

Memorandum

DATE:	September 11, 2007	Larry Walker Associates, Inc. Karen Ashby 707 Fourth Street, Suite 200 Davis, CA 95616 530-753-6400
TO:	Karen Cowan, Chair, Nitrogen and Selenium Management Program	
CC:	Daniel Apt, RBF	CH2M HILL Lisa Bacon 3 Hutton Centre Drive Suite 200 Santa Ana, CA 92707 (714) 435-6161
SUBJECT	Final Version - Preliminary Newport Bay Watershed Water Quality Credit Trading Program Framework	

1.0 Introduction

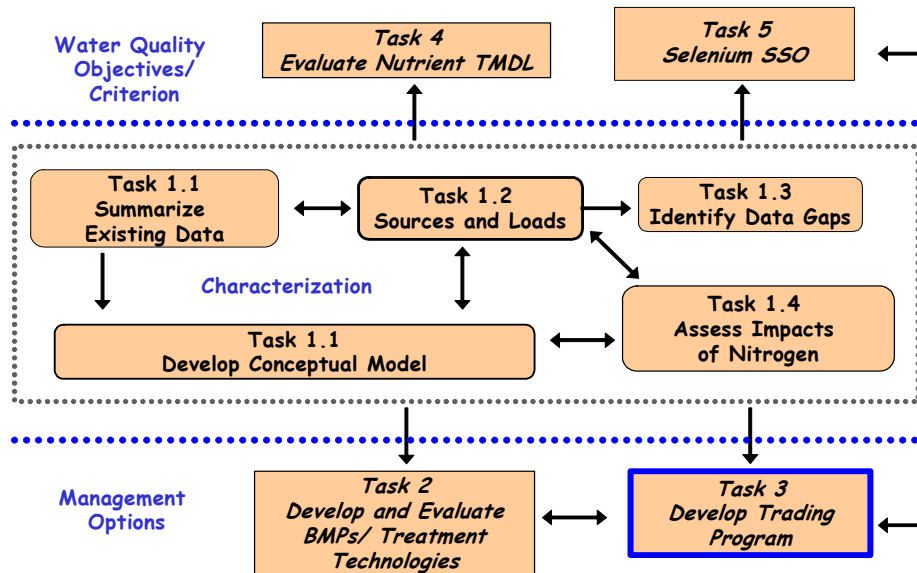
The Nitrogen and Selenium Management Program (NSMP) Working Group is evaluating water quality credit trading and offsets¹ (collectively referred to as trading) to determine if a trading program may be utilized within the Newport Bay watershed as a part of the overall management strategy for nitrogen and selenium. Water quality credit trading is being evaluated because it may provide a means to more efficiently and effectively allocate selenium and nitrogen treatment costs and efforts among sources in the watershed.

This technical memorandum (memo) identifies key policy, regulatory, and technical considerations specific to the Newport Bay watershed in evaluating alternative trading frameworks and making preliminary recommendations. The assessment of options is based on the previous work that has been undertaken as a part of the NSMP Work Plan. **Figure 1**, below, illustrates that much of the work associated with the development and implementation of the

¹ In many water quality credit programs, the terms trading and offsets are used interchangeably. When they are intended to describe different arrangements, one pair of uses is as follows: **Trading** is used as a general term referring to any negotiated transaction of water quality credits between a buyer and a seller, or by a single discharger or multiple dischargers within a “bubble” (e.g., between or among multiple discharge points within a defined area); and **Offsets** are used to describe a trade or situation where a single discharger implements a project to obtain credits in order to permit a new discharge, or to credit against a load above a cap. As noted in the text, in this memo the term “trading” is used to describe all credit exchange and banking situations. A discussion about whether the Working Group prefers to make a distinction between the two terms will occur at the beginning of the Year 3 work on this task.

trading program relies on the other tasks that are being completed including the conceptual models, sources and loads, assessment of impacts, treatment technologies and the re-evaluation of the nutrient total maximum daily load (TMDL) and selenium site-specific objective (SSO).

Figure 1. Relationship Between Trading Program and Other NSMP Work Plan Tasks



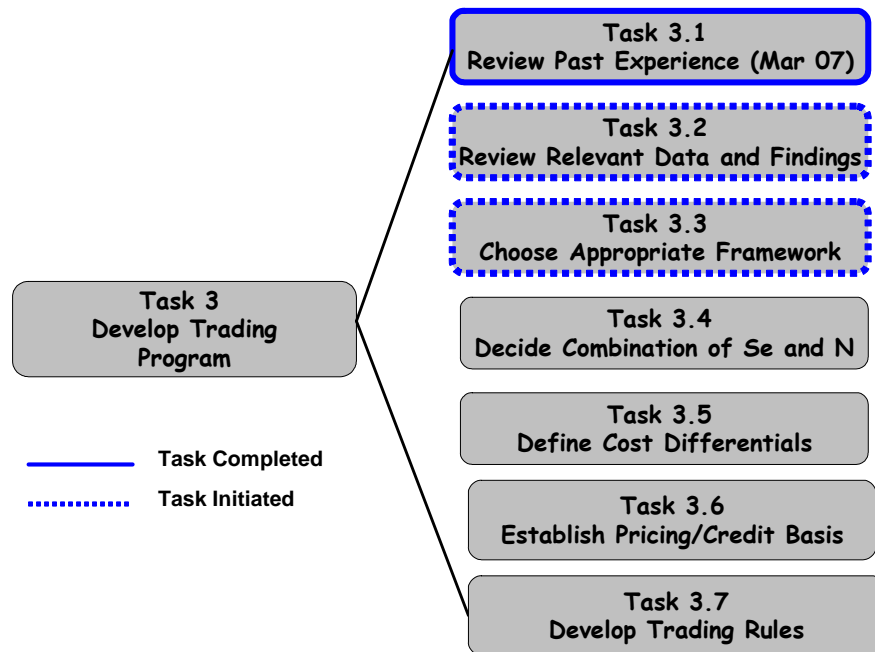
Within the NSMP Work Plan, the trading program task includes a number of sub-tasks (**Figure 2**). Task 3.1, the Review of Past Experience, has been completed. The technical memorandum, *Water Quality Credit Trading Programs*, functionally updated a previous document provided in May 2006, provided findings from a review of offset and trading programs and policies nationwide, identified the key elements of a trading program, and identified some of the key issues for the Newport Bay watershed (LWA et al, 2007). This document builds on this initial work effort and initiates work under Task 3.2, Review of Relevant Data and Findings and Task 3.3, Appropriate Framework.

This memo is divided into the following sections:

- Section 2 - Alternative Trading Program Frameworks
 - 2.1 - Introduction to Market Frameworks
 - 2.2 - Critical Elements for Newport Bay Watershed Trading Program
 - 2.2.1 - Baselines and Points of Compliance
 - 2.2.2 - Relationship Between Trading Partners
 - 2.2.3 - Size, Number and Frequency of Credit Transactions
 - 2.2.4 - Nitrogen and Selenium: Potential Trading Framework Differences
 - 2.3 - Newport Bay Watershed Trading Framework Options
- Section 3 - Recommended Preliminary Framework for Further Development
- Section 4 - Next Steps
- Section 5 - References

Developing a water quality credit trading program will require additional analysis and discussion with the Working Group over the next two years. Based on the feedback from the Working Group, the options will be narrowed and the trading framework developed further. Once the framework is agreed to, the program elements can be evaluated further and developed.

Figure 2. Trading Tasks Identified in the Work Plan and Those Completed to Date



2.0 Alternative Trading Program Frameworks

2.1 Introduction to Market Frameworks

The March 2, 2007 memo, *Water Quality Credit Trading Programs*, identified ten elements of trading programs aligned with the organization and concepts of the US Environmental Protection Agency's (EPA) January 2003 Final Water Quality Trading Policy. On May 15, 2007² the Working Group discussed another set of program elements that were described as consistent with EPA's elements, but were more focused on the operations and implementation of credit markets. **Table 1** lists the EPA policy-derived elements as well as the market-derived elements.

