

<u>AGENDA</u>

Regular Meeting of the Board of Directors Thursday, July 12, 2018 at 12:00 p.m. Progress Park Plaza, 15500 Downey Avenue, Paramount, CA

- 1. Roll Call
- 2. Determination of a Quorum
- 3. Additions to Agenda (Govt. Code Sec. 54954.2(b))
- 4. Oral Communications to the Board

This is an opportunity for members of the public to address the Board on any item under the jurisdiction of the agency. Depending upon the subject matter, t he Board may be unable to respond until the item can be posted on the agenda at a future meeting in accordance with provisions of the Brown Act.

5. Presentation: Melanie Winter & Johnathan Perisho of The River Project (Enclosure)

6. Consent Calendar: (Acted as one item unless withdrawn by request)

- a. Minutes of the Board Meeting of June 14, 2018 (Enclosure)
- b. Approve the Warrant Register for July 2018 as presented (Enclosure)
- c. Receive and File the Updated Expenditures for Legal Counsel Services (Enclosure)
- d. Ratify Transfer in the amount of \$500,000 from GWMA's Wells Fargo Checking Account to GWMA's LAIF Account (Enclosure)

7. Status Report Update on GWMA Funding Strategy & Grants Program (Enclosure)

- a. Authorize staff to identify up to 5 projects for inclusion in the Greater LA Prop 1 IRWM Implementation Grant cycle for GWMA Board review, approval, and consideration to fund grant application costs through engagement with the County of LA for the preparation and submittals of the Prop 1 IRWM Implementation Grant Application
- b. Upon final direction from the LA River Upper Reach 2 Group, authorize staff to develop a draft agreement for GWMA to act as the Grant Applicant for the following project: Cities of Bell Gardens and Cudahy for the Asmus, Shull Park and River Road Park water quality and urban greening improvements at the LA River

Members: Artesia · Avalon · Bell · Bell Gardens · Bellflower · Central Basin Municipal Water District · Cerritos · Commerce · Cudahy · Downey · Hawaiian Gardens · Huntington Park · La Mirada · Maywood · Lakewood · Long Beach · Long Beach Water Department · Lynwood · Montebello · Norwalk · Paramount · Pico Rivera · Pico Water District · Santa Fe Springs · Signal Hill · South Gate · Vernon · Water Replenishment District of Southern California · Whittier



- 8. Approve Second Amendment to the Professional Services Agreement with Anchor QEA, LLC for the Harbor Toxic Downstream Group (Enclosure)
 - a. Approve Second Amendment to the Professional Services Agreement between GWMA and Anchor QEA, LLC for the Harbor Toxic Downstream Group in an amount not to exceed \$3,768,533.00 through December 31, 2024, as presented
- 9. Gateway Region Watershed Management Groups Oral Reports
 - a. Lower Los Angeles River Upper Reach 2 Watershed Group
 - b. Lower Los Angeles River Watershed Group
 - c. Los Cerritos Channel Watershed Group
 - d. Lower San Gabriel River Watershed Group
- **10. Executive Officer's Oral Report**
- 11. Directors' Oral Comments/Reports
- 12. Adjournment

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Nature-Based Distributed Projects

Nature-Based distributed projects for stormwater capture, conservation, treatment and reuse provide a cost-effective, low-maintenance alternative to grey and grey-green infrastructure. Unlike the more traditional grey/centralized solutions, nature-based distributed projects address multiple challenges at once, realizing the greatest number of benefits at the lowest cost.

GREEN NATURE-BASED PROJECTS

Green nature-based projects rely predominantly on soils and vegetation to restore the natural ecosystem processes that slow, detain and absorb water, allow it to infiltrate to aquifers, filter pollutants out of water and air, sequester carbon, support biodiversity, provide shade and aesthetically enrich environments.

DISTRIBUTED (PARCEL-SCALE) PROJECTS

Distributed (parcel-scale) projects are simple and replicable enough that they can be spread widely and abundantly as source control measures. In contrast to centralized projects, these are public and private landscape-based projects that property owners can reasonably make and manage.

LETTING NATURE DO THE WORK

Plants, soil, wind and gravity—together with other physical and biological processes—work to effectively clean pollutants in air and water while enhancing local water supplies and reducing flood risk, erosion and runoff. In addition to providing visual appeal, they improve public health, reduce maintenance costs and increase property values.

COST-EFFICIENT AND EFFECTIVE

Cities across the country have championed green infrastructure as a part of water management. The range of costs, benefits and effectiveness of green and nature-based infrastructure techniques allows local stormwater managers to tailor solutions that are more resilient and affordable than grey-only systems. Triple-bottom-line assessments consistently find that



incorporating green and nature-based infrastructure can reduce stormwater treatment costs while increasing benefits. The cities of Portland, New York and Philadelphia have relied on nature-based, distributed projects to achieve their water capture and water quality targets.

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LOWER COST, INCREASED VALUE

Building more decentralized, nature-based projects can have lower construction and maintenance costs. Unlike traditional grey and grey-green infrastructure projects—which require significant engineering design and permitting processes, excavation, repairs and prolonged construction closure—distributed nature-based projects can be implemented quickly and easily. They function more immediately and grow more resilient as they age, requiring less upkeep and less resources. They utilize existing spaces, allowing us to create water management facilities out of existing homes, schools, parks and other spaces.



Parkway Basin Retrofit, Panorama City

Water LA parkway retrofits cost on average \$470/AF. The 22 wholehouse retrofits cost an average \$5,200 per household. Combined, the projects capture and treat an estimated 1.2 million gallons of water. The potential of such projects spread across 2.1M parcels within LA County Flood Control District's jurisdiction is massive.



MULTIPLE BENEFITS

Grey infrastructure is generally single-purpose. Dams, treatment plants, gutters, channels and pipes send on average 600,000 acre-feet of contaminated rainwater to the ocean every year. Distributed and neighborhood-scale nature-based projects make communities more climate resilient while providing tremendous economic benefits and cost savings for local jurisdictions, including:

- Augmenting local water supplies
- Reducing pollution in local waters
- Improving air quality
- Sequestering carbon
- Providing urban cooling
- Increasing longevity of systems & investments
- Mitigating local flood risk
- Improving public health
- Enhancing habitat and biodiversity
- Creating opportunities for recreation
- Reducing energy needed to pump water
- Lowering operation and maintenance costs
- Offering a wide variety of green jobs

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AGENDA ITEM NO. 5

Measuring Benefits of Distributed, Nature-Based Stormwater Projects





With funding from



June 2018

EXECUTIVE SUMMARY

The Southern California Water Coalition (SCWC) 2018 Whitepaper Update *Stormwater Capture: Enhancing Recharge & Direct Use Through Data Collection* has opened a valuable dialogue into what is known and what is not known about stormwater capture projects implemented across the region over the past decade.

While some have interpreted the paper's data analysis as a finding that large centralized projects are more cost-effective than distributed projects, a closer reading illuminates key factors:

- More monitoring data is needed
- Differentiating between project scales and typologies would provide more clarity on costs and benefits
- Evaluating project co-benefits beyond stormwater volume in additional detail could provide more accurate cost figures to support fiscally sound decision making.

The following is an exploration of implications for Distributed, Nature-Based Projects as a subset of Green Infrastructure. Distributed, Nature-Based projects for water capture, conservation, treatment and reuse are a cost-effective alternative to conventional gray infrastructure. Nature-based projects can be:

- Built cost-competitively with grey and grey/green infrastructure
- Maintained more cost-effectively than conventional grey and grey/green infrastructure long-term (leading to lower life-cycle costs)
- Provide multiple critical benefits offsetting costs and financing to address pressing social, environmental, and economic challenges as compared with grey infrastructure

This paper explores the following factors relevant to this assessment:

- Definitions of Terms
- Need for Data
- Typology
- Scale
- New vs. Retrofit
- Construction Costs
- Operations and Maintenance
- Multiple Benefits

DEFINITIONS OF TERMS

Terminology is significant in describing complex and diverse projects. There are two sets of project classifications that are useful in considering implications for costs and performance, which are referenced in this paper: typology and scale.

- Typology concerns the extent to which a project utilizes human inputs vs non-human inputs, and the different forms of components and operations associated.
- Scale concerns the size and intended distribution for different project types.

Typology

Nature-Based Solutions rely predominantly on soils and vegetation to restore the natural ecosystem processes required to slow, detain, and absorb water, infiltrate water to aquifers, filter pollutants out of water and air, sequester carbon, support biodiversity, provide shade, and aesthetically enrich environments. Examples include: strategically undeveloped mountains and floodplains; wetlands; rain grading/rain gardens; mulch; soil conservation and enhancement; tree and vegetation planting; and parkway basins.

Grey Infrastructure use primarily inert, impermeable materials such as steel and concrete to create conventional infrastructures, piped drainage and water treatment systems that rely on humans to engineer and operate. These make up most of our urban systems including paved streets, dams, drains, flood channels, and dry wells.

Grey/Green Infrastructure are a combination of green and grey infrastructure composed and managed to realize some benefits of green infrastructure within a framework of more conventional development. These are combinations of structures engineered for specific controls, such as green streets, spreading grounds, and planted areas with subsurface water storage capacity.

Size/Scale

Centralized Projects are located on large parcels in key locations in the county, which usually have an average annual capture potential of more than 1,000 acre-feet per year per project and manage stormwater concentrations which are often downstream from the point of runoff generation. Examples include dams, spreading grounds, treatment plants, and areas specifically protected for resource conservation such as the mountains of the upper watersheds, floodplains, and large wetlands.

Neighborhood Projects are located on or impact either large or multiple parcels, which usually have an average annual capture potential of less than 1,000 acre-feet per project. Often these are located on public lands or rights-of-way, which may include parks, streets, greenways, schools, and other significant public infrastructure.

Distributed (Parcel-scale) Projects are simple and replicable enough that they can be spread widely and abundantly. These are public and private landscape-based projects that property owners can reasonably make and manage. Micro interventions such as rain gardens and swales, parkway basins, mulching, soil conservation and enhancement, vegetation and tree planting, permeable paving, and rain tanks may be included as parts of larger projects, or as stand-alone improvements. These are effective source control measures.

	Nature-Based Solutions	Grey/Green Infrastructure	Grey Infrastructure
Distributed	Rain grading (swales, berms, rain gardens), curb cuts with parkway basins, infiltration trenches, soil amendment, vegetation and tree planting Examples: Water LA Panorama City Retrofits (3.8 AFY for all 22 retrofits)	Cisterns, rain tanks, permeable pavement, infiltration trenches, bioswales, green roofs, planter bump-outs, tree wells, most LID Examples: Horace Mann Elementary School, Jeff Seymour Family Center	Drywells, small low-flow diversions (LFD)/drainage, some LID Examples: PCH LFD in Pacific Palisades
Neighborhood	Wetlands, park grading, stream daylighting/restoration Examples: Rio de Los Angeles State Park, Dominguez Gap Wetlands	Green streets, parks with large underground chambers, small engineered treatment wetlands Examples: Watts Green Streets, Bolivar Park (624 AFY), Basset High School Project (266 AFY), Monteith Park Project (80 AFY)	Street gutters, storm drains, injection wells, large storage tanks, large low flow diversions/drainage Examples: Agro Drain Sub- Basin Facility at LA World Airport
Centralized	Floodplain reclamation, large wetland conservation, mountain and upper watershed conservation Examples: Upper LA River Big Tujunga Restoration (1,000 AFY), Malibu Lagoon	Spreading grounds, large engineered treatment wetlands Examples: Tujunga Spreading Grounds (16,000 AFY), Rory M. Shaw Wetlands Park (590 AFY)	Dams, Water and waste treatment plants, pipelines, reservoirs Examples: San Dimas Dam, Hyperion Water Reclamation Plant, Santa Monica Urban Runoff Recycling Facility

Developed in collaboration with Our Water LA partners

Based on these definitions, projects with available monitoring data inventoried in the 2018 SCWC whitepaper are of the grey or grey/green typology, and two of the three distributed projects represented therein would be considered to be neighborhood-scale.

Distinguishing between the neighborhood and distributed scales—as well as between project typologies of grey/green infrastructure and nature-based solutions—would be useful to developing a more robust understanding of the true costs and benefits of various approaches.

NEED FOR DATA

The 2018 SCWC whitepaper was driven in part by a recognition of the need for more results-based decision making in the region, and was designed to compile and evaluate the available monitoring data. Most projects locally and globally are developed and evaluated based on modelling parameters, rather than actual observed results from monitoring. The whitepaper highlighted a universal imperative to advance consistent monitoring across all scales and typologies—that can accurately measure performance and inform data-driven, results-based decision making.

A comprehensive search for complete monitoring data on stormwater capture projects resulted in an inventory of 32 projects from 6 different agencies. Of these, twenty-five (25) were classified as centralized retrofit/rehabilitation projects, four (4) as centralized new, and three (3) were classified as distributed new projects (SCWC 2018). Monitoring data were not provided from projects completed with the City of Los Angeles' Prop O funds nor those implemented under their LID ordinance. However, a major finding of the SCWC white paper is that such data has not yet been developed and made available. Making monitoring data available from Prop O projects—many of which were neighborhood-scale and new centralized projects must also be developed. More data is necessary to more equally represent and evaluate actual results across typologies and scales.

A consistent data sheet covering a similar period was completed for each project. However, the source data—coming from different agencies and with different project goals—was produced and compiled by different measures. Certain factors were estimated or assumed as necessary. A major limitation is the infeasibility of breaking down the impacts of individual projects out of budgets and infrastructure only tracked more broadly. For a centralized retrofit, the impacts from a specific project alone may be substantially different than the total impacts of both pre- and post-construction infrastructure. Source data limitations could be addressed in future by targeted measuring of installations for select factors, including tracking of labor hours specific to individual installations. Pre-construction data collection could also provide comparison to evaluate the specific impacts of improvements to existing projects.

