone at (707) 576-2693 or by email at david.kuszmar@waterboards.ca.gov.

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Association of Clean Water Administrators (ACWA) and Willamette Partnership 2016. *The Water Quality Trading Toolkit*, *Version 1.* Created by the Association of Clean Water Administrators and Willamette Partnership, Washington D.C.

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