Table 1. Trading Program Elements: EPA Policy List and Market List

Policy Areas	Market Elements
<ul style="list-style-type: none"> • Authorization • Trading Areas • Tradable Pollutants • Trading Baselines • Credit Eligibility • Credit Use • Monitoring Specific to Credit Trading • Compliance and Enforcement • Public Participation and Information Access • Reporting and Evaluation 	<ul style="list-style-type: none"> • Performance Targets and Points of Compliance • Program Rules & Policies • Relationships among Trading Parties • Information Analysis and Dissemination • Cost Basis and Pricing • Decision-making • Transactions • Tracking • Liability • Resources • Oversight & Evaluation • Results

Individual elements can generally be described using three characterizations:

- Centralized;
- Facilitated; and
- Decentralized

Collectively, individual elements will often, but not always, exhibit a predominant characteristic. The predominant characteristic of the elements will determine the market model in effect. A fourth approach which could be used alone or in conjunction with one of the other market models is a Reverse Auction. Key features of the four approaches are identified in **Table 2** below.

² May 15, 2007 Working Group meeting presentation "Trading/Offset Program Frameworks" by Lisa Bacon, CH2M HILL

Table 2. Key Features of Predominant Credit Market Types

Centralized	Facilitated	Decentralized
<ul style="list-style-type: none"> • “Market Manager” sets price, rules, policies • Manager may attempt to influence or “incentivize” certain actions, in certain locations through rules • All credit exchanges go through Market Manager • Participants do not make direct exchanges of credits or cash • Participants may or may not coordinate credit related decisions • Examples include the Connecticut Nitrogen Exchange Program and the Virginia Nutrient Credit Exchange 	<ul style="list-style-type: none"> • Middleman/ men support credit exchange program in one or more areas • May be existing or newly created entity • Authority conveyed through variety of mechanisms, which may cross-reference each other, such as NPDES permits, Memorandum of Understanding (MOUs), Inter-Governmental Agreements (IGAs), and Contracts • Usually only provide clearinghouse and technical services • Usually don’t assume any regulatory responsibility would not otherwise have • Examples include the Lower Boise River Pilot (Idaho Clean Water Cooperative), Clean Water Services’ Temperature Credit Program (Tualatin Soil and Water Conservation District), and Association-based programs where Association is not managing the market 	<ul style="list-style-type: none"> • Offer free-market like trading environment • Most considering this approach contemplate a web-based exchange system • Offers to buy and sell would be posted • Baselines would be set outside of trading system by regulatory entities • Eligibility, verification, and certification procedures needed, could involve independent third parties or self-certification • Examples include programs envisioned by Michigan, Pennsylvania, and the Willamette Partnership
<p style="text-align: center;">Reverse Auction Approach <i>(may be used alone, or in combination with another model)</i></p> <ul style="list-style-type: none"> • One buyer; many (potential) sellers • Buyer solicits bids for credit-generating projects • Rules established for eligibility and minimum performance standards • Evaluation criteria set by sponsor(s) – may/may not be published in detail • Example criteria include: cost-effectiveness, number of credits, location, certainty • Best number of bidders selected whose collective credit project costs are equal to or less than the available funds • Examples include the Great Miami River Watershed Water Quality Credit Trading Program 		

2.2 Critical Elements for Newport Bay Watershed Trading Program

The general process to develop alternative program frameworks involves the following steps:

- a. Examine elements (see **Table 1** above) that represent key functions, features, or arrangements;
- b. Construct a menu with the possible alternatives for each element;
- c. Evaluate market models (see **Table 2** above) to help understand how elements can fit together in a complete package; and
- d. Recommend best framework(s).

Based on a preliminary assessment of all the market elements as they may apply to the Newport Bay watershed and feedback from the Working Group, it was concluded that alternatives for a few critical elements would need to be examined further and either narrowed or decided upon before the overall framework could be finalized.

The five (5) critical elements identified at the May 15, 2007 Working Group meeting were:

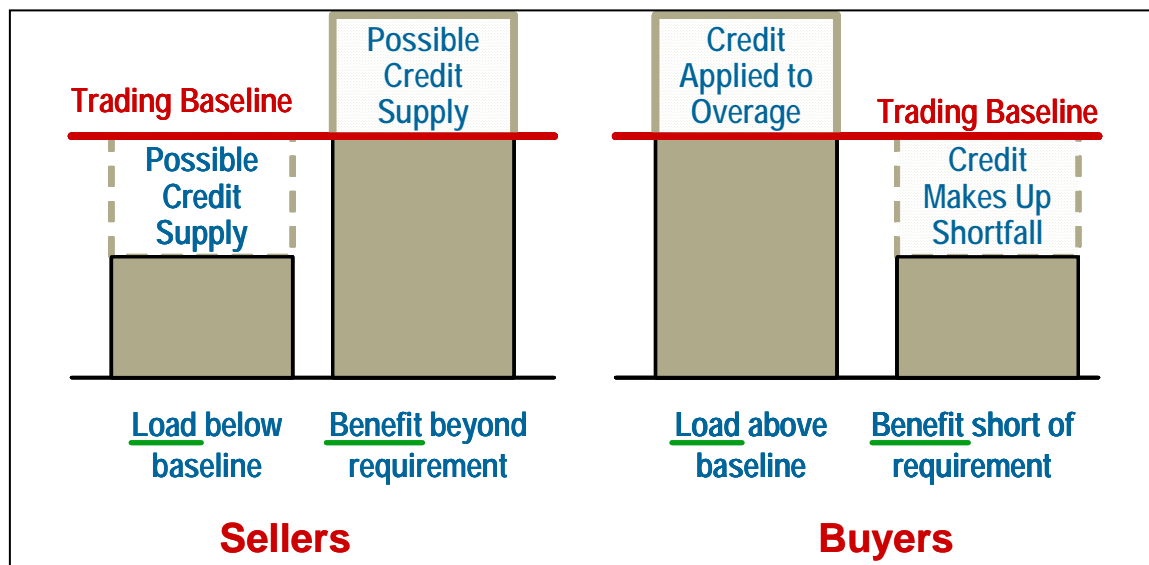
1. Trading Baselines
 - a. What are the baselines?
 - b. Are they individual, by sub-group, or collective?
2. "Points" of Compliance
 - a. Are these the same or different than Baselines?
 - b. How/where is individual, collective compliance judged?
3. Relationship Among Trading/Offset Partners
 - a. What are the relationship(s) with respect to decision-making, financing, contractual, and regulatory arrangements?
4. Credit Transactions
 - a. What are the size, number and frequency of credit transactions?
 - b. What is expected, preferred, allowed?
5. Nitrogen and Selenium: Trading Framework Differences
 - a. What are the similarities and differences for Nitrogen and Selenium?
 - b. How is this reflected within the trading framework?

These five elements are discussed in more detail below. Within each section the discussion defines what the element is and what the options are for the Newport Bay watershed. The recommended preliminary framework is presented in Section 3. The first two elements, Baselines and Points of Compliance, are combined for discussion purposes because they essentially represent two sides of one coin (or a "which came first the chicken or the egg" question).

2.2.1 Baselines and Points of Compliance

Baselines, within the context of water quality credit trading, identify sources' individual or collective pollutant treatment control and load reduction responsibilities, whether they are regulatory requirements (such as TMDLs) or voluntary commitments. These "baselines" establish the points from which better performance could generate a credit supply, and where shortfalls indicate potential credit demand (as illustrated in **Figure 3**).

Figure 3. Examples of Trading Baselines, Credit Supply, and Credit Demand



The baselines define how a credit is generated by a "seller", and how it may be used by a "buyer" for compliance purposes, or even banked by a group of dischargers and/or other stakeholders to document progress toward load reduction goals.

Point of compliance refers to the point (or points) in the watershed and/or Bay where load reductions are tallied. There may be one point of compliance or many points of compliance based on the goals of the trading program. For example, a single point of compliance may be within Newport Bay or at a point just upstream of Newport Bay such as San Diego Creek at Campus. Likewise, multiple points of compliance may also be established at key locations within the Newport Bay watershed. The point(s) of compliance selected for the trading program ultimately affects many aspects of the framework, particularly trading ratios and monitoring requirements.

The **relationship between the baselines and point(s) of compliance** is determined by decisions about the baselines and point(s) of compliance. In general, baselines can be the same or different from the level of detail required to report compliance with regulatory requirements on an individual and/or collective basis. If the baselines are the same as the point(s) of compliance then there is a direct relationship between the two. If the baselines are different than the point(s) of compliance then the compliance metrics typically reflect multiple baselines and may represent a broader or smaller geographical area.