The 2018 SCWC inventory found that actual volumes of water captured over the evaluation period were generally less than originally modeled and assumed for the primarily centralized projects. Of note, the evaluation period included the drought from 2012-2016. Conversely, evaluation of pre- and post-construction monitoring of distributed nature-based installations in New York City found performance exceeded modeled expectations (NYC Department of Environmental Protection 2014) during a drier period than the pre-evaluation. Together these examples highlight the benefit of actual measures. Methods, assumptions, actual climate, soil conditions, and other factors can impact modeling findings and produce divergent results.

Making decisions based on such assumptions can continue to yield divergent results. Accurate representation is essential for optimal efficiency of investments. Key actions to address data needs include:

- Advancing funding allocations for consistent monitoring in select representative current and future projects
- Establishing consistent monitoring measures for different project types, which project developers and owners could then apply

Performance in Related Literature

In recent decades, major US cities have been making significant investments in distributed, naturebased projects: these include Portland, OR; Seattle, WA; Philadelphia, PA; New York, NY; Chicago, IL; Detroit, MI; and Tucson, AZ. The US EPA promotes the cost-effectiveness of green infrastructure, including distributed project types and highlights the need to evaluate comprehensive factors to accurately represent performance (2017). However, despite extensive project installations, relevant data for apples-to-apples comparisons is limited.

Monitoring data collected by the Portland Bureau of Environmental Services (2013) for distributed, nature-based projects is promising. Despite assumptions that urban soils would have highly variable soil infiltration rates, the results have been consistent with an initial infiltration rate of 5.0 inches per hour, and minimum rate approaching 1.5 inches per hour over prolonged steady inundation. Recent NRCS soil data indicates infiltration rates are likely to exceed those rates across large areas of the Los Angeles basin.

In flow tests for the 25-year storm (1.89" in 6 hours), peak flow reductions were reduced from 62% to 100%, with an average reduction of 90%. At one facility monitored continuously, annual runoff over an eight-year period has been reduced by 84%. Water quality design storm results range from 61% to 100% retention, with most facilities achieving 100% (Portland Bureau of Environmental Services 2013). Projects are strategically installed with planned roadway improvements, leveraging other departmental expenditures to minimize costs (EPA 2007).

For comparison with the Portland 25-year 6-hour storm, the average 95th percentile 24-hour storm event across most of the LA Basin is approximately 2". Most storm events that occur in Los Angeles could be contained at this scale and level of performance, as well as a significant volume of first flush and peak flow from larger storms.

New York has over 4,000 projects on public and private land, approximately 90% distributed right-ofway bioswales, and New York City (NYC) Department of Environmental Protection (2014) monitoring concluded similar results. Monitoring data demonstrated that green stormwater projects reduced more stormwater from reaching sewers than expected (modeled), and significantly more than the pre-project period. Monitoring before and after construction included three study areas where an average of 24 projects up to 20' x 6' in size were installed, averaging infiltration rates between 1 and 6 inches/hour. On average they each captured 14.3% of total runoff from an average drainage area of 22.03 acres, with one study area capturing greater than 89% of all storms monitored (majority of storms less than 1" with peak rainfall 1.27 inches per hour) through only 18 installations (NYC Department of Environmental Protection 2014).

TYPOLOGY

The vast majority of urban areas are made up of grey infrastructure, including the dams, roads, walkways, gutters, channels, pipes, pumps and water treatment facilities that provide essential functions. However, this infrastructure relies exclusively on human inputs to operate and maintain. Manufacturing and installing increasingly sophisticated components out of labor and carbon-intensive materials; using energy to convey water by pipes and pumps; transferring sediment and debris by vehicle; these projects require ongoing operations and maintenance over time.

Measuring Benefits of Distributed, Nature-Based Stormwater Projects

Over the past 15 years, we have begun to pilot and implement a variety of green infrastructure projects in the region, testing ways to incorporate various natural elements into the armature of familiar grey infrastructures. The degree to which natural process play a role in these projects has varied, but many still consider the green part of green infrastructure to be a costly and decorative appendage rather than an essentially functional feature. Therefore, the material inputs utilized and the operation and maintenance practices adopted are often not dissimilar to grey infrastructure.

Integrating green infrastructure—specifically nature-based projects—can reduce those inputs and diversify vital benefits by leveraging naturally-occurring systems, processes, and biological organisms. Natural systems are inherently regenerative. They do a lot of work in the processes of growing and sustaining life: cycling air, water, and nutrients—including carbon and volatile compounds; opening up soil; and continually creating materials that nourish, shade, cleanse, and enrich the world around us. When we make space for diverse life and these processes, we allow nature to do the work that humans would otherwise need to expend resources to accomplish.

As we continue to develop our understanding of natural systems, we see a growing emphasis on distributed and nature-based projects: from the Intergovernmental Panel on Climate Change (IPCC), US EPA, and Rockefeller Foundation's 100 Resilient Cities Challenge down to the California Water Quality Control Boards, Natural Resources Agency, and local communities.

Portland, Philadelphia, and New York have famously made triple bottom-line assessments on alternative solutions to separate their combined sewer overflow (CSO) systems. They among others have concluded that making significant investments in distributed, nature-based projects such as rain grading and right-of-way swales is the most cost-effective course of action (City of Portland Bureau of Environmental Services 2013, City of Philadelphia Water Department Office of Watersheds 2011, Entrix 2010, Stratus Consulting 2009, NYC Department of Environmental Protection 2017, 2016, 2014, 2010).

SIZE/SCALE

Centralized projects are critical in ensuring a sustainable future, from the San Gabriel Mountains originally conserved for water resources and providing a majority of our local water—to the many dams and spreading grounds that help to manage water flows and infiltrate for local water supply, and the treatment plants managing urban wastewater. However, new thinking on what constitutes centralized projects is needed. While we have recently come to accept that available land for traditional centralized projects is limited, the potential for regional nature-based projects to address current imperatives merits consideration. These include conservation of upper watershed mountain and foothill areas, as well as floodplain reclamation, and stream and river restoration.

Neighborhood projects can be designed to manage flows at the sub-drainage level, and can work with existing municipal land uses (roads, park space) to reduce pressure on existing infrastructure and/or offset the impacts of impervious surface areas while providing a range of co-benefits.

Distributed projects manage rainwater at the source. These smaller projects are quicker to install as compared with larger centralized projects (The River Project 2018, City of Philadelphia Water Department 2013, 2011, 2009, Roseen 2011). Additionally, the cost of operations and maintenance is taken up by property owners, and the failure of any one micro project will not destabilize an entire system. Distributed-scale projects not only capitalize on efficient use of space, but are necessary to realize regional targets (Black & Veatch et. al. 2016, CH2M et al. 2016, US Bureau of Land

Management and LA County Flood Control District 2016, Geosyntec 2015). For residential retrofits, an adoption rate of 1% of homes a year is assumed necessary to meet regional targets, or approximately 16,000 homes a year.

Based on recent assessments in regional plans–even if all centralized and neighborhood project opportunities were maximized, we would still fall short of regional goals for local water supply, management, and quality. Implementations at different scales creatively adapted to diverse conditions are key, from the regional out to distributed parcel-based interventions.

NEW VS RETROFIT

Retrofits to existing infrastructure may use less material and typically involve less disturbance, materials, and work to complete than new projects.

One of the major conclusions of the 2018 SCWC white paper is that retrofit projects are generally more cost-effective than new projects. While capture from pre-construction infrastructure components could not be meaningfully differentiated from retrofits due to limitations of source data collection, even allowing for this limitation the centralized retrofit projects demonstrated a high cost-efficiency ratio by a wide margin.

Similarly, distributed, nature-based retrofits demonstrate significant potential to be both cost-effective and high impact. In evaluating water management projects in California, The Pacific Institute (Cooley and Phurisamban 2016) concluded that landscape conversions were by far the most cost-efficient. Costs were estimated as low as *negative* (-)\$4,500 AFY factoring for offsets such as reduced labor, fertilizer, and pesticide use. The Water LA pilot for residential retrofits corroborated these findings with 22 home retrofits capturing an estimated 3.8 acre feet in an average rain year, at an average labor and materials cost of \$5,200/home (The River Project 2018), not factoring for the additional offsets. Such simple landform grading for stormwater capture is now a requisite to qualify for LADWP's turf removal rebates, amplifying the impact of landscape conversions without increasing their cost.

New thinking on what constitutes retrofits can help focus thinking on opportunity sites. For instance, existing park space can become a space for stormwater management through the use of simple landform grading. At the same time, adjusting the scope of new projects to include neighborhood and distributed scale nature-based projects can provide significant benefits without significant additional cost. This may be due to the limited extent of additional materials and labor necessary for their creation.

CONSTRUCTION COST

Efficient design and implementation are essential for any project to be cost-effective. Every project has different goals and targets to fulfil, which may involve many different factors. Grey, grey/green, or nature-based typologies at centralized, neighborhood, or distributed scales may be most appropriate for different goals. Accurately evaluating relevant factors is key to reflect impacts and true cost for benefits.

For comparison the following considers costs by water volume captured alone.

The Pacific Institute (Cooley and Phurisamban 2016) has defined small, centralized stormwater projects as those with an annual yield of 280 to 1,500 AFY, ranging from \$590 to \$1,300 AFY with a median cost of \$1,200. Higher-cost projects require more infrastructure for conveyance to recharge areas. Large stormwater projects are defined as those with an annual yield of 6,500 to 8,000 acre-feet, ranging from \$230 to \$260 AFY with a median cost of \$250 AFY.

- By these measures, many centralized projects inventoried for the SCWC 2018 whitepaper (ranging from 3–2,569 AFY) do not qualify as even small, and none qualify as large.
- The Tujunga Spreading Grounds Enhancement Project is estimated to deliver nearly 12,200 AFY (DWP 2016) at \$27 million, an example of what would be considered a large and most cost-effective project. At an estimated project life of 30 years and not factoring for ongoing operations, the estimated cost per AF is approximately \$74 per acre foot. Few opportunities for projects of this scale considered most cost-effective exist in Southern California.

SCWC 2018 finds the median costs for new centralized projects are \$6,900 per acre-foot, and retrofit projects are \$600 per acre-foot including operations and maintenance costs (typically estimated at 3%). With the exception of the Virginia Avenue Park Library Rainwater Harvesting Project that collects and treats water on-site for bathroom flushing, the other two projects defined as Distributed in this study would be defined as Neighborhood scale in the above definitions, including underground chambers, paving, utilities, etc. The median cost of these projects was \$25,000 per acre-foot including operations and maintenance costs. Of particular note, these last projects also had many targets outside the goal of cost-efficient water supply delivery.

The Pacific Institute 2016 definition for Landscape Conversion most closely aligns with distributed, nature-based projects. The landscape conversions involve minor excavations and planting, as the new LADWP turf rebate which also now requires minor additions of stormwater capture improvements including grading for stormwater capture to qualify for the full rebate amount. At the low end "costs ranged from -\$4,500 to -\$2,600 per acre-foot (i.e., negative costs) because the reduction in maintenance costs outweighs the investment cost of the conversion. At \$5 per square foot, the higher end of the landscape conversion cost, the cost of conserved water would be \$580 to \$1,400 per acrefoot."

The River Project's Water LA 2018 Report also demonstrates distributed, nature-based retrofit projects falling in this range. Without subtracting costs for mowing, blowing, fertilizers, pesticides, irrigation, etc. the average home retrofit cost an estimated \$1,013/AF over a 30-year expected project life, and the average parkway basin alone cost \$470/AF.

Concerning new project installations, the City of Portland installs swales with planned roadway improvements, so the only additional costs associated with the stormwater project are the costs of a steel curb insert to allow stormwater to enter project areas and the additional soil excavation. These additional costs are more than offset by the \$2,400 to \$4,000 cost that would have been required to relocate existing catch basins (EPA 2007).

OPERATIONS AND MAINTENANCE

There is a need to track operations and maintenance for individual projects to accurately evaluate costs over time. Most projects evaluated by the 2018 Southern California Water Coalition whitepaper applied an assumed 3% of capital costs to align with the Metropolitan Water District of Southern California 2015

Integrated Water Resources Plan (IRP) Update. Most existing operations budgets cover broader assets than individual projects, and may not be accurately broken down to determine actual costs. Tracking of individual projects costs over time would be invaluable to drive results-based decision-making.

At the assumed 3% of capital costs, the Water LA distributed, nature-based retrofit projects would cost \$156/year in maintenance (The River Project 2018). SCWC 2018 includes operations and maintenance costs for centralized projects ranging from \$5,000 to \$464,000/year, with a median cost of \$35,100.

Operations and maintenance of nature-based projects are above ground, making access simple for simple tasks such as trimming, mulching, and debris removal. Of key significance, vegetation, invertebrates, microbiota, etc. cycle nutrients and maintain soil porosity without ongoing human inputs. Accordingly, the cost-effectiveness of such projects improves over time when compared to more traditional grey and grey/green infrastructure. A tree planted today will provide more benefit in the next 15 years than it will provide in the first year. With appropriate maintenance, projects can strengthen over time rather than wearing down, leading to lower life-cycle costs (Roseen 2011). Green infrastructure tends to need more frequent O&M than traditional grey infrastructure, but it is less intense and expensive as projects grow more resilient as they age. Additionally, replacing existing turf with more appropriate native/drought-tolerant landscapes as a way reduce water waste/enhance local water supplies (native gardens use 83% less water than traditional grass), can offer additional cost savings (such native landscaping generates 56% less green waste and require 68% less maintenance than the traditional gardens) (City of Santa Monica 2013).

Additionally, property owners can provide the necessary O&M, just as they now care for their landscapes. Investments to build capacity and buy-in are needed to accelerate adoption of these new practices, but as garden/garden has shown (City of Santa Monica 2013), the inputs and time required to properly manage climate-resilient landscapes are different but less burdensome—in both time and materials—than the current paradigm. Eliminating the need for pesticides, fertilizers, and gas-powered machinery creates added benefits for water and air quality goals.