The dischargers ultimately end up in one of three situations with respect to the relationship of Baselines to Points of Compliance/Compliance Metrics:

- **Baselines = Compliance Metrics:** In these cases, the “compliance ledger” will typically show individual Wasteload Allocations (WLA) and Load Allocations (LA), whether an individual participant has a credit (is under its allocation) or debit (is over its allocation), and will calculate net results after credit exchanges have been made. Two examples of this approach are represented in the Virginia Nutrient Credit Exchange and the Connecticut Nitrogen Exchange programs.
- **Baselines < Compliance Metrics:** In these cases, the trading baselines are less than (i.e., at a smaller level of calculation or resolution) the WLAs and LAs. To measure compliance at the WLA/LA level, one simply sums the individual results to the WLA/LA level of resolution. Two examples of this approach are represented in the Neuse River and Grasslands Irrigation District programs.
- **Baselines > Compliance Metrics:** In these cases, trading baselines are greater than the WLAs or LAs. To demonstrate compliance, participants will have to subdivide, allocate, and segregate their loading results relative to the smaller metrics, and will have to use credit exchanges to explicitly demonstrate compliance at the metric level. In this approach, it could be harder to manage and report compliance if participants don’t appropriately structure their credit accounting system in advance. The Clean Water Services temperature credit program is an example where the compliance metrics (stream miles of shade planted) require some translation to the original allocation (kilocalories).

It would be possible to establish baselines and points of compliance at the same level of resolution across all program participants, or to have a mixture of levels within the program if technical considerations and participant preferences dictated such a mixture.

2.2.2 Baselines/Compliance Options for Newport Bay Watershed

Baselines/compliance options for the Newport Bay watershed must be derived from and consistent with the TMDLs; the Santa Ana River Basin Water Quality Control Plan (Basin Plan); and applicable water quality objectives and criteria. Each is discussed below.

Selenium and Nutrient TMDLs

The baselines/compliance options need to be derived from TMDLs since TMDLs are the leading market drivers for trading programs because they create the “need” to meet load or wasteload allocations within a certain timeframe. For point sources, TMDL wasteload allocations are reflected in National Pollutant Discharge Elimination System (NPDES) permits. For nonpoint sources the TMDL load allocation is not translated into a binding requirement via an NPDES permit, however the trading program can provide an incentive for nonpoint sources to reduce their pollutant loads by providing financial incentives for controlling pollutant loadings beyond the TMDL load allocation (USEPA, 2004).

TMDLs have been developed and adopted within the Newport Bay Watershed for nitrogen and selenium in 1998 and 2002, respectively. Based on the TMDLs, the wasteload and load allocations could be used for establishing baselines and determining compliance.

Figures 4 and 5 identify how Table 5-9b from the Nutrient TMDL and Table D-4 from the Newport Bay Toxics TMDL provide a series of options for establishing baselines/compliance metrics including:

- Individual Allocations – leave them as they are. These baselines would be the same as the individual wasteload allocations and load allocations.
- Combined Allocations – combine several individual and/or categorical allocations. Allocations could be combined based on several rationales, including for example similarity of discharge, seasonal similarities and/or geographical location. The result would be a single baseline for each of the combined allocations.
- Categorical Allocations – leave them as they are and/or make up new categories for purposes of trading. These allocations would be for a group of dischargers, as already categorized in the TMDL, or as newly grouped for trading purposes.
- Categorical Allocations – subdivide. The dischargers would subdivide the categorical allocations into smaller groups of more than one discharger/source, or even down into individual baselines.

Figure 4. Baselines/Compliance Options for Newport Bay Watershed Trading Framework - Nutrients

Table 5-9b: Seasonal Load Allocations of Total Nitrogen for the Newport Bay Watershed

Potential Options

Combined Allocation:
Combine several individual and/or categorical allocations ←

Individual Allocation:
Leave as is ←

Categorical Allocation:
Leave as, make up new categories, or sub-divide ←

Nutrient TMDL	1990-1997 Loading	2002 Allocation ⁸	2002 Summer Allocation (April-Sept) ⁹	2007 Allocation ⁸	2007 Summer Allocation (April-Sept) ⁹	2012 Allocation ⁸	2012 Winter Allocation (Oct-Mar) ^{7, 8, 11}
Newport Bay Watershed	lbs/year TN ²	lbs/day TN ¹⁰	lbs/season TN	lbs/day TN ¹⁰	lbs/season TN	lbs/day TN ¹⁰	lbs/season TN
Wasteload Allocation							
Hines Nurseries	96,360 TIN ¹	224	40,992	211	38,613	211	14,227
Bordiers Nursery	30,660 TIN	71	12,993	67	12,261	67	4,518
El Modena Gardens	18,250 TIN	43	7,869	40	7,320	40	2,697
Unpermitted nurseries	----- ³	30	5,490	24	4,392	24	1,618
Nursery subtotal			67,844		62,686		20,960
IRWD WWSP (permanent discharge) ⁹	0	62		62		62	4,181
Silverado Constructors ETC ⁴	0	141	25,671	141	25,671	141	9,459
Urban runoff	277,131 ⁴		20,785		16,628		55,442
Wasteload Allocation			113,800		104,885		92,142
Load Allocation							
Agricultural discharges	328,040 ⁸		22,963		11,481		38,283
Undefined sources (Open space, atmospheric deposition, rising groundwater, groundwater cleanup/dewatering, in-bay nitrogen)	----- ³		63,334		37,495		13,939
Load Allocation			86,297		48,976		52,222
Total	1,087,000 ⁸		200,097		153,861		144,364
			5 year target		10 year target		15 year target

Figure 5. Baselines/Compliance Options for Newport Bay Watershed Trading Framework - Selenium

Table D-4: Wasteload and Load Allocation Calculations for San Diego Creek Watershed

Potential Options	Source	4/98-3/99 Loading (lbs/year)	Allocations (lbs/year)				
			Tier 1	Tier 2	Tier 3	Tier 4	Annual Total
Wasteload Allocations (WLA)							
<u>Individual Allocation:</u> Leave as is	MCAS - Tustin		1.55	1.95	1.76	7.90	13.16
	GW Cleanup		6.19	7.81	7.54	36.88	58.4
	Silverado GTF		3.09	3.91	4.02	21.07	32.1
	GW Dewatering		3.87	4.88	4.52	21.07	34.3
	other GW facilities		0.39	0.49	0.50	2.63	4.0
	Stormwater permit (MS4)		0.39	0.98	1.00	5.27	7.6
	<i>WLA Sub-total</i>		15.47	20.01	19.34	94.83	149.66
Load Allocations (LA)							
	Hines Nursery		1.1	1.4	1.5	7.8	11.9
	Bordiers Nursery		0.6	0.7	0.7	3.9	5.9
<u>Combined Allocation:</u> Combine several individual and/or categorical allocations	El Modeno Gardens		0.2	0.3	0.3	1.6	2.5
	Nakase Nursery		0.4	0.4	0.5	2.4	3.7
	AKI		0.1	0.1	0.1	0.5	0.8
	Unpermitted nurseries		0.7	0.9	0.9	4.9	7.4
	<i>Nursery Sub-total</i>		3.1	3.9	4.0	21.1	32.1
	Agriculture Runoff		5.4	7.3	8.0	44.8	65.6
<u>Categorical Allocation:</u> Leave as, make up new categories, or sub-divide	Undefined Sources ¹		53.4	66.4	69.1	366.2	555.0
	<i>LA Sub-total</i>		61.9	77.6	81.1	432.0	652.6
	Total allocations²	2443³	77.4	97.6	100.5	526.8	802.3

A Combined Allocation can also be based on geographical similarities within the same watershed, sub-watershed, or even seasons, as described below.

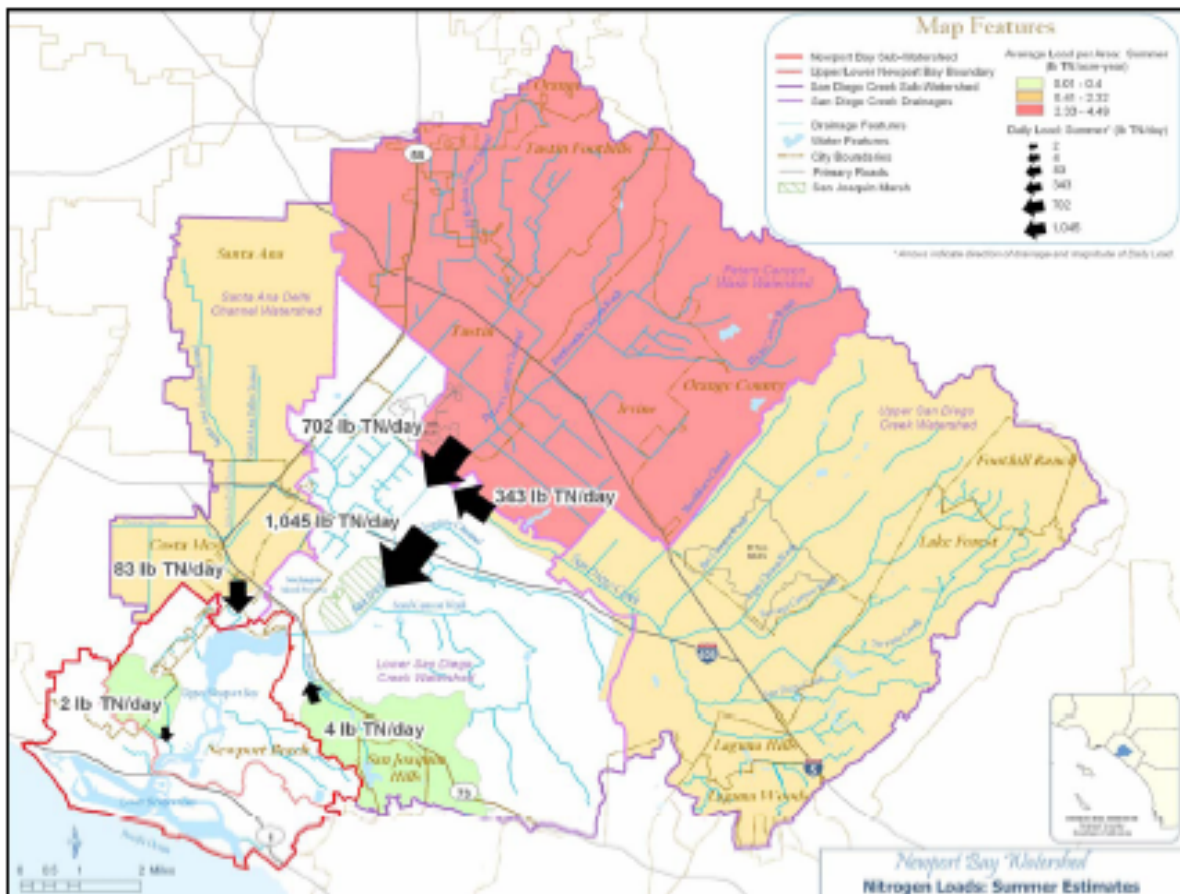
- *Watershed*: The watershed-based baselines and compliance metrics could be similar to Table 5-9a from the Nutrient TMDL and represent an overall 50% reduction within a certain time frame (in this case 2012).

Table 5-9a Summary of Loading Targets and Compliance Time Schedules.

TMDL	December 31, 2002 ⁵	December 31, 2007 ⁵	December 31, 2012 ⁵
Newport Bay Watershed Total Nitrogen - Summer Load ¹	200,097 lbs.	153,861 lbs.	
Newport Bay Watershed Total Nitrogen - Winter Load ²			144,364 lbs.
Newport Bay Watershed Total Phosphorus - Annual Load ³	86,912 lbs.	62,080 lbs.	
San Diego Creek, Reach 2 Total Nitrogen - Daily Load ⁴			14 lbs.

- *Sub-Watershed*: The sub-watershed based baselines and compliance metrics could be similar to Figure 31 from the *Sources and Loads Report for Nitrogen* (LWA, 2006). This illustrates one basis for developing baselines and compliance metrics that are at a greater level than the individual and categorical allocations.

Figure 31. TN loads for the Major Sub-watersheds as Average Total Load/Season and Total Load/Season/Acre for Summer.



- *Seasons:* The baselines and compliance metrics could be similar to Table 5-9a from the Nutrient TMDL and represent seasonal reductions. In this case the TMDL is already structured for seasonal reductions since loads are expressed by summer and winter loads for total nitrogen.

Table 5-9a Summary of Loading Targets and Compliance Time Schedules.

TMDL	December 31, 2002 ⁵	December 31, 2007 ⁵	December 31, 2012 ⁵
Newport Bay Watershed Total Nitrogen - Summer Load ¹	200,097 lbs.	153,861 lbs.	
Newport Bay Watershed Total Nitrogen - Winter Load ²			144,364 lbs.
Newport Bay Watershed Total Phosphorus - Annual Load ³	86,912 lbs.	62,080 lbs.	
San Diego Creek, Reach 2 Total Nitrogen - Daily Load ⁴			14 lbs.

Water Quality Control Plan

The baselines/compliance options for the Newport Bay watershed must be consistent with the Santa Ana River Basin Water Quality Control Plan (Basin Plan) and, in particular, the TMDLs that have been adopted as Basin Plan amendments.

The Santa Ana Regional Water Quality Control Board (Regional Water Board or RWQCB) supports trading to meet TMDLs for nutrients in the Newport Bay Watershed as evidenced within the Water Quality Control Plan (Basin Plan) for the Santa Ana River Basin as well as several permits that have been issued over the past few years. The Basin Plan was amended in 1998³ to incorporate the nutrient TMDL for Newport Bay/San Diego Creek Watershed, including the wasteload and load allocations.

The Newport Bay Toxics TMDL (including selenium) was promulgated by the US EPA in 2002. However, the corresponding implementation plan and Basin Plan amendment are still under development by the Regional Board.

Although the TMDLs identify wasteload and load allocations, it was recognized that additional data was necessary to further define the sources and loads within the watershed for both TMDLs. One objective of the NSMP was to further define the spatial and temporal distributions of selenium and nitrogen concentrations in the watershed, particularly in relation to sensitive habitats and identify and quantify the selenium and nitrogen sources and loads. In 2006 existing information on the distribution of selenium and nitrogen concentrations and loads was organized using map-based graphical tools, and the sources and loads defined further based on a review of available data and framed in terms of the conceptual models developed (CH2M HILL, 2006), (LWA, 2006).

During the reevaluation of the TMDLs, which is currently underway, it will be important to ensure that the trading program remains consistent with any revisions to the sources and loads

³ Attachment to Resolution No. 98-9, as amended by Resolution No. 98-100 Resolution

information and, ultimately, the load and wasteload allocations. If the WLAs and LAs are modified, this would have a direct impact on the baselines used for the trading program.

Applicable Water Quality Objectives and Criteria

The baseline/compliance options for the Newport Bay watershed must be derived from and consistent with applicable water quality objectives and criteria. Although TMDLs have been developed for nutrients and selenium based on the existing water quality standards, it was recognized that the existing water quality objectives/criteria for nitrogen and selenium, respectively needed to be re-evaluated. This is significant since the results of these evaluations/work efforts may impact the need for and types of management options available to the watershed dischargers, including the trading program.

For nitrogen the NSMP Working Group is assessing the linkages between nitrogen and algal growth and the resulting habitat impacts. It is anticipated that this work will be closely coordinated with the RWQCB since they are currently reevaluating the nutrient TMDL.

For selenium the NSMP Working Group is in the process of developing a selenium SSO for the water column, fish tissue, and bird eggs. The development of the selenium SSO is based on the December 2006 decision report (County of Orange, 2006). The final SSO recommendations and technical report will be submitted to the RWQCB in June 2009.

How the selenium objective is applied and interpreted throughout the watershed may impact the trading framework. Spatial differences in the watershed may be related to: (1) the different species and bioavailability of selenium; (2) where bioaccumulation has occurred historically and is occurring today (where impairment is evident); and (3) priority locations for selenium load and/or concentration reductions.

Summary

Based on the TMDLs, the Basin Plan and the applicable water quality objectives and criteria, it appears that all of the baselines/compliance options discussed above are viable for the trading program and will be considered further as the trading program is refined.