Conversely, grey and grey/green infrastructure projects typically require manual or mechanic operation, cleaning, and below-ground repairs that can be costly due to lack of access, excavation, and reconstruction (Roseen 2011). The cost of upgrading grey infrastructure can be astronomical, especially if maintenance is deferred over time. For example, the Clearwater Project upgrades being proposed by the Sanitation Districts of Los Angeles County (to replace existing sewage infrastructure leading from Carson to the coast) is estimated at \$700 million. Similarly, the proposed California Water Fix (recently approved for funding by MWD) is estimated to cost between \$17-26 Billion, with \$50 million a year for operations and maintenance. Moreover, experience teaches us that large-scale projects tend to severely underestimate construction costs. More decentralized, greener infrastructure is a way to hedge again needing massive capital investments as old infrastructure ages and degrades.

Multiple Benefits

According to the US EPA (2017), the two most common approaches for cost analysis fail to address broader differences in performance, assessing only:

- initial construction costs
- life cycle costs, including planning, design, installation, operation and maintenance, and replacement.

Nature-based projects provide manifold benefits. Quantifying these benefits demonstrates they realize significant return for investments collectively over time. The City of Philadelphia found that the value of green infrastructure for stormwater management ranged from \$1.94 to 4.47 billion over a 40-year period, as compared with \$0.06 to \$0.14 billion for grey infrastructure alternatives alone (Stratus 2009). Factors included water quality improvements as well as recreation, aesthetics for land value, urban cooling, wetland creation, jobs, energy efficiency, air-related health impacts, and traffic impacts. In Portland a 3.5 to 5 percent increase in home values was also observed with green streets and swales (Entrix 2010).

In Los Angeles, the urban environment is built-out with limited space for improvements, and the region faces many challenges from climate change and drought to chronic physical and mental health that can be positively impacted by environmental improvements. Efficiency is increasingly vital for every investment and every square foot. **Distributed and neighborhood-scale nature-based projects are critical to clean, absorb, and infiltrate water effectively, while also:**

- improving air quality, sequestering carbon, and providing urban cooling by replacing concrete and other impermeable surfaces with healthy soils, vegetated groundcover, shrubs, and trees
- mitigating local flood risk by offsetting peak flow and reducing erosion
- increasing longevity and integrity of water quality investments through reduced wear on systems
- making opportunities for habitat and improving species diversity
- reducing green waste when replacing existing turf and mulching vegetation on-site, lessening disposal and transportation costs
- making opportunities for recreation with associated amenities
- improving aesthetics, further increasingly quality of life and economic potential through increased land value and commercial interest
- making communities more climate resilient by increasing green space and reducing energy associated with pumping and treatment of water
- supporting a green economy, providing a wide variety of design, construction and ongoing maintenance jobs throughout the LA region
- reducing traffic impacts of alternatively larger infrastructure projects

Soil and vegetation may be among the most essential assets to address climate change. Developing research continues to highlight additional benefits of soil and vegetation to impact air quality and carbon sequestration. Diverse vegetation structures including trees, shrubs, and groundcovers can reduce localized concentrations of nitrogen dioxide by as much as 40% and particulate matter by as much as 60% (Pugh et. al. 2012). Trees are also well-established for absorbing carbon, and globally soil alone stores more than three times the total carbon in the atmosphere (Rattan 2007, Batjes 1996). Wetlands are most effective—primarily freshwater wetlands—holding up to 30% of soil carbon in 8% of the land area (Nahlik and Fennessy 2016). 0.35 tons carbon/hectare/year (.007 lbs/square foot) can be sequestered by reforestation alone (Minasny et. al. 2017, Morris et. al. 2017)

Increasing soil organic matter (SOM) can also increase its available water-holding capacity (Hudson 1994). Healthy soil can increase water infiltration and hold up to 20 times its weight in water (California Department of Food and Agriculture 2018), significant factors in minimizing flood impacts.

Distributed, nature-based projects are not only cost-effective additions and alternatives for grey and grey/green infrastructure, but essential companions in a project portfolio for a sustainable, livable, climate-resilient Los Angeles.

References

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AGENDA ITEM NO. 6A

MINUTES OF THE GATEWAY WATER MANAGEMENT AUTHORITY LOS ANGELES GATEWAY REGION INTEGRATED REGIONAL WATER MANAGEMENT JOINT POWERS AUTHORITY BOARD AT PARAMOUNT, CALIFORNIA THURSDAY, JUNE 14, 2018

A regular meeting of the Board of Directors of the Gateway Water Management Authority was held on Monday, June 14, 2018 at 12:00 p.m. at the Progress Park Plaza, 15500 Downey Avenue, Paramount, CA.

Vice Chair Adriana Figueroa called the meeting to order at 10:08 a.m. Roll was called by Ms. Penn and a quorum of the Board was declared.

BOARD MEMBERS PRESENT:

Okina Dor Jordan Monroe Robert Linton (alternate) Veronica Sanchez (alternate) Joseph Legaspi (alternate) Gina Nila Dan Mueller (alternate) Christina Dixon (alternate) Mark Stowell Lisa Rapp Melissa You Christopher Garner Cecilia Amaya (alternate) Adriana Figueroa Sarah Ho (alternate) Kenner Guerrero (alternate) Mark Grajeda Kelli Tunnicliff Gladis Deras (alternate) Claudia Arellano (alternate) Phuong Nguyen (alternate)

Artesia Avalon Bell Bell Gardens Central Basin MWD Commerce Downey Huntington Park La Mirada Lakewood Long Beach Long Beach Water Dept. Montebello Norwalk Paramount Pico Rivera Pico Rivera Water District Signal Hill South Gate Vernon Whittier

STAFF AND GUESTS ON SIGN-IN SHEET:

Grace Kast	Executive Officer
Toni Penn	Admin/Accounting Manager
Bill Minasian	Downey Resident
Kekoa Anderson	Koa Consulting
Russ Bryden	LA County Flood Control District

ITEM 3- ADDITIONS TO THE AGENDA

None.

ITEM 4 – ORAL COMMUNICATIONS TO THE BOARD

None.

ITEM 5 – ELECTION/APPOINTMENTS

Ms. Kast reported that, with the resignation of Chris Cash on June 1, 2018, the position of Chair of the GWMA was now vacant. She stated that staff was requesting that the Chair also be appointed to serve as the Chair of the Lower San Gabriel/Lower Los Angeles IRWM Sub-region Steering Committee which also votes on the Greater LA IRWM Leadership Committee. She stated that she has been serving as the alternate for the Chair.

Director Nila nominated Director Rapp as Chair of the GWMA. The motion was seconded by Director Tunnicliff and was approved by the following voice vote:

AYES: DOR, MONROE, LINTON, SANCHEZ, LEGASPI, NILA, MUELLER, DIXON, STOWELL, RAPP, YOU, GARNER, AMAYA, FIGUEROA, HO, GUERRERO, GRAJEDA, TUNNICLIFF, DERAS, ARELLANO, NGUYEN

NOES: NONE

ABSTAIN: NONE

Director Rapp nominated Direct Figueroa as Vice Chair of the GWMA. The motion was seconded by Director Grajeda and was approved by the following voice vote:

- AYES: DOR, MONROE, LINTON, SANCHEZ, LEGASPI, NILA, MUELLER, DIXON, STOWELL, RAPP, YOU, GARNER, AMAYA, FIGUEROA, HO, GUERRERO, GRAJEDA, TUNNICLIFF, DERAS, ARELLANO, NGUYEN
- NOES: NONE
- ABSTAIN: NONE

Director Rapp nominated Director Tunnicliff as Secretary/Treasurer of the GWMA. The motion was seconded by Director Stowell and was approved by the following voice vote:

AYES: DOR, MONROE, LINTON, SANCHEZ, LEGASPI, NILA, MUELLER, DIXON, STOWELL, RAPP, YOU, GARNER, AMAYA, FIGUEROA, HO, GUERRERO, GRAJEDA, TUNNICLIFF, DERAS, ARELLANO, NGUYEN

- NOES: NONE
- ABSTAIN: NONE

ITEM 6 – CONSENT CALENDAR

Director Nila motioned to approve the consent calendar as presented. The motion was seconded by Director Grajeda and was approved by the following voice vote:

AYES: DOR, MONROE, LINTON, NILA, MUELLER, DIXON, STOWELL, RAPP, YOU, GARNER, FIGUEROA, TUNNICLIFF, DERAS

NOES: NONE

ABSTAIN: MINUTES ONLY: GRAJEDA, LEGASPI, NGUYEN, HO, ARELLANO, GUERRERO, AMAYA, SANCHEZ

ITEM 7 – PRESENTATION: SAFE CLEAN WATER PROGRAM – LA COUNTY FLOOD CONTROL DISTRICT

Mr. Russ Bryden gave a presentation of Los Angeles County Flood Control District's Safe Clean Water Program. He reviewed the program in detail and indicated that the intent of this Program was to improve public health. He stated that by reducing pollution in streams, rivers, lakes, and oceans, eliminating wasting of stormwater that would otherwise flow to the ocean, and investing in the communities through public education and school curriculum the County believes it leads to behavioral changes toward stormwater, creates green infrastructures job training, and puts needed emphasis on underserved communities. He also discussed programs pertaining to municipalities, districts and regional objectives along with the funding process. In closing Mr. Bryden indicated that there will be a Board of Supervisors Public Hearing on July 10th.

ITEM 8 – GWMA MEMBERSHIP REDUCED DUES FOR FY2018/19 (ARTESIA, BELL, CUDAHY & MAYWOOD)

Ms. Kast reported that in July 2017, the Board adopted a Membership Dues Policy that outlined the eligibility requirements for JPA Member reduced dues. Ms. Kast stated that GWMA currently had 4 memberships with reduced dues, which were as follows: Artesia (\$5,500); Bell (\$7,500); Cudahy (\$5,500); and Maywood (\$4,500). She indicated that GWMA received a total of 4 reduced dues applications from the cities of Artesia, Bell, Cudahy and Maywood for FY 2018/19. She stated that Artesia's audited financial for 2016 were not yet finalized and noted that, had they been finalized, Artesia would not have qualified for reduced dues.

Director Dor discussed the reasons why Artesia would not qualify for reduced dues and requested that the Board revisit GWMA's Reduced Dues Policy.

Director Figueroa moved to approve reduced dues for FY2018/19 for the cities of Artesia, Bell, Cudahy, and Maywood. The motion was seconded by Director Deras and was approved by the following voice vote:

AYES: DOR, MONROE, LINTON, SANCHEZ, LEGASPI, NILA, MUELLER, DIXON, STOWELL, RAPP, YOU, GARNER, AMAYA, FIGUEROA, HO, GUERRERO, GRAJEDA, TUNNICLIFF, DERAS, ARELLANO, NGUYEN

NOES: NONE

ABSTAIN: NONE

ITEM 9 – GWMA FY 2018/19 OPERATING BUDGET

Ms. Kast presented the GWMA proposed budget for FY 2018/19, which reflected actual costs and projections through the end of the fiscal year. She stated that staff anticipated an ending fund balance of \$496,922 for FY 2017/18 (including watershed group reserves). She stated that the administrative budget did not include MOU project costs or grant project costs, but it did reflect the administrative and legal costs associated with the MOUs.

Director Nila moved to approve GWMA's FY2018/19 operating budget as presented. The motion was seconded by Director Dor and was approved by the following voice votes:

AYES: DOR, MONROE, LINTON, SANCHEZ, LEGASPI, NILA, MUELLER, DIXON, STOWELL, RAPP, YOU, GARNER, AMAYA, FIGUEROA, HO, GUERRERO, GRAJEDA, TUNNICLIFF, DERAS, ARELLANO, NGUYEN

NOES: NONE

ABSTAIN: NONE

Directors Figueroa and Garner left at 1:24 p.m.

ITEM 10 – STATUS REPORT UPDATE ON GWMA FUNDING STRATEGY & GRANT PROGRAM

Mr. Kekoa Anderson, Koa Consulting, provided the Board with a status update on GWMA Funding Strategy and Grants Program ("Program").

Director Nila moved to authorize staff to solicit proposals from GWMA's On-Call Consulting list as needed. The motion was seconded by Director Arellano and was approved by the following voice votes:

AYES: DOR, MONROE, LINTON, SANCHEZ, LEGASPI, NILA, MUELLER, DIXON, STOWELL, RAPP, YOU, AMAYA, HO, GUERRERO, GRAJEDA, TUNNICLIFF, DERAS, ARELLANO, NGUYEN

NOES: NONE

ABSTAIN: NONE

ITEM 11 – APPROVE FIRST AMENDMENT TO THE PROFESSIONAL SERVICES AGREEMENT WITH ANCHOR QEA, LLC FOR THE HARBOR TOXIC DOWNSTREAM GROUP

Ms. Kast reported that in July 2014, GWMA entered into a Professional Services Agreement with Anchor QEA, LLC as recommended by the Harbor Toxics Downstream Group to develop a coordinated compliance monitoring and reporting plan, implement and conduct the monitoring set forth in the CCMRP and perform other professional services. She indicated that this Agreement was set to expire on September 30, 2019. She indicated that the Harbor Toxics Downstream Group had requested that GWMA amend the Agreement to extend the terms of the Agreement for an additional three months to December 31, 2019 in order to coincide with the annual reporting period.