2.2.2 Relationship Among Trading/Offset Partners

Within the larger category of considering alternative relationships among trading partners and other parties, four areas seem most important at this stage. The four areas that should be considered to evaluate how a trading/offset program could help stakeholders achieve watershed goals include: (a) decision making processes; (b) financial arrangements and credit pricing, (c) contractual and legal agreements, and (d) regulatory mechanisms.

a) Decision Making Processes

A variety of governance structures are theoretically available to provide a way for program participants to establish rules and policies and administer them, including a process for making decisions. For example, some decisions may be easily and appropriately made by a small group of participants after general procedures are agreed to, while other decisions might require convening a larger group for discussion and a voting or consensus process. For the Newport Bay watershed, decision making options for each of the key areas outlined below should be considered at this stage in the process.

Set-Up and Administration

Set-up and administration is usually most efficiently accomplished with some level of centralization in that some organization or group of individuals has the direct lead responsibility for implementation, or at least functions in a leadership role to coordinate others. Set-up and administration can include: setting and overseeing rules and policies; establishing technical guidelines, procedures, or templates; and managing relationships with external parties. If a large number and/or diverse set of parties are involved in the program, it may be particularly important to provide a single, coordinated message and point of contact that would not supersede individual ones, but help streamline important communications. This type of approach would be very similar to the governance structure of the NSMP.

BMP Identification and Prioritization, Eligibility to Propose and Execute Trades

Multiple options exist for managing this activity and they are not necessarily mutually exclusive. At a maximum, participants would collectively collaborate on identifying and prioritizing Best Management Practice (BMP) sites/type. At a middle level, basic rules, guidelines, targets, and or policies are set by the group then some parties coordinate their actions, so as to avoid duplications or gaps. With the least coordination, everyone would independently make decisions about what type of BMP an entity places where. Within the approach(es) taken, some BMP decisions could be encouraged or discouraged by rule (e.g., no BMPs of Type A in Location B), and/or some decisions could be made more or less attractive through program incentives or differential trading ratios (e.g., certain favored BMPs in priority locations are granted lower trading ratios, and therefore generate more credits than they otherwise would).

The concept of eligibility as it is used here addresses the issue of who gets to trade/offset when, in what direction (buyer or seller), and in what credit amounts. As with BMP identification and prioritization, multiple options exist for managing this activity and they are not necessarily mutually exclusive. For the smoothest and most efficient operations, decisions regarding eligibility should be consistent with the approach taken for BMP identification and prioritization. The collaborative, cooperative, and independent approaches outlined above correspond roughly to a managed market, a facilitated market, and a free market with respect to who trades what when.

- In a managed market – even if self-managed – the group or its manager designee very purposefully attempts to reach a specific credit supply-demand objective through the program’s set of rules and incentives.
- In a facilitated market, a market coordinator may try to reach specific goals, but trades that don’t best support those goals or may even be inconsistent with them are not prohibited, so long as they conform to the basic rules and policies.
- In a free market, individuals are allowed to make offers to buy and sell credits and execute transactions that conform to the basic rules, but no special effort is made to manage overall supply and demand or the cumulative result of the trades. The success of a free market approach to a water quality credit market presumes a quality of information (in its accuracy and timeliness) that is not often possible to reach – which is why the majority of the water quality credit markets in place today involve some degree of management or facilitation.

The discussion above about eligibility is generally confined to who might be considered a program participant. There are other relevant questions about eligibility that have been posed, such as: can a source that elects to not “join” the program at the outset later participate; and can a “non-source” such as an environmentally-focused non-governmental organization (NGO) participate as a buyer or a seller (although most typically NGOs position themselves as exclusively buyers, when they take an active role in program development, but conceivably they could be sellers too.) These are important questions that will be addressed in future work as the program is developed, but are not examined in this document.

b) Financial Arrangements and Credit Pricing

Within the context of choices about trading baselines, points of compliance, and the BMP prioritization process, participants in a trading program will need to establish how they will interact with respect to funding administration of the overall program as well as paying for specific projects that create nitrogen and/or selenium credits. As with some of the decision making elements, the options for financial relationships can be described on a continuum of collective – cooperative – individual. In considering the alternatives, preferences and implications, the following questions are particularly relevant. Note that depending on how the program is set up, different financial arrangements could automatically exist or be available if participants agreed to a combination or hybrid approach.

Are BMPs collectively and/or individually funded?

Funding BMPs collectively would involve securing revenue from the participants using an agreed-upon formula. This formula could be newly established specifically for the trading/offset program, for example with some nexus to load contributed or credits needed, or the formula could follow an allocation method used by the participants for another program for Newport Bay management. “Individually” funded BMPs would be paid for by one entity, or perhaps a small ad hoc consortium, and no effort would be made to secure funds from other parties except through credit sales.

Do the participants pay into a “pot” and/or pay each other?

If BMPs were collectively funded, it might streamline management of financial resources to deposit the contributions into a centralized account, but participants would not necessarily have to take that approach and could, instead, establish a reconciliation process to document pledges for financial contribution to the BMPs and manage resources separately throughout the process. If a collective approach is not taken, where, for example, contributions are associated with proportionate claims on credits created, then at some point participants will likely have to deal with an invoicing and remittance process on a frequency consistent with the established credit life and regulatory compliance period.

How are credit prices set? Are they fixed and/or variable?

Under a collective approach to BMP funding and credit transactions, it may make the most sense to set credit prices as the average of the overall “portfolio” at any given time. This would be similar to how the price of a mutual fund share represents a weighted average of the price of the securities within it. Some programs establish credit “vintages” to distinguish between groups of credits created in different years. Under this approach, it would be presumed that the participants would agree to a method together, then a smaller group or individual with program management responsibilities would calculate the prices according to the method and required frequency. Alternatively, if credits remain attached to specific BMPs for accounting and

transaction purposes, and especially if BMPs are individually funded, then it would be expected that the BMP owner would set credit prices as he saw fit, consistent with any general pricing rules that may be established.

What is the cost basis for credit prices?

Credit cost and credit price are distinctly different terms for the purposes of this discussion: cost is the monetary investment made to create the credit; while price is the monetary amount at which the credit changes hands. The expectation is that price would be greater than or equal to cost in most cases, but a BMP owner may be willing to sell at below-cost for any number of reasons. In a managed market, participants often prefer to establish guidelines for how to calculate the cost of a credit—for example, include capital, and annual operation and maintenance, but exclude site selection costs. An issue that frequently arises in any type of market involves BMP cost-share funding: If a project is partially funded by state and/or federal grant money, is some portion of the load reduction not creditable for sale by the owner (state and federal policies on this matter take different stances and some are currently in flux)? Once cost is set, price then may be the approved cost, plus some fixed or proportionate profit. In a facilitated or free market, sellers have more discretion about how they set their price and less obligation to explain or document their methods.

Are administrative and transaction costs paid separately or included in credit price?

The feasible and preferred alternatives for funding general operations and efforts associated with discrete credit transactions will be aligned with the options and choices about whether other financial relationships are predominantly collectively- or individually-based (again, remember both approaches could co-exist for different portions of a larger program). The choice of whether to pay such costs separately or as a component of a credit price is usually made for convenience—which seems easier to process, and for transparency—which seems cleaner to track.

If arrangements are not credit-specific, how are “shareholder” allocations made?

Under many of the options discussed above, it would be clear how to track where the 100 credits from BMP #15 were sold and where Buyer ABC bought his 1,000 credits. In other options, buyers and sellers would own proportionate amounts of the credits bought and sold according to a pre-established allocation formula. Under these approaches it would be time-consuming and likely unnecessary to map specific credits to specific participants. As discussed above, if the share allocation approach (as opposed to the “explicit” credit trade approach) is selected, participants will have to pre-agree to an allocation formula that satisfies regulatory objectives and is consistent with their sense of equity among partners.

c) Contractual and Legal Agreements

At minimum, it will be necessary to: establish the authority to create a trading and offset program; specify participants’ binding roles, responsibilities, and liabilities (joint, several, individual); and memorialize any bylaws, rules, and policies. Where a trading program involves NPDES-permitted entities, states and federal environmental agencies typically want to see some authorization or link to other program documents substantively in, or at least referenced in the permits (see under Regulatory Mechanisms below). Beyond that expectation, program participants generally have a good deal of discretion in how they establish the contractual and legal relationships among the participants, whether it be through one primary vehicle, or a combination of several vehicles that serve complementary purposes.

A key question is whether a new trading/offsets program would be managed through the existing Nitrogen and Selenium Management Program, or if a new program and/or new lead organization would be established. The answer to this question may come directly from stakeholders' philosophical or practical reaction, irrespective of the contractual mechanics. With that one decision, the rest of the necessary and preferred contractual and legal elements may fall quickly into place. Alternatively, if a strong preference does not immediately emerge, it may be necessary to outline alternative schemes in some detail. In addition to an approach where the program would be enabled and governed by amending existing NSMP agreements, other types of contractual and legal mechanisms that could be considered in addition to or in lieu of that approach include, but are not limited to: new by-laws, program charter, Memorandum of Understanding; a Master Agreement that would cover multi-lateral activities or concerns; individual trade/offset contracts that would cover bi-lateral arrangements and agreements.

Because the feasible and preferred contractual and legal structure for any trading program in the Newport Bay watershed will likely depend to a great extent on the decisions made regarding baselines and points of compliance, more detail is not provided about the various options at this time. Independent from the outcome of those decisions, it is expected that the several relevant agreements already in place related to Newport Bay watershed management would certainly be consulted and examined with regard to how they could be used, in whole or in part, as the contractual and legal foundation for trading and offset program among all or some parties to those agreements. **Table 3** identifies and summarizes four such agreements, including funding formulas as referenced in the section above.

Table 3. Summary of Existing Agreements Involving Potential Trading Program Participants

Title	Purpose	Date Initiated	Parties ¹	Funding Formula
Original Agreement D99-128	Agreement to Fund Nutrient, Fecal Coliform, and Toxics TMDL Studies in the Newport Bay Watershed	September 18, 2003	13 Entities: OC, OCFCD, 9 cities, IRWD, and TIC	1) OC, OCFCD, 9 cities 75% - individual % based on land area and population; 2) IRWD, TIC - each 12.5%
Amendment No. 1 to Agreement D99-128	Same as above, includes four new funding partners	July 5, 2006	17 Entities: same, added Caltrans, TLCP, Lennar, GPC	1) Original parties 88% - remainder cost shared 3) Caltrans 5% 4) TLCP, Lennar 2.5% 5) GPC 2%
Form Agreement	Agreement to Fund the NSMP for the Newport Bay Watershed	As Needed	As Needed	Fixed % or \$2,500 per year, whichever is greater - offsets costs
Agreement No. D98-034 (replaces previous Agreements)	Newport Bay/San Diego Creek Watershed Sediment Control Monitoring and In-Channel Maintenance Program	April 20, 1999 (Prior Agreements dated 9-25-84 and 8-20-96)	7 Entities: OC, OCFCD, 4 cities, and TIC	Based on benefit ratio, land area, sediment sources, and population

¹ - OC - Orange County; OCFCD - Orange County Flood Control District; IRWD - Irvine Ranch Water District; TIC - The Irvine Company; TLCP - Tustin Legacy Community Partners; GPC -Orange County Great Park Corporation

d) Regulatory Mechanisms

As mentioned above under Contractual and Legal Agreements, it will be necessary to include some mention of the trading/offset program in NPDES permits that cover the point sources participating in the program. Depending on the overall program governance structure preferred by the participants and agreeable to the regulators and other stakeholders, this language could consist of one to several paragraphs that describe the basics of the program and cross-reference the implementing documents. Alternatively, it may be preferred or necessary in order to obtain regulatory approval to place more of the implementing provisions directly in the NPDES permits.

Consistent with federal EPA policy on trading and watershed permitting,⁴ and evolving California policies in selected Regions,⁵ several options may be available with respect to including desired provisions relating to the trading/offset program in NPDES permits. These are described briefly below, and it is noted that the viability and desirability of any specific option is related to the choices made about baselines and points of compliance (see Section 2.2.1), as well as relationships among parties: for example, if some consolidation of WLAs and LAs is accomplished and a cooperative approach taken, some consolidation of selected aspects of permits might be beneficial in streamlining the permitting process and integrating management activities; on the other hand, if baselines are essentially as they are in current permits, and a facilitated or decentralized approach to many program elements is chosen, there may be little advantage to any permit consolidation or permit supplements (e.g., limited general permit) except to streamline the process to reopen permits for inclusion of the relevant trading-related language.

Summary List of Regulatory Mechanisms

The following types of permits could be used to implement a nitrogen and/or selenium credit trading/offsets program. They are not mutually exclusive and it would be expected that all current dischargers would continue to hold their primary permits that would cover all aspects they currently do that are not superseded by one or more new permit vehicles.

- Status quo permits – all NPDES permits that currently exist remain in place, no consolidation of Nutrient (N) and/or Selenium (Se) provisions.
- More consolidation – a selected number of permittees are covered under one or more “group” permits, by geography and/or discharger category for example.
- More currently unpermitted sources covered – some number of unpermitted sources are brought under one or more regulatory umbrellas, by geography and/or source category for example (since it is unlikely such sources would accept formal regulation, the nature of their coverage would likely specify targets and participation responsibilities).
- General permit for N and/or Se – this model would involve all permissible N and/or Se dischargers to file for coverage under a general permit and the N and/or Se related provisions would supersede or be in addition to provisions in their NPDES permits they would continue to hold.
- Integrate/combine with stormwater permits – though few implemented examples exist, EPA’s watershed permitting policy and guidance, and some pilot projects, advance models that combine one or more NPDES permits for outfall discharges with other stormwater permits, including municipal permits (one advantage over a narrower general permit

⁴ See for example: U.S. Environmental Protection Agency. 2003. Final Water Quality Trading Policy; and U.S. Environmental Protection Agency. 2003. Watershed-Based NPDES Permitting Policy Statement. <http://cfpub.epa.gov/npdes/wqbasedpermitting/wspermitting.cfm>.

⁵ Examples are in such flux at the time of this writing that they are not specifically referenced. The project team is carefully tracking them and will formally bring them into consideration for this effort when they are closer to a draft final or final state.

approach would be to consolidate all the relevant discharges/reduction targets, as well as monitoring programs, in one document).

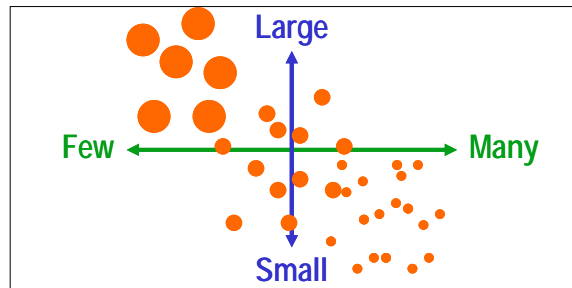
- Full watershed permit where all participants in the trading program are covered – this could, for example, take a form that looked like a combination Basin Plan Amendment and General Permit and reflect the most consolidation possible with respect to documenting TMDL allocations, baselines and points of compliance, and trading provisions.

2.2.3 Size, Number, and Frequency of Credit Transactions

Given that the estimates of the size, number, and frequency of credit transactions depends on having firm assumptions about baselines, current/future loads without trading, and relationships among trading partners than currently exist, it is not yet possible to estimate, with any degree of accuracy, what the average frequency or size of credit transactions could be. In general, stakeholders would not want to over- or under-build their program for the size, number, and frequency of transactions they expect to execute over a specified time period.

For example, as illustrated in **Figure 6**, the program might experience a few large transactions, a moderate number of medium-sized trades, and/or many small credit exchanges. The program's administrative (and electronic, presumptively) infrastructure will need to be optimized or be able to accommodate the types of trades expected. While the functions and services are similar across the Few-

Figure 6. Summary of Types of Credit Transactions



Many : Small-Large range, there may be some important differences to account for. As an example, you might not subject a trade for 10 credits to the same level of detail in its verification and certification as you would a trade for 100,000 credits. Similarly, a frequent trader may get to access a streamlined process that would not be available to a first-time participant. These issues will be examined in more detail in Year 3 of the work plan.

2.2.4 Nitrogen and Selenium: Potential Trading Framework Differences

Most water quality trading programs currently in place involve only one pollutant, but a handful have parallel programs for two similar pollutants, such as nitrogen and phosphorus, and a few involve “cross-pollutant” trading within a pollutant species or “family” (examples of these are the Clean Water Services dissolved oxygen program, and the Rahr Malting permit covering CBOD5, N and, P, as identified in the previously referenced Task 3 memo, *Water Quality Credit Trading Programs*). Cross-pollutant trading is not under consideration for nitrogen and selenium in the Newport Bay watershed, but the feasibility of trading both pollutants is part of this investigation.