Director Nila moved to approve the First Amendment to the Professional Services Agreement between GWMA and Anchor QWA, LLC for the Harbor Toxic Downstream Group as presented. The motion was seconded by Director Dor and approved by the following voice votes:

AYES: DOR, MONROE, LINTON, SANCHEZ, LEGASPI, NILA, MUELLER, DIXON, STOWELL, RAPP, YOU, AMAYA, HO, GUERRERO, GRAJEDA, TUNNICLIFF, DERAS, ARELLANO, NGUYEN

NOES: NONE

ABSTAIN: NONE

ITEM 12 – GATEWAY REGION WATERSHED MANAGEMENT GROUPS ORAL REPORT

Lower Los Angeles River Upper Reach 2 Watershed Group

Director Nila reported that a Request for Proposal had been released for the design of the Ford Park project of which GWMA was the Grant Awardee.

Lower Los Angeles River Watershed Group

None.

Los Cerritos Channel Watershed Group

Director Rapp reported that one project was completed and that another project had begun.

Lower San Gabriel River Watershed Group

None.

ITEM 13 – EXECUTIVE OFFICER'S ORAL REPORT

None.

ITEM 14 – DIRECTORS' ORAL COMMENTS/REPORT

None.

The meeting was adjourned at 1:45 p.m.

Kelli Tunnicliff, Secretary/Treasurer

Date

AGENDA ITEM NO. 6B



July 12, 2018

SECTION NO. 6B Approve the Warrant Register for July 2018

SUMMARY:

The Warrant Register is a listing of general checks issued since the last warrant register. Warrants will be signed by 2 of the 3 Board Officers and released by Toni Penn, serving as the Administrative/Accounting Manager of the Gateway Water Management Authority, upon Board Approval.

DISCUSSION:

The Warrant Register for expenditures dated July 2018 in the amount of \$163,874.22 are submitted for approval. Invoices and supporting documentation are available for review at the office of the GWMA.

FISCAL IMPACT:

The Warrant Registers totals \$163,874.22. Funds to cover payment are available in the GWMA budget.

RECOMMENDATION:

Approve the Warrant Register for July 2018 as presented.

AGENDA ITEM NO. 6b WARRANT REGISTER Disbursement Journal July-18

Invoice		Invoice			
Date	Vendor	Number	Description		Amount
5/23/2018	Anchor QEA	57298	Harbor Toxics TMDL Monitoring for FY 16/17	\$	23.371.00
5/23/2018	Anchor QEA	57299	Harbor Toxics TMDL Monitoring for FY 17/18	Ś	13,424.31
3/31/2017	Central Basin MWD	2017-00000003	Prop 84 2015 Grant Reimbursement	\$	1,067.04
7/1/2018	City of Paramount	3891	Rent - July 2018	\$	351.51
7/1/2018	City of Paramount	3893	Reimbursment for June Meeting Expenses	\$	27.49
6/29/2018	Gateway Cities COG	6/29/2018	Reimbursement for Office Supplies	Ś	585.00
7/1/2018	GK Consulting	18-6-DACIP-GWMA	GLAC DAC Chair Activities for June 2018	Ś	4.160.00
07/01/18	GK Consulting	18-6-GWMA	Professional and Accounting Services	Ś	18.191.24
06/25/18	Joe A Gonsalves & Son	156653	Legislative Advocacy Services for July	Ś	2.083.00
09/26/17	John Hunter & Associates	GAGRANT0717	Prop 84 - Round Two through 6/30/17	Ś	62.694.42
06/18/18	John Hunter & Associates	GANPLA0518	LLAR WMP Implementation for May	\$	29.226.14
06/18/18	Richard Watson & Associates	18-192-003-006	LCC Watershed Monitoring Program for May	Ś	42.130.21
06/13/18	Richards Watson Gershon	217281	Legal Services - General	Ś	2,360.49
06/13/18	Richards Watson Gershon	217282	Legal Services - Harbor Toxic Upstream	Ś	1.395.00
06/04/18	Rodger's Catering	29789	Meeting Expenses	Ś	148.92
06/14/18	Rodger's Catering	29854	Meeting Expenses	Ś	448 95
06/27/18	Toni Penn	6-27-18-expenses	Office Supplies	Ś	71.85
		1		\$	163,874.22
		1		•	•

Reviewed and Approved by:

Kelli Tunnicliff, GWMA Secretary/Treasurer

AGENDA ITEM NO. 6C



July 12, 2018

SECTION NO. 6C: Status of total legal expenditures for General Legal Counsel Services for FY 2017/18

SUMMARY:

At the Board meeting in January 2018, the Board increased the budget for legal counsel services from \$50,000 to \$88,000 for FY 2017/18 to address unique and unexpected legal issues. At that time, the Board also directed staff to provide monthly updates on total expenditures for legal counsel services for FY 2017/18.

Legal Counsel Services Update:

\$88,000.00	FY2017/18 Budget amount for Legal Counsel services
<u>\$86,679.61</u>	Expenditures for Legal Counsel services through May 2018
\$ 1,320.39	Remaining budget amount available through June 30, 2018

FISCAL IMPACT:

The total expenditures for Legal Counsel services through May 2018 total \$826,679.61. Funds to cover payment are available in the GWMA budget.

RECOMMENDATION:

Receive and file the update on expenditures for Legal Counsel services.

Members: Artesia · Avalon · Bell · Bell Gardens · Bellflower · Central Basin Municipal Water District · Cerritos · Commerce · Cudahy · Downey · Hawaiian Gardens · Huntington Park · La Mirada · Maywood · Lakewood · Long Beach · Long Beach Water Department · Lynwood · Montebello · Norwalk · Paramount · Pico Rivera · Pico Water District · Santa Fe Springs · Signal Hill · South Gate · Vernon · Water Replenishment District of Southern California · Whittier

AGENDA ITEM NO. 6D



July 12, 2018

SECTION NO. 6D: Ratify Transfer of Funds from GWMA's Wells Fargo Checking Account to GWMA's LAIF Account

SUMMARY:

In September 2015, the Board approved the GWMA's Accounting Policies and Procedures Manual. Included in this Manual was GWMA's Investment Policy. At the Board meeting in January 2017, the Board directed staff to establish a Local Agency Investment Fund (LAIF in the State Treasury under Government Code Section 16429.1 and approved the following procedures:

- a. Authorize the Chair, Vice-Chair and/or Secretary/Treasurer to initiate LAIF transfers in-out and to/from GWMA's Wells Fargo Checking account and that two of the three must sign formal written approval;
- b. The written approval authorizes staff to complete LAIF transfer in/out and to/from GWMA's Wells Fargo Checking account;
- c. GWMA Board to ratify transaction under the Consent Calendar;
- d. Authorize the Secretary/Treasurer to verify that all deposits and withdrawals have been properly approved and that all deposits and withdrawals to the GWMA's bank account that paid/received the funds to/from LAIF.

On June 14, 2018, GWMA's Chair and Secretary/Treasurer initiated a transfer in the amount of \$500,000 from GWMA's Wells Fargo Checking account to GWMA's LAIF account for investment/interest earning opportunities. Staff is now recommending that the Board ratify this transaction.

FISCAL IMPACT:

None.

RECOMMENDATION:

Ratify transfer in the amount of \$500,000 from GWMA's Wells Fargo Checking account to GWMA's LAIF account.

Lisa Rapp (Lakewood), Board Chair • Adriana Figueroa (Norwalk), Vice-Chair • Kelli Tunnicliff (Signal Hill), Secretary/Treasurer Proudly serving Gateway cities and agencies in Southeastern Los Angeles County

Members: Artesia · Avalon · Bell · Bell Gardens · Bellflower · Central Basin Municipal Water District · Cerritos · Commerce · Cudahy · Downey · Hawaiian Gardens · Huntington Park · La Mirada · Maywood · Lakewood · Long Beach · Long Beach Water Department · Lynwood · Montebello · Norwalk · Paramount · Pico Rivera · Pico Water District · Santa Fe Springs · Signal Hill · South Gate · Vernon · Water Replenishment District of Southern California · Whittier



July 12, 2018

SECTION 7: Status Report Update on GWMA Funding Strategy & Grants Program

BACKGROUND:

GWMA Funding Strategy & Grants Program FY-2018

The GWMA Funding Strategy & Grants Program FY-2018 allows for local and regional significant projects to move forward towards implementation with group consensus. The Funding Strategy & Grants Program will identify priority projects and encourage program stakeholders to put forward their best and most creative ideas for innovatively addressing how emerging surface water and transportation technologies and applications can be assimilated with existing and proposed systems to benefit the region.

The goal of the GWMA Funding Strategy & Grants Program FY-2018 is to coordinate and identify possible funding strategies and to prioritize and optimize the benefits to the region with the greatest rate of return on our investment though shared funding avenues and program coordination.

Existing Regional Program Coordination

- The existing GWMA Integrated Regional Water Management Plan (IRMWP), based on the GWMA Board Meeting on May 14, 2018 directed staff not to update the GWMA IRMWP and only pursue project grants using the Greater Los Angeles IRWMP, which will contain all water related projects from the entire Gateway Region and the four watershed groups. Discussion section to follow describes the process of updating the projects into the Greater Los Angeles IRWMP's **OPTI system**.
- The Gateway Cities Strategic Transportation Plan (STP), which contains a comprehensive subregional plan of transportation projects from all Gateway Cities jurisdictions and analyzes relationships and impacts amongst these programs.
- The Lower Los Angeles River Revitalization Plan, developed collaboratively by a 39 member working group and various elected officials, provides a strategic opportunity to support the projects that were identified through this community-based planning exercise. Through this plan, over 155 river-related and adjacent projects were identified for purposes of revitalizing the Lower Los Angeles River and its tributaries.

DISCUSSION:

The following discussion items provide an update on the current scope of work of the GWMA Funding Strategy & Grants Program:

Members: Artesia · Avalon · Bell · Bell Gardens · Bellflower · Central Basin Municipal Water District · Cerritos · Commerce · Cudahy · Downey · Hawaiian Gardens · Huntington Park · La Mirada · Maywood · Lakewood · Long Beach · Long Beach Water Department · Lynwood · Montebello · Norwalk · Paramount · Pico Rivera · Pico Water District · Santa Fe Springs · Signal Hill · South Gate · Vernon · Water Replenishment District of Southern California · Whittier

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a) Coordination Meetings:

The coordination meetings that are planned in the near future include the following:

Upcoming Meetings:

•	RMC Board Meeting	July 9, 2018
•	Lower Los Angeles River UR2 Watershed Group	July TBD, 2018
•	Greater LA – Lower SG/Lower LA Sub-region	July 17, 2018
•	Los Cerritos Channel Watershed Group	July 19, 2018
•	Lower San Gabriel River Watershed Group	July 19, 2018
•	Lower Los Angeles River Watershed Group	July 23, 2018

GCCOG/GWMA Joint Committee Meeting •

August 6, 2018

b) Grant Program Schedule Overview:

We are currently developing a Program Schedule Overview to identify the major milestones and activities required to meet the program objectives. **Below is a copy of the draft Schedule Summary**



This schedule overview will continue to be developed over the months to come and input from GWMA Board Members is encouraged.

c) Grant Program Overview:

We are currently developing the draft GWMA Funding Strategy & Grants Program while at the same time beginning to identify candidate projects and priorities for the current grants that are now active. The following grant overview being developed includes the following active and pending grants:

Active:

- 1. Lower LA River, RMC Prop 1 Grant
 - (The RMC will start accepting applications July/Aug 2018, on a first come first served basis)
- 2. Prop 1 Greater LA IRWM Implementation Grant
 - (OPTI updates June 2018, Application Winter 2018)

Pending:

- RMC Prop 1, Round 2 (Implementation late 2018/early 2019)
- Prop 1 Stormwater Grant Round 2 (Implementation late 2018/early 2019)
- Others grants being developed as part of GWMA Funding Strategy & Grants Program (TBD)

d) Active Grants – Summary Details:

1. Lower LA River, RMC Prop 1 Grant Summary:

The allocation is for projects to protect and enhance urban creeks and their tributaries (Prop. 1 Section 79735(a)). Projects identified within the Lower LA River Revitalization Plan and along the Lower LA River corridor are eligible.

The following Exhibits identify the current planned projects along the Los Angeles River and Interstate 710.



Our meetings to date are beginning to identify candidate focus location & projects to submit for the Lower LA River, RMC Prop 1 Grant



The Grant focuses on the following programs/projects categories:

- Property Acquisition
- Enhancement Fund (Small Starts Ready Project under \$1M, & Planning Projects for Revitalization)
- Construction Fund (Supports projects for Revitalization)
- Green Incubator Fund (Green & Environmental non-profits)

Project/Program grants amounts are as follows:

\$50M over the next 2-4 years

Schedule Overview:

- Informational Workshops (March 2018).
- Call for Projects are due around (May-July 2018).
- Proposal Deadline is planned for July 2018
- Grant agreements (for awards) will come around Summer of 2019.

2. Prop 1 IRWM Implementation Grant, Round 1 Summary:

The grant eligibility criteria includes the following programs/projects elements:

- Does at least one project in the proposal provide benefits that help water infrastructure systems adapt to climate change impacts? [79741 (a), 79742 (e)].
- Does the proposal contribute to regional water self-reliance [79741 (c)]?
- Has the IRWM Plan, updated to comply with 2016 IRWM Plan Standards, been submitted to, or previously been deemed sufficient by DWR prior to grant application submittal?
- Does the proposed budget reflect that the grant administration budget is less than or equal to 10% of the grant amount requested?
- Is the project included in the IRWM Plan?
- Does the project address one or more of the needs and priorities of the IRWM region as defined in IRWM Plan (meet the intent of most critical statewide needs [79707(a)])?
- Does the project address one or more of the Statewide Priorities as identified in CA Water Action Plan and DWR Prop 1 IRWM Grant Program Guidelines (updated 2018)?
- For construction projects: does the application confirm a lifecycle benefit for 15 years as required by Government Code 16727?
- For applicable projects, will CEQA be complete and permits acquired within 6 months of Final Award or prior to agreement execution, whichever occurs first?

Project/Program grants amounts (Preliminary) are as follows:

\$98M over the next 2 rounds, TBD amounts for Round 1 & 2. \$9.8M for DAC Projects

Schedule Overview:

- Release draft Proposal Solicitation Package (PSP)
- Public Meetings, Workshops and Comments
- Release draft PSP
- Proposal Deadline
- Round 1 Grant Awards

e) Greater Los Angeles IRWMP - OPTI System Update

The process of updating the existing GWMA IRMWP Projects into the Greater Los Angeles IRWMP's project database known as OPTI, which will contain all water related projects from the Gateway Region is undergoing the following steps:

Late June 2018 Late Summer 2018 Fall 2018 Starting January 2019 Late 2019

- 1. Evaluation of the project listings in the Greater Los Angeles IRWMP OPTI system, determined many GWMA projects were missing, coded incorrectly, completed or in need of updated information.
- 2. Utilizing the existing GWMA IRMWP project listings, the four Watershed Management Plan Group meetings (that took place last month) focused on identifying and updating the OPTI system projects so that the Greater Los Angeles IRWMP is current and represents the active projects of the GWMA. This step needs focus discussions with the Water Districts & Cities Water Departments, which is on-going.
- 3. Discuss the draft Prop 1 IRWM Grant Implementation schedule, process and review projects in OPTI in order to establish a baseline of current projects within the sub-region. Assure that all priority projects for the active grants are updated in OPTI as soon as possible.
- 4. All new projects must be presented to and accepted by the Lower SG/LA Subregion Steering Committee in order for them to be included in the Greater LA IRWM Plan and eligible for grants.

The update and maintenance of the Greater Los Angeles IRWMP OPTI database will be an on-going exercise for the GWMA (as this is a living document). However, the steps we complete over the next month or two will greatly improve the level of completion and detail while at the same time covering the projects that will be applicants on the current Active Grant List.

DOWNTOWN My Projects ▲ Shared Projects O ✓ Like Projects Other Projects Whitti Water Supply / Duth Inte Fe South V ttier Groundwater Water Quality La Habra Habitat, Open Space, Mirad Recreation 🗖 🗹 Flood ompton brba Linda Project Status **Buena** Park Project Type Cerritos Sub-region Anaheim Approval illa Park Signal Hill Orange

Below is map of All Projects <u>Currently</u> listed in OPTI

FISCAL IMPACT:

Currently we are identifying the program and projects that will determine the fiscal impact. As the information becomes more defined over the next months, we will be seeking direction from the GWMA on how they want to fund the cost of grant applications. Likely GWMA, on behalf of watershed groups or other regional project group(s), could be applying for several grants over the 2019 fiscal year.

a) Prop 1 IRWM Implementation

Identification of projects to submit on the Prop 1 IRWM Implementation Grant, Round 1 is an ongoing process with the Greater LA – Lower SG/Lower LA Sub-region and Watershed working groups. We anticipate that 3 to 5 projects (or combination of projects) will be identified for submittal of the Grant. The County of LA has existing On-Call firms that will prepare the region-wide grant package with a collection of projects. The estimated cost per project application of \$20k would require a range of \$60-100k needed to prepare the 3 to 5 grants. If the Board desires to fund the application cost, the funding for the Prop 1 IRWM Implementation Grants could come from the GWMA reserves. The timing of the development of the GWMA Funding Strategy & Grants Program, the availability of current grant programs and the development of the FY 2018/19 budget did not allow for sufficient time and evaluation of potential budgetary needs. To that end, the FY 2018/19 Budget estimates an ending fund balance of \$359,607 which includes the required 6-months of operating reserves (\$226,859) that must be maintained. Thus, the available reserve funds that could be used to fund several grant applications is \$132,748. If GWMA selected 5 projects to fund grant applications, an estimated total of \$100,000 would be needed leaving a balance of \$32,748 in available reserves. This, of course would impact how future grant applications could be funded. Identification of the Grant Applicant for each project will be determined in the months to come.

b) Lower LA River, RMC Prop 1 Grant

Identification of projects to submit on the Lower LA River, RMC Prop 1 Grant is an ongoing process with the four Watershed Management Groups and the GCCOG/GWMA Joint Committee. Currently we anticipate that 3 project combinations (2-projects in the Lower LA River WMG and 1-project in the Lower LA River-UR2 WMG) will be identified for submittal of the Grant. The Watershed Management Groups will prepare and submit the grant packages. The estimated cost per grant range from \$20-30k. The funding for the Lower LA River, RMC Prop 1 Grants is expected to come from the Watershed Management Groups budget utilizing their consultants. Identification of the Grant Applicant for each grant will be determined in the weeks to come. Currently, the GWMA has been requested to act as the Grant Applicant for the project in the Lower LA River-UR2 WMG.

RECOMMENDATIONS:

- a) Authorize staff to identify up to 5 projects for inclusion in the Greater LA Prop 1 IRWM Implementation Grant cycle for GWMA Board review, approval and consideration to fund grant application costs through engagement with the County of LA for the preparation and submittals of the Prop 1 IRWM Implementation Grant Application.
- b) Upon final direction from the LA River Upper Reach 2 Group, authorize staff to develop a draft agreement for GWMA to act as the Grant Applicant for the following project: Cities of Bell Gardens and Cudahy for the Asmus, Shull Park and River Road Park water quality and urban greening improvements at the LA River.

AGENDA ITEM NO. 8



July 12, 2018

SECTION 8: Approve Second Amendment to the Professional Services Agreement with Anchor QEA, LLC for the Harbor Toxic Downstream Group

SUMMARY:

In March, GWMA issued a Request for Proposals (RFP) for Harbor Toxic regional and monitoring reporting for the Harbor Toxic Downstream Group. The deadline to submit a proposal was on April 9, 2018. GWMA received three proposals, which were from Anchor QEA, LLC, Kinnetic Laboratories, Inc., and Latitude Environmental, Inc. GWMA forwarded the proposals to the Harbor Toxics Downstream Group for consideration. After careful review of the proposals received, the Harbor Toxic Downstream Group has elected to continue with Anchor QEA, LLC and has requested that GWMA amend the Professional Services Agreement between GWMA and Anchor QEA, LLC to further extend the Agreement's expiration date from December 31, 2019 to December 31, 2024, increase the Consultant's compensation to an amount not to exceed \$3,768,533 to cover the extended expiration date, incorporate Consultant's proposed rate sheet into the Agreement and to amend the Services set forth in Exhibit A of the Agreement.

BACKGROUND:

In July 2014, GWMA entered into a Professional Services Agreement (PSA) with Anchor QEA, LLC as recommended by the Harbor Toxic Downstream Group to develop a Coordinated Compliance Monitoring and Reporting Plan ("CCMRP") and to implement and conduct the monitoring set forth in the CCMRP and perform other professional services. This PSA is set to expire on September 30, 2019. At the request of the Harbor Toxic Downstream Group, this Agreement was first amended to extend the Agreement's expiration date from September 30, 2019 to December 31, 2019.

FISCAL IMPACT:

GWMA will be reimbursed legal and administrative costs for the development and management of the contract per the terms of the MOU.

Lisa Rapp (Lakewood), Board Chair • Adriana Figueroa (Norwalk), Vice-Chair • Kelli Tunnicliff (Signal Hill), Secretary/Treasurer Proudly serving Gateway cities and agencies in Southeastern Los Angeles County

Members: Artesia · Avalon · Bell · Bell Gardens · Bellflower ·Central Basin Municipal Water District · Cerritos · Commerce · Cudahy · Downey · Hawaiian Gardens · Huntington Park · La Mirada · Maywood · Lakewood · Long Beach · Long Beach Water Department · Lynwood · Montebello · Norwalk · Paramount · Pico Rivera · Pico Water District · Santa Fe Springs · Signal Hill · South Gate · Vernon · Water Replenishment District of Southern California · Whittier



RECOMMENDATION:

a. Approve Second Amendment to the Professional Services Agreement between GWMA and Anchor QEA, LLC for the Harbor Toxic Downstream Group in an amount not to exceed \$3,768,533.00 through December 31, 2024, as presented.

Members: Artesia · Avalon · Bell · Bell Gardens · Bellflower · Central Basin Municipal Water District · Cerritos · Commerce · Cudahy · Downey · Hawaiian Gardens · Huntington Park · La Mirada · Maywood · Lakewood · Long Beach · Long Beach Water Department · Lynwood · Montebello · Norwalk · Paramount · Pico Rivera · Pico Water District · Santa Fe Springs · Signal Hill · South Gate · Vernon · Water Replenishment District of Southern California · Whittier

SECOND AMENDMENT

TO

PROFESSIONAL SERVICES AGREEMENT

This Second Amendment to that certain Professional Services Agreement ("Agreement") by and between the Los Angeles Gateway Region Integrated Regional Water Management Authority also referred to as the Gateway Water Management Authority ("GWMA") and ANCHOR QEA, LLC a California Limited Liability ("Consultant") is dated and effective as of this _____ day of _____, 2018.

- 1. This Second Amendment is made with respect to the following facts and purposes:
 - A. GWMA has entered into a Memorandum of Understanding between the GWMA and the Cities of Bellflower, Lakewood, Long Beach, Paramount, Rancho Palos Verdes, Rolling Hills, Rolling Hills Estates, Signal Hill, and Los Angeles, acting by and through its Board of Harbor Commissioners ("POLA"), the County of Los Angeles, Los Angeles County Flood Control District ("LACFCD"), and the Port of Long Beach ("POLB") for Administration and Cost Sharing for the Prepartaion and Implementation of a Coordinated Compliance Monitoring and Reporting Plan ("CCMRP") as Required by the Regional Water Quality Control Board, Los Angeles Region, for the Dominguez Channel and Los Angeles and Long Beach Harbor Waters Toxic Pollutants Total Maximum Daily Loads ("MOU");
 - B. For the purposes of the Agreement, the term "Permittees" means the Cities of Bellflower, Lakewood, Long Beach, Paramount, Rancho Palos Verdes, Rolling Hills, Rolling Hills Estates, and Signal Hill, and the County of Los Angeles, the LACFCD, POLA, and POLB;
 - C. The United States Environmental Protection Agency established the Total Maximum Daily Loads for Toxic Pollutants on March 23, 2012, with the intent of protecting and improving water quality in the Dominguez Channel and the Greater Los Angeles and Long Beach Harbor Waters ("Harbor Toxic Pollutants TMDL");
 - D. The Harbor Toxic Pollutants TMDL regulates certain discharges from National Pollutant Discharge Elimination System ("NPDES") permit holders, requiring organization and cooperation among the Permittees;
 - E. The Permittees manage, drain or convey storm water into at least a portion of the Dominguez Channel, Greater Los Angeles and Long Beach Harbor Waters (including Consolidated Slip) and the Los Angeles River Estuary ("Greater Harbor Waters");
 - F. The Permittees desire to facilitate the achievement of the objectives of the Harbor Toxic Pollutants TMDL by implementation of a CCMRP to ensure consistency with other regional monitoring programs and usability with other TMDL related studies;
 - G. The Permittees have elected to implement the CCMRP to address the Harbor Toxic Pollutants TMDL requirements;
- H. Pursuant to the MOU, GWMA provides administrative coordination services to the Permittees relating to the implementation of the CCMRP and any additional services agreed to by the Permittees and approved by GWMA;
- I. The Permittees have authorized GWMA to hire and serve as conduit for paying a consultant, Anchor QEA, L.L.C. ("Consultant"), approved by the Permittees, to implement and conduct the monitoring set forth in the CCMRP;
- J. GWMA and Consultant entered into the Agreement dated July 10, 2014 for the purpose of retaining the Consultant to implement and conduct the monitoring set forth in the CCMRP and perform other professional services; and
- K. The Agreement was first amended extend the Agreement's expiration date from September 30, 2019 to December 31, 2019.
- L. The purpose of this Second Amendment is to further extend the Agreement's expiration date from December 31, 2019 to December 31, 2024, increase the Consultant's compensation amount to cover the extended expiration date, incorporate Consultant's proposed rate sheet into the Agreement, and to amend the Services set forth in Exhibit A of the Agreement.
- 2. Section 3 of the Agreement is hereby amended in its entirety to read as follows:

"TIME FOR PERFORMANCE

- **3.** The term of this Agreement shall commence on the effective date of this Agreement and expire on December 31, 2024, unless earlier terminated in accordance with the terms of this Agreement or extended by the GWMA Governing Board."
- 3. Section 6 of the Agreement is hereby amended in its entirety to read as follows:

"COMPENSATION AND METHOD OF PAYMENT

6. GWMA shall pay Consultant, for the Services performed on a time and materials basis at the rates set forth in Exhibit B and up to the not-to-exceed amount of three million, seven hundred sixty-eight thousand, five hundred thirty-three dollars and zero cents (\$3,768,533.00), which represents the initial not-to-exceed amount of two million, eighty-six thousand, six hundred fifty-eight dollars and zero cents (\$2,086,658.00) plus the Second Amendment's not-to-exceed amount of one million, six hundred eighty-one thousand, eight hundred seventy-five dollars and zero cents (\$1,681,875.00).

Consultant shall perform the Services for the amount listed above. GWMA shall not withhold federal payroll, state payroll and other taxes, or other similar deductions from each payment made to Consultant. Consultant shall pay all applicable federal, state, and local excise, sales, consumer use, and other similar taxes required by law. GWMA shall not allow any claims for additional services performed by Consultant, unless the Project Manager or GWMA Chair authorizes the additional services in writing prior to Consultant's performance of the additional services or the incurrence of additional expenses. Any additional services authorized by the Project Manager or GWMA Chair shall be

compensated at the hourly rates set forth in Exhibit B, or, if not specified, at a rate mutually agreed to by the parties.

Consultant shall submit to GWMA a proposed annual budget for the Services to be performed during each calendar year of the term of this Agreement. The proposed annual budgets shall identify the proposed total annual budget amount and the proposed budget amounts for the periods of January 1st through June 30th and July 1st through December 31st. Consultant shall submit a proposed annual budget to GWMA on or before the 1st of March for the Services to be performed during the subsequent calendar year. GWMA will submit Consultant's annual budgets to the RMC no later than April 1st of each year for the RMC's approval and adoption.