The Newport Bay watershed trading program framework for nitrogen and selenium could be:

- a) The same basic framework and rules for both pollutants;
- b) Totally separate program frameworks and rules; or
- c) The same umbrella framework with some differences in process and/or rules based specifically on water quality-related differences (such as fate and transport, temporal

effect in the ecosystem) and/or on differences in the preferences or needs of the parties that may trade one pollutant versus the other.

While there are similarities and differences between these two pollutants on a variety of attributes, at this point in the process it is assumed that same umbrella framework would be developed and implemented for both pollutants, recognizing that there may be the need to incorporate some differences (Option “c” above). A likely advantage to this approach is that many of the same parties would be involved in both programs, so it is to their benefit to provide “one-stop-shopping” and a consistent set of rules, procedures, and administrative facilitators. Additionally, it is expected that the cost to operate a joint program would be less than the cost to operate two completely separate programs.

As the trading program is further developed, the differences in framework elements or implementation will be identified and accounted for as needed so that the trading program can encompass multiple pollutants while maintaining the necessary distinctions.⁶ In addition, a flexible trading program may encourage greater innovation and result in greater cost savings. By presenting trading as an opportunity to provide greater environmental benefit at a lower cost, other TMDLs may also recognize trading as a viable option.

It is recognized that some types of pollutants are more suitable for trading than others and that there are some fundamental differences between selenium and nitrogen that would have to be considered when developing the framework. The similar and unique characteristics of nitrogen and selenium that will need to be considered as the trading program is developed are outlined in **Table 4**.

⁶ At some point in the process it may be determined that separate frameworks are needed or desired. However, part of the rationale for this approach is that there are other TMDLs that will be developed for this watershed, and it may be beneficial to develop one program framework that could address multiple pollutants.

Table 4. Similarity and Differences Between N and Se that need to be Considered for Trading Program

Issue	Nitrogen (N)	Selenium (Se)
EPA Trading Policy	Explicitly encourages trading of nutrients	Although cautionary, may consider bioaccumulatives as pilot programs
Santa Ana Regional Water Quality Control Board	Basin Plan and Order No. R8-2004-0021 explicitly supports trading as an option for nutrients	Order No. R8-2004-0021 recognizes trading as an option for selenium
Newport Bay Watershed Participants	Since groundwater is a major source of nitrogen and selenium, it is expected that the trading program participants would be very similar.	
Primary Sources (NPS dominated)	<ul style="list-style-type: none"> • Groundwater • Nurseries 	<ul style="list-style-type: none"> • Groundwater
Water Quality Objectives (WQO)s	Nitrogen WQO may be re-evaluated as part of the TMDL re-evaluation	NSMP Working Group developing a selenium site specific objective (SSO)
Impacts	Eutrophication in the Newport Bay is significant concern. Evaluating extent of watershed impacts.	Concern regarding impacts/ concentrations in bird eggs and fish tissue
Areas of Primary Concern	<ul style="list-style-type: none"> • Bay 	<ul style="list-style-type: none"> • Freshwater creeks in the mid-low portion of the watershed • Newport Bay
TMDL Status	TMDL and implementation plan adopted in 1998, undergoing a re-evaluation by Regional Board	TMDL promulgated in 2002 by EPA, no implementation plan., undergoing a re-evaluation by Regional Board staff, including the development of an implementation plan and Basin Plan Amendment
TMDL Allocations	<ul style="list-style-type: none"> • Individual • Combined • Seasonal/Phased 	<ul style="list-style-type: none"> • Individual • Combined • Flow Tiered
TMDL Load Allocations (LA)	<ul style="list-style-type: none"> • Ag Discharges • Undefined (open space, atmospheric deposition, groundwater, in-bay nitrogen) 	<ul style="list-style-type: none"> • Ag Runoff • Nurseries • Undefined (open space, hillside runoff, shallow groundwater, saltwater Se)
TMDL Wasteload Allocations (WLA)	<ul style="list-style-type: none"> • Nurseries • IRWD • Silverado ETC • Urban Runoff 	<ul style="list-style-type: none"> • MCAS Tustin • GW Cleanup/Dewatering • Silverado GW • Stormwater Permit

2.3 Newport Bay Watershed Trading Framework Options

At the May 15th Working Group meeting, three “candidate” trading framework options were presented for the Newport Bay watershed that considered the five critical elements discussed in Section 2.2. They were defined as: “One for All, All for One” (aka, the Three Musketeers); “Tiny Bubbles” (a la Don Ho); and “You Can Go Your Own Way” (per Fleetwood Mac). The three options essentially represent the *centralized, facilitated, and decentralized* approaches discussed in Section 2.1, as tailored for the Newport Bay watershed, and considered the five critical elements discussed in Section 2.2,

Table 5 summarizes the key features and preliminary observations as presented at the meeting. Given that the key features are consistent with the alternatives and issues discussed in Sections 2.1-2.2, additional detail is not provided here. Section 3 presents the recommended, refined framework for discussion at the July 12th Working Group meeting which will, with comments and feedback from that meeting, serve as the starting point for the Year 3 work on the trading program.

Table 5. Newport Bay Watershed Trading Framework Options

One for All, All for One	Tiny Bubbles	You Can Go Your Own Way
<i>Key Features</i>		
<ul style="list-style-type: none"> • Use existing vehicles for program management, augment as needed • Funding contributions made to a “pot” based on allocation formulas” • Credits shares apportioned based on contributions, need • Collaborate to prioritize candidate BMP projects • Collective compliance metric at largest acceptable level • Seek watershed permit structure consistent with program structure and objectives 	<ul style="list-style-type: none"> • Trading/offset bubbles established keying from TMDL allocations, some consolidation, possibly some divisions • Intra-bubble trading may not involve cash transfers, depending on operating agreement among members • Cross-bubble trading would likely involve financial exchanges • Bubble members work together on decision-making and BMP prioritization, independent of other bubbles • All bubbles operate under same basic program umbrella, with some flexibility • Compliance measured at bubble level, could adjust regulatory mechanisms accordingly, wouldn’t have to 	<ul style="list-style-type: none"> • Baselines at current TMDL allocation levels, or lower • Compliance judged individually • All decisions made independently • Direct, explicit credit and debit system with periodic reconciliations • Would need electronic exchange or live broker(s) to facilitate efficient transactions • Transactions could be anonymous or not • Role for Third Party aggregators and deal-makers • No special permit changes, other than authorizing trading/offsets
<i>Observations</i>		
<ul style="list-style-type: none"> • Builds on existing approach • Would well support program with relatively few, large BMP projects, to maximize cost-effectiveness and target priority locations • Could still have separate track, companion program for smaller buyers/sellers 	<ul style="list-style-type: none"> • Good approach if can’t aggregate or subdivide allocations • Would set up separate financial structure from existing program 	<ul style="list-style-type: none"> • Most free-market like • Would likely need electronic trading platform • Price signals, policies, rules primary means of influence • Central entity could still play market maker role

3.0 Recommended Preliminary Framework for Further Development

The technical analysis of the critical program elements and feedback from the Working Group received to date strongly suggests that the Working Group should consider moving forward with two market models that could operate independently under a single umbrella framework, with or without a formal bridge between them. As discussed below, this approach appears to meet many of the most important water quality needs and expressed policy preferences, some of which at first appeared to indicate competing frameworks. The proposed approach offers an opportunity for some to begin constructing certain portions of a nitrogen and selenium credit market immediately, but establishes a separate track for the entry of certain participants or types of trades where it might take longer to work out technical or regulatory details.

The preliminary framework has two parts:

- **Part A** is modeled on the centralized “One for All, All for One” approach
- **Part B** is modeled on the decentralized “You Can Go Your Own Way”, with some facilitation and transaction support mechanisms.

Key features of the two parts are described below.