Consultant shall submit invoices to GWMA on a monthly basis for actual work performed and actual expenses incurred during the preceding month. The invoices shall describe in detail the Services performed by each person for each task, including the days and hours worked.

Prior to releasing payment to Consultant, GWMA shall submit Consultant's invoices to the RMC for final payment approval. The RMC decides whether to pay an invoice submitted by Consultant and informs GWMA of its decision. If the RMC approves GWMA payment of an invoice, GWMA shall make payment to Consultant payable to: ANCHOR QEA, LLC, 27201 Puerta Real, Suite 350, Mission Viejo, CA 92691.

GWMA's payment obligations pursuant to this Agreement are payable solely from funds appropriated to GWMA by the Permittees to fulfill the purpose of this Agreement. GWMA and Consultant expressly agree that full funding for this Agreement over the term of this Agreement is contingent on GWMA's receipt of payment from each Permittee of its proportional costs of the Services. In the event of a Permittee's failure to pay its proportional costs of the Services to GWMA, GWMA may either reduce funding for this Agreement at a level that is proportionate to the reduction in GWMA's receipt of funds from the Permittees or suspend all or a portion of the Services being performed by Consultant."

3. Exhibit A ("Services") to the Agreement is hereby amended by adding thereto the scope of work items set forth in Attachment "A" to this Second Amendment, which is attached hereto and incorporated herein as though set forth in full.

4. A new Exhibit B ("Rate Sheet") is hereby added to the Agreement as set forth in Attachment "B" to this Second Amendment, which is attached hereto and incorporated herein as though set forth in full.

5. Except for the changes specifically set forth herein, all other terms and conditions of the Agreement shall remain in full force and effect

[SIGNATURE PAGE FOLLOWS]

The parties are signing this Agreement as of the effective date set forth above.

GWMA

Los Angeles Gateway Region Integrated Regional Water Management Authority

By: ______ Name: ______ Title: _____

ATTEST:

Consultant/Officer of the Firm

ANCHOR QEA, LLC

By: ______ Name: ______ Title: _____

By: ______ Name: ______ Title: _____

(Please note: Two signatures required for corporations pursuant to California Corporations Code Section 313.)

APPROVED AS TO FORM:

By:

Name: Nicholas R. Ghirelli Title: General Counsel

ATTACHMENT "A"

SERVICES

12664/0005/1725116-2







April 2018

GATEWAY WATER MANAGEMENT AUTHORITY ON BEHALF OF THE GREATER HARBOR WATERS REGIONAL MONITORING COALITION

C ANCHOR QEA

Harbor Toxics Regional Monitoring and Reporting Proposal

Submitted by the Anchor QEA team

27201 Puerta Real, Suite 350 Mission Viejo, California 92691 949.347.2780



April 9, 2018

Bibi Weiss Gateway Water Management Authority 16401 Paramount Boulevard Paramount, California 90723

Re: Response to Request for Proposal for Harbor Toxics Regional Monitoring and Reporting

Dear Ms. Weiss:

Anchor QEA, LLC, is pleased to provide this proposal for consideration by the Gateway Water Management Authority (GWMA), on behalf of the Greater Harbor Waters Regional Monitoring Coalition (RMC), for compliance monitoring and reporting services as required by the *Total Maximum Daily Load for Toxic Pollutants in Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters* (Harbor Toxics TMDL). As the RMC's incumbent contractor supporting these services, Anchor QEA thoroughly understands all compliance monitoring and reporting requirements and has assembled a team of qualified professionals to successfully complete all field monitoring, laboratory analysis, data management, and regulatory agency support and coordination elements on behalf of the RMC.

First and foremost, the GWMA and RMC require a strong team with the sufficient resource depth and expertise to complete all the required compliance monitoring and reporting elements of this program. Anchor QEA has built an outstanding team of local consulting firms and service laboratories to meet this need. Anchor QEA will be joined by staff from Amec Foster Wheeler and Aquatic Bioassay and Consulting Laboratories recognized as leaders in benthic community ecology, fish ecology and toxicity assessments. We will be supported by several firms dedicated to quality field sampling operations, as well as two analytical chemistry laboratories with accomplished resumes using cutting-edge technology to support regional monitoring programs.

Andrew Martin will be the program's Project Manager with technical assistance from Steve Cappellino, Chris Stransky (Amec Foster Wheeler), and Dr. Wendy Hovel. Andrew will work closely with RMC members and GWMA to manage monitoring and administrative tasks efficiently to ensure compliance monitoring and reporting schedules are met. Andrew knows the complexities of this program and is committed to ensuring every aspect of the program is completed efficiently with the highest attention to detail.

As highlighted in our proposal, the RMC will directly benefit from the Anchor QEA team's knowledge and expertise for the following key reasons.

Strategic Coordination of Compliance Monitoring Activities with TMDL Objectives. Anchor QEA is the only firm with a unique combination of strong project management and hands-on field experience in conducting all elements of the compliance monitoring program with strategic insight into the continued evolution of the Harbor Toxics TMDL. Furthermore, due to our multi-year involvement in the Harbor Technical Working Group with State regulators, Anchor QEA has an informed perspective of California's Sediment Quality Objectives (SQOs) by providing case study support on how the Benthic Community SQO assessment framework can be used to evaluate compliance with the TMDL, a compliance end-point of the Harbor Toxics TMDL. This experience enables Anchor QEA to best understand how historical compliance monitoring activities and results may be used to develop a more efficient monitoring and reporting program.

Trusted Relationships with the RMC and Regulatory Agencies. Anchor QEA has been involved with the development and coordination of the RMC since its inception. Originally contracted by the Ports of Long Beach and Los Angeles (Ports) to develop and manage the strategic approach to addressing Harbor Toxics TMDL requirements, we recognized that the Ports and the remaining named responsible parties would mutually benefit from a coordinated approach to compliance monitoring activities. We facilitate the RMC meetings and are committed to maintaining the communication and responsiveness to this group throughout the program. In addition, we have supported the RMC by working with the RWQCB to resolve key technical issues that have arisen as part of the compliance monitoring and reporting program over the last several years (i.e., random sampling approach for collection of sediment quality samples on non-Bight sampling years that is consistent with Southern California Coastal Water Research Project methods and development of an area-weighted analysis approach for Benthic Community SQO assessments).

Dedication to Program Efficiency and Superior Quality. Anchor QEA continuously evaluates program performance and adopts more efficient approaches without sacrificing quality or a commitment to meeting schedules. In our current role supporting this contract, we anticipate completing the project under budget – directly benefiting the RMC members. Identified program efficiencies from the past several years have been applied to this proposal resulting in a cost-savings of nearly \$400,000 to the RMC members. Assuming all our recommended changes to the monitoring program are adopted by the RWQCB, an additional \$260,000 in cost-savings may be realized.

We are confident that, working together with the RMC, we can continue to successfully complete all required compliance monitoring and reporting elements of the Harbor Toxics TMDL with the most cost-effective approach possible.

Thank you for giving us the opportunity to provide this proposal. In the following pages, we present details about Anchor QEA, the local staff committed to this project, an overview of our program approach, our relevant project experience, cost estimate, and schedule.

We look forward to continuing our relationship with the RMC and providing each participating member exceptional service.

Sincerely,

Steve Cappellino Partner

-11-t.

Andrew Martin Project Manager

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REGIONAL WATER, SEDIMENT, AND TISSUE QUALITY EXPERTS

Anchor QEA is a nationally recognized leading science and engineering firm with extensive experience developing cost-effective solutions for managing complex watersheds and conducting permit and Total Maximum Daily Load (TMDL)-required compliance monitoring activities. A hallmark of our firm is our proven ability to work alongside our clients to provide solutions to technically challenging environmental and engineering problems and to do so in a manner that provides value, innovation, and a sincere level of enthusiasm.

Anchor QEA has provided guidance and support to numerous industrial and municipal clients in navigating requirements under Clean Water Act regulations (i.e., National Pollutant Discharge Elimination System [NPDES] permits and TMDLs) and State of California water and sediment quality policies (i.e., Water Quality Control Plans and Sediment Quality Objectives [SQOs]). Our team works closely with clients and regulators to meet the needs of permitting and compliance with Clean Water Act, state, and local regulatory actions.

Our comfort working with large stakeholder groups and implementing complex monitoring and assessment programs is illustrated, in particular, by our long-standing involvement with the Harbor Toxics TMDL compliance monitoring and reporting program, which serves as a prime example of our ability to develop plans, facilitate a regional TMDL compliance monitoring coalition, and implement monitoring activities of multiple matrices (water, sediment, and tissue) under a continually changing regulatory environment.

In addition to our technical expertise, key highlights of our team's qualifications include:

- Readiness and availability of key staff members to immediately prioritize work
- A strong local presence in Southern California and an established understanding of its regional issues, regulatory agencies, and key players in the public and private realms
- Established practices for project management, clear client communications, and real-time tracking of budgets

Anchor QEA, LLC

27201 Puerta Real, Suite 350 Mission Viejo, California 92691 Tax Identification Number: 91-1851322

Andrew Martin, Project Manager

27201 Puerta Real, Suite 350 Mission Viejo, California 92691 949-334-9630 amartin@anchorgea.com

Regional Project Experience



GWMA Regional Monitoring Coalition Program

Anchor QEA facilitated development of the Greater Harbor Waters Regional Monitoring Coalition to satisfy TMDL monitoring requirements. As a result, Anchor QEA now serves as the coordinating consultant who designed the sampling program and implemented long-term monitoring and reporting requirements as dictated by the Harbor Toxics TMDL.



Greater Harbor Waters Toxics TMDL Management

By continuing to provide strategic support to the Ports of Long Beach and Los Angeles with the Harbor Toxics TMDL, Anchor QEA works closely with State and regional regulators toward TMDL revisions that may improve the efficiency of compliance monitoring and reporting requirements.





KEY PERSONNEL

We have built a team with the depth of expertise and resources to provide the greatest flexibility and ability to conduct time-sensitive (i.e., wet weather) sampling activities and ensure laboratory capacity during monitoring years coordinated with other regional programs.

Project Team

Andrew Martin will lead the team with technical assistance from Steve Cappellino and Chris Stransky (Amec Foster Wheeler) and quality assurance/quality control (QA/QC) oversight from Dr. Wendy Hovel. All project communication should be directed to Andrew. In an extreme case that Andrew is unavailable, Claire Dolphin will be our team's alternate Project Manager and be available for direct communication with GWMA and the Greater Harbor Waters Regional Monitoring Coalition (RMC) as needed.

As the Project Manager, Andrew will work closely with GWMA and the RMC members dedicated to program oversight to manage monitoring and administrative tasks efficiently to ensure compliance monitoring and reporting schedules are met. Andrew has managed every aspect of the Harbor Toxics TMDL program for the past 4 years and understands the commitment and detail necessary to complete this project. He has built a team dedicated to the success of this program, and he maintains regular communication with Anchor QEA staff and subcontracted team members to review ongoing work products and coordinate upcoming field projects. Andrew has a wealth of field knowledge and experience to oversee and respond to questions or issues that may arise during sample collections.



Andrew Martin Project Manager

Andrew Martin is an environmental scientist with more than 22 years of expertise in multidisciplinary environmental science data collection, interpretation, and presentation. He has designed, implemented, and managed a variety of programs in the marine environment and surrounding watersheds, including the Harbor Toxics TMDL Coordinated Compliance Monitoring and Reporting Program for the past 4 years. He is skilled in the collection of receiving water, sediment, and biological samples, including those collected to support an SQO assessment in accordance with State requirements—a compliance metric for the Harbor Toxics TMDL. Andrew is also experienced in dry weather and stormwater monitoring, contaminant sources investigation, and contaminant fate and transport studies. He has managed programs to support development of TMDLs, environmental impact statements, NPDES permit requirements, and special research studies. Andrew applies innovative technological methods to more accurately and extensively collect environmental data.

Contact Information: 949-334-9630, amartin@anchorqea.com



Claire Dolphin Assistant Project Manager

Claire Dolphin is an environmental scientist with more than 5 years of field experience in a variety of ecosystems. Her field experience includes water quality monitoring and sampling, sediment sampling and characterization, fish sampling, and boat operations. She assists in planning logistics for field operations and writing reports based on data received and analyzed. For the last 4 years, Claire has supported Andrew with all field operations, field planning, reporting, and project management tasks for the Harbor Toxics TMDL compliance monitoring and reporting. Claire will be the team's alternate Project Manager and be available for direct communication with GWMA and the RMC if Andrew is unavailable.

Contact Information: 949-334-9615, cdolphin@anchorqea.com





The Anchor QEA team understands that although our contract will be held directly with the GWMA, the GWMA acts as a fiduciary for the RMC and the RMC members are directly responsible for the compliance monitoring and reporting requirements of the Harbor Toxics TMDL. The technical areas of proficiency, roles and responsibilities, and lines of communication of each Anchor QEA team member are presented in our organizational chart and summarized on the following pages. Resumes for key staff are attached in Appendix A.