Part A: Collaborative Credit Creation

- **Participation:** Participation in Part A would be voluntary, but once an entity joined, it would be subject to the rules and policies developed by the Part A participants. For example, it might be expected that participants sign up for a minimum of one year, with opt out notification procedures. Ideally, to best support the program, enrollment would be for a longer minimum period, for example a 5-year initial term, with a rolling renewal provision.
- **Funding:** A cooperative funding structure would be established. This could use a similar basis as for the existing NSMP funding participation agreements, or a different formula could be used (for example one that represented a nexus between relative pollutant loading, need for credits, and relative financial contribution). Participants would “own” or otherwise have claim to a share of the credits proportionate to their contributions.
- **BMP Selection and Prioritization:** Participants would work together to establish a priority listing of BMPs and other actions that would generate nitrogen and/or selenium reductions. BMPs would be implemented according to the agreed to priority listing. The cooperative funding would be used to pay for design, implementation, operation and maintenance, and monitoring of the BMPs. This approach could specifically target orphan sources and provide a means of making reductions from those sources creditable to other sources.
- **Prices:** Credit *costs* would be tracked for purposes of managing the collective BMP budget. The price of a credit would not need to be set and tracked under the approach where participants own a proportionate share of all credits based on their financial contribution. However, the resulting price of a set of credits could be calculated using the cost and assigning some proportionate administrative cost that together would represent a break-even starting price, should the Part A participants ever want to sell their credits into the Part B

market. It also might be necessary to set a price for a specific batch of credits if in special or recurring situations one or more participants needed more than his share and had to pay a special assessment to secure them.

- **Baselines and Points of Compliance:** This will need to be determined in consultation with the regulatory agencies among the options discussed in Section 2 and others as may be identified. Note that this model specifically lends itself to situations where compliance is judged on a group basis, rather than on an individual basis. This could involve establishing group allocations or targets, or designing a credit exchange system that explicitly places credits in participants “accounts” when they are needed to show WLA compliance.
- **Nitrogen and Selenium:** Separate “ledgers” would be kept for the two pollutants, but both credits would be managed under the same program.

Part B: Facilitated Credit Exchanges

- **Participation:** Participation in Part B would also be voluntary, but a participant in this market could come and go, there would not be anything to “join.” There would be rules and policies with respect to eligibility, data and information submissions, certifications, etc. that would have to be followed on a transactional basis. A Part B participant could trade in the Part B market: only once, and never again; intermittently; or frequently. Under one approach, a single entity would not participate in both Part A and Part B; under another conceivable model, the two markets might serve different types or different sizes of a “dual” participant’s transaction needs.
- **Funding:** Some mechanism would need to be established to fund the basic administration operation of the Part B market (for example, a manual or electronic bid/offer posting and clearing service). Perhaps the participants in Part A would be willing to allocate a small portion of their funds for such a market. Beyond the fixed costs, transaction fees on postings and exchanges would be needed to fund trade-specific activities.
- **BMP Selection and Prioritization:** Prospective sellers would select and site their own BMPs. At their discretion, they may do so with or without consultation with Part A participants or prospective buyers. The “market” would judge whether credits from a particular BMP were desirable on attributes that the buyer cares about, such as cost-effectiveness, credit quality/life, and location (if that matters to him or his regulator). The only way to target or otherwise prioritize BMPs under the Part B market would be to establish explicit rules regarding credit eligibility for sale (e.g., type, location), or through mechanisms, such as trading ratios, that would direct or incentivize buyers/sellers to one BMP type/location over another.
- **Prices:** Buyers and sellers would negotiate trade-specific credit prices, on a willing to sell at/willing to pay basis.
- **Baselines and Points of Compliance:** These would almost have to be set at the individual level, or at the applicable WLA or LA were for the buyers and sellers, if different from the individual level. It might be difficult and record-intensive to conduct transactions at a higher or lower level.
- **Nitrogen and Selenium:** Separate “ledgers” would be kept for the two pollutants, but as with Part A, both credits would be managed under the same program.

Rationale and Observations

The proposed preliminary framework simultaneously accomplishes several key objectives:

- Participation in either market is voluntary;
- Part A is primarily constructed for major sources that want to get started working together sooner than later, and are comfortable with a cooperative approach to funding and selecting BMPs;
- Part B is primarily constructed for sources whose credit demand or supply is relatively smaller and/or intermittent;
- Because participation is voluntary, it is assumed that small sources would be allowed to join Part A if they agreed to abide by the cooperative funding and crediting approach, and that likewise major sources could participate in the Part B market if they declined to join Part A; and
- Part A provides a very specific mechanism to go after orphan sources, but Part B does not preclude credits from such sources.

By developing a largely single framework for the two markets, participants in both markets would share economies of scale with respect to things like administration, record keeping, credit reporting, and reconciliation. Additionally, until it becomes clearer how important each type of market may be to achieving the pollutant load reduction goals in the watershed, preserving the flexibility in the approach with links between the two markets seems to afford the best of both models without building any extraneous mechanisms. One way to stage the two markets would be to develop Part A first, but provide a mechanism for “non-members” to come and go. If that avenue was heavily utilized, then Part B could be spun out on its own, or set up as a separate market but still managed by the Part A members.

4.0 Next Steps

The preliminary framework described in Section 3 of this memo will be presented and discussed at the July 12th Working Group meeting. Feedback and direction from that session, and any comments on this memo, will be compiled and synthesized into a short document that charts the path forward, consistent with the Year 3 Work Plan, which has already been developed and approved.⁷

The first, and most important next step, is achieving *general* agreement on the preliminary trading framework, sufficient enough to guide and prioritize efforts under the Year 3 Work Plan. Further development of the overall framework will involve an iterative process, conducted in parallel with a more detailed analysis of options for structuring specific critical elements of the program, such as those discussed in Section 2 of this memo. The work will draw products from Year 2 of the NSMP Work Plan, carry forward the issues outlined in this document, and reflect results of the presentation and discussion at the July 12th Working Group meeting. The overall framework will be finalized, in whole or in part, as key program elements are agreed upon.

The six primary areas of focus for the next steps in developing a trading program framework, in addition to developing the overall framework, are briefly described below.

Determine the Trading Program Baselines/Compliance Options

Although the nutrient and selenium TMDLs identify wasteload and load allocations, both TMDLs recognized that additional data was necessary to further define the sources and loads. Based on the sources and loads documents developed in 2006 (CH2M HILL, 2006) (LWA, 2006), the Project Team (Team) will need to work with the Regional Water Board to evaluate the information in those reports along with the related TMDLs and determine what the baselines should be for the trading program. In addition, the Team will need to also use the information developed during the first two years of the NSMP and work with the Regional Water Board to identify the preferred compliance option for the program.

Develop the Trading Program Agreements/Rules

The Team will need to define the trading program rules to ensure that the participants understand how the program works and to ensure that the program is in compliance. The level of detail will depend, in part, on the final framework selected. In addition, the trading program participants will need to agree upon a governance structure and funding agreement.

Define the Cost Differentials

Based on the previous NSMP work products, the Team will need to estimate the range of source reduction and treatment costs associated with the participants, identify the associated opportunities and constraints, and assess the degree to which these costs could change over time. The Team will also need to identify the treatment efficiencies and pollutant load reduction estimates for the types of BMPs and actions that will be considered as a part of the trading program. This information will help determine whether the differences in costs provide

⁷ This memo is considered a final deliverable for the purposes of the Year 2 Work Plan.

adequate incentives for the trading program and which types of trades are likely to be more viable.

Establish Pricing/Credit Basis

The Team will need to evaluate the full range of potential pricing and credit options, the pros and cons of each, as well as the mechanisms and criteria for credit generation, credit purchases, verification, and reconciliation.

Determine How the Framework will Address Selenium & Nitrogen

As noted above, while there are similarities and differences between these two pollutants on a variety of attributes, it is assumed that same umbrella framework will be developed and implemented for both pollutants, recognizing that there may be the need to incorporate some differences. The Team will continue to assess this and determine the best approach for addressing both constituents. This will include evaluating several technical aspects including, but not limited to, the feasibility for treating and/or controlling combined loads, trading and offset opportunities, and potential participants.

5.0 References

CH2M HILL. 2006. Sources and Loads and Identification of Data Gaps for Selenium. Interim Report. Task 1.2. June 26.

County of Orange. 2006. Submittal of Decision Package on Appropriateness to Commence Development of a Site-Specific Objective for Selenium in the Newport Bay Watershed for Compliance with Provision D.15.i(13) of Order No, R8-2004-0021. Task 5.1. December 20.

Larry Walker Associates. 2006. Sources and Loads for Nitrogen. Interim Report. Task 1.2. May.

Larry Walker Associates and CH2M HILL. 2007. Water Quality Credit Trading Programs. Memorandum. Task 3.1. March 2

United States Environmental Protection Agency (USEPA) (2004). Water Quality Trading Assessment Handbook. EPA 841-B-04-001.