ORGANIZATIONAL CHART







Key Personnel Qualifications and Responsibilities

Steve Cappellino Technical Advisor	 More than 28 years of experience leading multidisciplinary environmental assessment projects in terrestrial and aquatic matrices Managed hundreds of sediment, water, and biological investigations to support projects ranging from simple dredge material characterization studies to multi-million-dollar Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation efforts Led the development of ASTM sampling and testing protocols for field analyses, including porewater chemistry, trace-level metals analyses, and biological surveys
Chris Stransky Technical Advisor	 More than 20 years of experience managing diverse environmental programs for port and harbor, commercial, industrial, municipal, academic, and federal clients Expertise includes sediment investigative studies and use of multiple lines of evidence (i.e., triad analysis), including the State of California SQO approach Frequently provides regulatory and scientific study support for site-specific investigative studies and TMDLs related to sediment contamination Regularly participated in the Bight Program and has helped develop the regional testing and field work plans, standard operating procedures, QA/QC methods and objectives, and current data analysis and reporting efforts
Wendy Hovel, PhD QA/QC, Database	 More than 18 years of experience with water quality assessment, chemical characterization, dredged material assessment, beneficial use alternatives assessment, sediment toxicity identification evaluations, TMDLs, ecological risk assessment, and bioaccumulation modeling Used technical programs to identify effective sediment management strategies involving sediment chemical delineation, statistical analysis of contaminant patterns, linkage analysis to sediment and other sources, contaminant flux determination, development and calibration of bioaccumulation models, wildlife food chain modeling, strategic risk management planning, and risk assessment Provided QA/QC oversight of all technical aspects for numerous complex, multidisciplinary sampling and analysis programs
Chris Torell, CSP QA/QC, Health and Safety	 More than 27 years of professional environmental consulting experience Manages Anchor QEA's Corporate Health and Safety Program and serves as the primary firm health and safety manager for large remedial and construction projects Experienced in project management; supervising multidisciplinary project teams and administering staff; conducting budgeting, invoicing, weekly and monthly reporting, client communication, and labor and profit/loss analysis; and cost estimation
Chris Osuch Field Operations	 More than 18 years of professional experience as an environmental scientist Managed multiple water quality monitoring programs to assess discharge impacts and demonstrate permit compliance, as well as sediment characterizations to evaluate dredge material suitability, delineate contamination, assess sediment quality, evaluate risk, and determine if cleanup objectives have been met Experienced in overall project management, development of approach and field sampling design, preparation of environmental documents, management of sample collection and subcontractors, QA/QC, evaluation and interpretation of data results, and coordination and negotiation with regulatory agencies

4





Cindy Fields Analytical Chemistry	 More than 16 years of experience in the environmental industry Coordinates subcontract laboratory selection and work products for Anchor QEA projects by developing scopes of work for laboratory contracts, coordinating bottle orders and analytical requests, and tracking laboratory data packages through completion Performs data validation using U.S. Environmental Protection Agency (USEPA) functional guidelines or project-specific criteria and has specific expertise in environmental analytical chemistry using USEPA methodology (SW-846 and 1600 Series) and Standard Methods.
Ivy Fuller Database Support	 More than 8 years of experience in environmental consulting with a background in analytical chemistry Maintains project databases and provides data exports for project teams, which include capturing data in the form of field and laboratory electronic data deliverables (EDDs), querying and exporting data, and ensuring data quality Experienced in preparing data deliverables for the California Environmental Data Exchange Network (CEDEN) maintained by the State Water Resources Control Board (SWRCB), with a strong understanding of CEDEN requirements and resources and a good relationship with Regional Data Center staff

Subcontractors

To support GWMA and the RMC, Anchor QEA selected local firms to assist with implementing compliance monitoring. We have an exceptional team with unique knowledge to implement a program that is consistent with GWMA's goals. Members of our team have worked closely together for more than 10 years and have created strong, efficient, and collaborative working relationships with each other. We are confident that our team will respond quickly and efficiently to meet GWMA's and the RMC's needs.

Amec Foster Wheeler Environment and Infrastructure, Inc. Field and Vessel Support (Water, Sediment, and Fish); Reporting	Amec Foster Wheeler is a large, multidisciplinary environmental and engineering firm that has been providing consulting expertise in Southern California since 1972. Their aquatic sciences group includes specialists in planning and implementing regulatory compliance monitoring programs; municipal, industrial, and construction stormwater monitoring; watershed investigations; and biological resources surveys. Staff have participated in numerous regional monitoring programs, including multiple Bight monitoring efforts. Existing clients include port agencies; federal, state, and local government agencies; joint powers authorities; waterfront commercial operations; and scientific advisory groups.
Aquatic Bioassay & Consulting Laboratories, Inc. Benthic Infauna Assessments; Toxicity Testing; Field and Vessel Support (Water, Sediment, and Fish)	ABC has been a leader in California toxicity testing and aquatic biological monitoring for more than 30 years, providing project management, field sampling, toxicity testing, freshwater and marine bioassessments, data management, and reporting. The ABC team is led by biologists, toxicologists, chemists, and oceanographers with decades of experience helping clients meet their regulatory requirements. Some of their clients include sanitation districts throughout California, the western United States, and the Pacific Rim; the Ports of Los Angeles and Long Beach and Marina del Rey Harbor; the Southern California Coastal Water Research Project (SCCWRP); federal agencies; and Fortune 500 companies including Hewlett Packard, Chevron, and Exxon.





Eurofins Calscience, LLC Analytical Chemistry	Eurofins Calscience is an industry leader in the environmental and marine chemistry laboratory testing field. Eurofins Calscience offers a comprehensive portfolio of analytical methods encompassing all environmental matrices including, air, groundwater, seawater, sediment, soil, solid waste, stormwater, tissue, and wastewater. Eurofins Calscience has grown to become one of the largest environmental testing laboratories in the western United States.
FMF Pandion Field Support (Water)	FMF Pandion is an environmental and engineering firm specializing in water quality, hydrology, and stream channel geomorphology. Industries served include state and local government, federal government, and private companies and stakeholders. FMF Pandion's technical expertise is based on staying ahead of regulatory requirements, keeping up with recent scientific advancements, and utilizing their strong history of field experience.
Marine Taxonomic Services, Ltd. Field and Vessel Support (Water and Sediment)	MTS is an environmental consulting firm committed to providing innovative solutions to help clients obtain scientific knowledge. MTS projects are selected and implemented to manage the condition of natural resources through procurement of scientific data. With laboratory capabilities to process thousands of samples per year and rigorous QC procedures, MTS specializes in rapid turnaround of the highest quality dataset. They have more than 30 years of experience in the environmental consulting industry and can assist in a wide range of field and laboratory services.
Physis Environmental Laboratories, Inc. Analytical Chemistry	Physis is a leading-edge commercial chemistry laboratory in Orange County that provides general and specialized chemistry support. Their analytical services and technical chemistry consulting include analysis of nutrients, general constituents, trace elements, and trace organic compounds, providing historical, current-use, and potentially impactful water, sediment quality, and correlative bioaccumulation tissue characterizations. Physis has state-of-the-art matrix-specific facilities for analyzing waste, riverine, marine and stormwater, sediment, bioaccumulative animal and plant tissue, and aerial deposition samples meeting standard detection levels, lower required reporting limits, and ultra-low target reporting limits.
Rincon Consultants, Inc. Field and Vessel Support (Water, Sediment, and Fish)	Rincon's Marine Resources Group brings experience managing and executing marine, estuarine, and coastal resource investigations consistent with regulatory agency guidance, standardized collection procedures, and client objectives. Rincon's marine scientists plan, design, and conduct physical and biological resource investigations, surveys, and monitoring throughout the state. Their team is skilled in developing regulatory documents, designing mitigation strategies, and implementing monitoring programs for complex capital improvement and military construction, coastal development, and restoration projects.
Seaventures, Inc. Vessel Support (Sediment and Fish)	Seaventures is a certified Disabled Veteran Business Enterprise based in Dana Point, California, with more than 30 years of experience conducting scientific research, environmental monitoring, and collection projects. Seaventures has participated in thousands of projects throughout the Bight, including previous SCCWRP Regional Surveys; the Montrose Settlement Restoration Project for the National Oceanic and Atmospheric Administration; numerous surveys for the Ports of Los Angeles, Long Beach, and San Diego; and many other programs.
Six Scientific Service Field and Vessel Support (Water and Sediment)	SixSci's marine scientists specialize in water quality, marine sediment, and biological monitoring and compliance. They provide integrated solutions to clients who require comprehensive environmental support. SixSci's team has more than 13 years of experience in water quality monitoring and more than 10 years of experience leading NPDES monitoring. They have conducted nearshore fish surveys from San Diego to the Columbia River and in every port and harbor in California, off the island of Guam, and throughout the South Pacific in support of Naval Facilities Engineering Command Pacific.



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SCOPE OF WORK

Description and Understanding of the Project

The Amendment to the Water Quality Control Plan – Los Angeles Region (Basin Plan Amendment) incorporates specific Harbor Toxics TMDL compliance monitoring requirements for sediment, water, and fish tissue in the Greater Los Angeles and Long Beach Harbor Waters (including Consolidated Slip; herein referred to as Greater Harbor Waters). The Basin Plan Amendment recommends that responsible parties collaborate or coordinate compliance monitoring efforts to avoid duplication and reduce associated costs. As such, the responsible parties for the Greater Harbor Waters have formed the RMC.

Anchor QEA understands the RMC requires an experienced and qualified team to entrust with conducting all compliance monitoring and reporting activities (as described in the Scope of Services below). Anchor QEA can provide these services in the most cost-effective manner, without sacrificing quality or jeopardizing compliance with the Harbor Toxics TMDL requirements, and is able to prioritize the needs of this program while coordinating with other regional monitoring programs.

RMC Need	Anchor QEA Approach
Experience and qualified team to entrust with conducting all compliance monitoring	Anchor QEA has a proven record of successfully completing all aspects of the compliance and monitoring program, including the following:
and reporting activities	Quickly responding with sufficient resources to conduct wet weather monitoring synoptically across the harbors and Eastern San Pedro Bay
	 Executing coordinated sediment and fish fissue sample collections Developing and submitting annual reports and CEDEN-formatted electronic data in a timely manner
	Benefit: The RMC has met all TMDL compliance and reporting requirements
Services will be provided in the most cost- effective manner without sacrificing quality	Anchor QEA continually evaluates program performance for more efficient approaches to implementation.
of jeopardizing compliance with the Harbor Toxics TMDL requirements	Anchor QEA evaluated historical compliance monitoring results and identified potential monitoring efficiencies.
	Benefit: A cost-effective base program with potential to realize greater cost savings if alternate program is negotiated and implemented
Team able to prioritize the needs of this program while coordinating with other regional monitoring programs	Anchor QEA has strong relationships with staff from the SCCWRP, other agencies such as the City and Port of Los Angeles and Port of Long Beach, and other environmental consulting firms that facilitate mutually beneficial coordination of the TMDL compliance monitoring and reporting program with other regional monitoring programs (e.g., Bight and the Ports' Biological Survey), when applicable.
	Benefit: RMC compliance monitoring and reporting needs are met through coordinated monitoring approaches





Scope of Services to Be Provided¹

Task 1: Regional Monitoring Coalition Meeting Management

Anchor QEA will coordinate quarterly meetings and provide logistic support and meeting facilitation for the RMC. Responsibilities associated with meeting support include the following:

- Serving as a public point-of-contact for stakeholders regarding general information and coordinating document review and comments
- Scheduling meetings as requested by RMC members
- Developing meeting agendas in coordination with RMC members
- Providing meeting materials as needed for RMC meetings
- Researching and responding to inquiries and comments presented by participating responsible parties relative to compliance monitoring activities and the potential to coordinate these activities with other monitoring programs (e.g., municipal storm sewer system [MS4] permit), where feasible
- Taking detailed meeting minutes and documenting attendees (meeting minutes include follow-up action items and a summary of agreed-upon decision points)

Deliverables

- Meeting agenda
- Meeting materials

Assumptions

- Meetings will be held quarterly.
- Meetings will be held at either the City of Long Beach or Port of Long Beach. Anchor QEA will provide remote access (e.g., WebEx or Skype) to those unable to participate in person.

Task 2: Compliance Monitoring Field Activities

Anchor QEA will coordinate and conduct field activities. As provided in detail in the Coordinated Compliance Monitoring and Reporting Plan (CCMRP), the monitoring program consists of collecting water and sediment samples at 22 stations and collecting fish tissue samples within four waterbodies. To maintain consistency and to take advantage of coordinated sampling efforts with other regional monitoring programs, sample collection methods will adhere to SCCWRP's Regional Bight Monitoring Program or Surface Water Ambient Monitoring Program (SWAMP) monitoring protocols.

¹ Resources cited:

Bay, S.M., D.J. Greenstein, J.A. Ranasinghe, D.W. Diehl, and A.E. Fetscher, 2014. Sediment Quality Assessment Draft Technical Support Manual. Technical Report 582. Southern California Coastal Water Research Project. May 2014.





Beegan, C. and K. Faick. 2017. Amendments to the Water Quality Control Plan for Enclosed Bays and Estuaries of California: Sediment Quality Provisions. California Environmental Protection Agency and State Water Resources Control Board. October 2017.

Water

Water samples will be collected three times annually (two during wet weather events and one during a dry weather event) at each of the 22 stations, as specified in the Harbor Toxics TMDL and described in the CCMRP. The first large storm of the wet weather season (October 1 through April 30) will be targeted as one of the two wet weather events; storms will have a predicted rainfall of at least 0.25 inch with a 70% probability of rainfall at least 24 hours prior to the event start time. In situ water quality will be measured with a multiparameter instrument. In situ measurements include temperature, dissolved oxygen, pH, and salinity. Water samples will be collected using a Van Dorn grab sampler (or similar) and submitted for the following parameters:

- Total suspended solids (TSS) (from three depths: surface, midcolumn, and bottom)
- Dissolved and total metals (from surface only)
- Organochlorine pesticides (including DDT and its derivatives, chlordane compounds, dieldrin, and toxaphene) (from surface only)
- Polychlorinated biphenyl (PCB) congeners (from surface only)

Flow will not be measured in receiving waters because mixing and other hydrodynamic factors will confound the flow measurements.

Receiving water sampling during wet weather events requires experience with reviewing and interpreting long-term storm and marine hazards forecasts to predict the most likely field sampling day. Our team's experience enables us to coordinate multiple field sampling crews to respond quickly to storm events.

Sediment

Sediment monitoring will be performed twice every 5 years at 22 stations. Anchor QEA understands the Regional Water Quality Control Board (RWQCB) requires stations for sediment monitoring to be randomly selected within each of the 22 designated sample areas for each monitoring event. When sampling is coordinated with the Bight Program, Anchor QEA will work directly with SCCWRP to ensure each of the 22 designated sample areas receives a randomly drawn Bight Program station and that the responsibility to sample those coordinated stations is given to the RMC. In years not coordinated with the Bight Program, Anchor QEA will follow an RWQCB-approved approach for random station selection. Anchor QEA also understands RWQCB's approval of the final station location is required prior to sampling and is prepared to coordinate early in the process to obtain this approval.

Water Sampling

Receiving water sampling during wet weather events requires experience with reviewing and interpreting longterm storm and marine hazards forecasts to predict the most likely field sampling day. Our team's experience enables us to coordinate multiple field sampling crews to respond quickly to storm events.



Documenting water samples in the field



Water collection sampling using a Van Dorn grab sampler.

Sediment Sampling

Sediment sample results, consisting of three lines of evidence (chemistry, toxicity, and benthic community condition) will be categorized for an integrated assessment at each station.



Extracting sub-samples for a sediment-water interface toxicity test







Surface sediment grab sampling via a double Van Veen grab sampler

Tissue Sampling

Anchor QEA understands all aspects of the compositing and tissue homogenization scheme. Our field staff are constantly evaluating fish caught in terms of tissue mass required for analysis of composite samples, and they understand the alternate species selection process. This evaluation requires an understanding of how fish will be prepared and homogenized (skin off, fillet vs. head off, and guts out whole body).



Measuring prey fish



Processing target fish species in Outer Harbor

In accordance with the proposed amendments to the Water Quality Control Plan for Enclosed Bays and Estuaries of California (Beegan and Faick 2017), sediment triad sampling may be conducted between June 1 and September 30; however, Anchor QEA will target this sampling between July 1 and September 30 for consistency with the *Sediment Quality Assessment Draft Technical Support Manual* (Bay et al. 2014).

Surface sediment grab samples will be collected using a double Van Veen grab sampler and submitted for chemistry, toxicity, and benthic community analyses in accordance with the Benthic Community SQO assessment. Sediment chemistry analyses will include the following parameters:

- Total organic carbon
- Grain size
- Metals
- Polycyclic aromatic hydrocarbons (PAHs)
- Organochlorine pesticides (including DDT and its derivatives, chlordane compounds, dieldrin, and toxaphene)
- PCB congeners

SQO sediment line of evidence toxicity analyses will include an acute amphipod survival test and the chronic, sub-lethal bivalve sediment-water interface test. Benthic community analyses will be conducted and benthic community condition will be quantified using four benthic community indices. The three lines of evidence (chemistry, toxicity, and benthic community condition) will be categorized for an integrated assessment at each station. It is anticipated that compliance may be ultimately based on an area-weighted analysis that may be included in the annual report at the direction of the RMC, should this approach ultimately be adopted by the SWRCB as defined in the draft revision of the Water Quality Control Plan for Bays and Estuaries (Beegan and Faick 2017).

Fish Tissue

Fish tissue samples will be collected once every 2 years at only four stations: one in Consolidated Slip, one in Los Angeles Outer Harbor, one in Long Beach Outer Harbor, and one in Eastern San Pedro Bay. Composite samples of three target fish species (white croaker, California halibut, and shiner surfperch) will be collected at all stations, except for Consolidated Slip; only white croaker will be collected at this station. If these target species are not caught, alternate species may be kept for analysis as approved by the RWQCB. Fish tissue samples will be submitted for the following parameters:

- Percent lipids
- Organochlorine pesticides (including DDT and its derivatives, chlordane compounds, dieldrin, and toxaphene)
- PCB congeners





Anchor QEA understands all aspects of the compositing and tissue homogenization scheme. It is imperative that experienced field staff are constantly evaluating fish caught in terms of tissue mass required for analysis, compositing requirements (i.e., number of fish requirement per composite and target composite number), and the alternate species selection process, if target species are not caught. This evaluation also requires an understanding of how fish will be prepared (skin off, fillet for sportfish vs. head off and guts out, whole body for prey fish) in accordance with State requirements (Beegan and Faick 2017), as well as how homogenization duplicates can be prepared and analyzed to achieve data quality objectives set forth in the CCMRP and Programmatic Quality Assurance Project Plan (PQAPP).

Deliverables

Status updates on field sampling and sample analyses progress

Assumptions

- All field sampling will be conducted in accordance with methods used in the SCCWRP's Regional Bight Monitoring Program or SWAMP compatible programs.
- Wet weather receiving water sampling will be targeted for 24 hours after a storm event occurring between October 1 and April 30.
- Sediment sampling activities occur in 2016 and 2018 and will include all Benthic Community SQO lines of evidence for both sampling events.
- Benthic Community SQO and fish tissue sampling will only occur between July 1 and September 30.

Task 3: Annual Reporting and Data Management

Anchor QEA will compile all field observations and laboratory analytical results for presentation and review with RMC members during status update meetings as appropriate. These data, representative of each monitoring year (i.e., July 1 to June 30), will comprise the core of the annual compliance report due to the RWQCB the following December. A draft report will first be developed for RMC review and comment. Anchor QEA will then develop a final report and response to comments matrix for the RMC. Anchor QEA will assist the RMC Chairperson with submittal of the annual report and associated CEDEN-formatted data files to the RWQCB.

Annual compliance monitoring reports will include the following elements:

- Introduction: an overview of the Harbor Toxics TMDL and objectives of compliance monitoring program
- Overview of Compliance Monitoring Activities: a summary of required monitoring activities conducted during the reporting year
- Methods: detailed information relative to sampling and sample analysis techniques
- Results: presentation of all field observations and laboratory analytical data, including project maps illustrating actual sampling locations
- QA/QC: review of results relative to the PQAPP and data validation of analytical laboratory reports
- Appendices: copies of field logs, representative photographs, and all laboratory analytical reports

Anchor QEA understands the RMC's objective is to provide a more generalized Statement of Compliance with compliance monitoring and reporting activities as part of the annual report cover letter, rather than a Statement of Compliance for each TMDL-named waterbody within the report itself.





This task also includes all data management activities as follows:

- QA/QC (i.e., data validation) of all laboratory analytical data
- Coordination with analytical laboratories to confirm tests are being conducted within holding times and to correct any errors found during the data validation process
- Database management and electronic deliverables of all data in CEDEN-required format to responsible parties
- Support in the upload of CEDEN-formatted data to CEDEN
- Project management activities required to ensure successful completion of field sampling, data management, and field reporting

Deliverables

- Draft Annual Monitoring Report for RMC (September 1)
- Final Draft Annual Monitoring Report for RMC (December 1)
- EDD of field observations and laboratory analytical data for each RMC member in CEDEN format (December 1)

Assumptions

- A Draft Annual Monitoring Report will be submitted electronically to the RMC by September 1 of each year (for monitoring activities occurring between July 1 [of the previous year] and June 30).
- RMC members will have 1 month to review the draft report, and Anchor QEA will have 1 month to
 respond to comments and prepare a Final Draft Annual Monitoring Report. That report will be
 submitted electronically to the RMC by December 1 for confirmation that all comments were
 appropriately addressed.
- The RMC will submit the Final Annual Monitoring Report to the RWQCB by December 15.

Alternate Approach

Anchor QEA is committed to continuously evaluate program requirements and our performance in conducting each element of the program for the benefit of the RMC. In our existing role, Anchor QEA has analyzed the historical data and recognizes an opportunity for the RMC to negotiate a more efficient monitoring program as the Harbor Toxics TMDL is scheduled for reconsideration this year. A more efficient monitoring program includes the following three changes:

- 1. Reduce the number of water sampling locations from 22 to 12.
- 2. Reduce the number of water depths from which TSS samples are collected from three to two.
- 3. Always coordinate fish tissue sampling with sediment sampling.

A More Efficient Program that Maximizes Efficiencies and Eliminates Redundancy.

Anchor QEA's approach is to efficiently manage the monitoring program by reducing the number of water sampling locations from 22 to 12, reducing the number of water depths from which TSS samples are collected from 3 to 2, and coordinating fish tissue sampling with sediment sampling.



Analysis

Compliance monitoring to assess water, sediment, and fish tissue quality has been conducted as part of the Harbor Toxics TMDL compliance monitoring and reporting program since 2013. Water quality monitoring results have consistently shown that for all detectable² chemicals except copper, concentrations are well below water quality criteria in both wet and dry seasons. Water column TSS concentrations have also been found to be similar across all water column depths and across stations for all sampling events. In addition, fish tissue PCB and DDX concentrations have shown consistent results for each species, location, and chemical of concern across sampling events, indicating that recovery is slow. These observations of the available water and fish tissue monitoring data provide an opportunity for more efficient sampling, as described below.

Water column compliance data were analyzed to identify opportunities to reduce the redundancy in data being collected, while retaining the same spatial coverage and station representativeness across the Greater Harbor Waters. The focus of this evaluation was on copper because it is the only detectable chemical that has exceeded water quality criteria at more than one station and more than one sampling event. The analysis involved performing statistical and spatial analyses to evaluate whether there were differences in copper concentrations measured at stations near each other and within unique Greater Harbor Waters subareas, and similarly whether there were statistical differences in TSS concentrations across the three depths sampled for both wet and dry season events. The results of the copper evaluation, shown in Figure 1, demonstrate that there are spatial groupings of statistically similar copper concentrations in distinct subareas (i.e., as indicated by unique colors in the figure), regardless of the season or event. In addition, while not shown, at most stations and events, TSS was not statistically different among different water column depths; however, in some cases, the surface and mid-column water depths showed statistically lower concentrations than those at bottom depths. Together these findings suggest that a more efficient sampling program could be implemented without changing the spatial coverage and station representativeness. In this alternate sampling program, each event would involve the following:

- For copper and other required contaminants, one sample would be randomly sampled from each statistically established grouping of stations (i.e., those found near and within unique Greater Harbor Waters subareas; see Figure 2); chemical analyses would remain unchanged. This would reduce the total number of water samples collected for analytical chemistry from 22 to 12, per event, resulting in a cost savings of approximately \$232,850 over the course of the contract.
- For TSS analyses, the surface and bottom water column depths would be sampled, but no sampling of the mid-column water depth would be necessary to capture the full range of TSS variability in the water column. This would reduce the total number of water samples collected for TSS analysis from 66 to 44, per event, resulting in a cost savings of approximately \$8,825 over the course of the contract.

² Detectable chemicals refer to detections of chemicals above the laboratory reporting limit, indicating the lowest concentration that can accurately be measured by the laboratory.







FIGURE 1: COMPLIANCE MONITORING COPPER CONCENTRATIONS BY STATION







Fish tissue data collection efforts were also evaluated to determine if efficiencies could be gained without reducing the ability to measure significant reductions in fish tissue concentrations over time. Current compliance monitoring requires sampling fish tissue biennially, which is off schedule from sediment sampling requirements that involve two sampling events within every 5-year period. To determine if there was a more efficient sampling program that would provide the necessary power to detect anticipated changes in fish tissue over time, fish tissue temporal trends for PCBs were evaluated using regression analysis and the model-predicted concentrations in future years were determined. PCBs were the focus of this evaluation as they are the driver of potential human health consumption risks and potential TMDL-related source reduction activities. The rate of decline for white croaker PCBs was determined to be 4.18% per year on a wet-weight basis, corresponding to a change in fish tissue concentrations of approximately 1 microgram per kilogram (µg/kg) or 2 µg/kg when fish are sampled 2 or 3 years, respectively, after the 2016 sampling event. These differences in concentration across a 2- or 3-year period are negligible considering the known PCB concentration variability associated with different analytical laboratories and occurring due to differential uptake and bioaccumulation within individual fishes.

Therefore, to improve efficiencies in the sampling program, Anchor QEA recommends that the fish tissue sampling efforts be conducted synoptically with sediment. Based on data provided, this change will not reduce the power to measure differences in fish tissue PCBs over time and will potentially allow for paired analyses of sediment and fish, if warranted. In this alternate sampling program, each event would involve shifting the fish tissue monitoring events from 2020 and 2022 to 2021 and 2023 to be coordinated with the sediment sampling events. The total number of fish tissue events would not change; however, by coordinating the fish tissue sampling with sediment sampling, the total number of field staff and vessel mobilization events would decrease from four to two, saving \$17,000 over the course of the contract. Considering long-term monitoring requirements, coordinated sampling events would result in one less fish tissue sampling event every 10 years, resulting in further cost savings to the RMC.

Cost Saving Summary

Anchor QEA is prepared to develop supporting documentation on behalf of the RMC for submittal to the RWQCB staff managing the Harbor Toxics TMDL program to justify a reduction in water quality and fish tissue monitoring requirements. Acceptance of these changes by the RWQCB would result in a total program cost savings of approximately \$260,000, as shown below.

More Efficient Program Element Reduction of water sample station locations from 22 to 12	5-Year Cost Savings \$232,850	
Elimination of mid-column or bottom water depth for TSS analysis	\$8,825'	
Coordination of fish tissue sampling with sediment sampling	\$17,0006	

Notes:

a. When coordinated with a reduction in the number of water sample stations

b. Additional cost savings beyond this contract period will be realized by shifting the fish tissue sampling to twice in a 5-year period (i.e., four times every 10 years) compared to biennially (i.e., five times every 10 years)





PROJECT MANAGEMENT SYSTEM

Capability to Manage Projects of this Scope

Andrew Martin will efficiently execute this contract by working closely and communicating openly with GWMA and the RMC during all stages of the project. Delivery of high-quality and on-time work products will be accomplished by using a proven system of project management and scheduling software products (e.g., Microsoft Project and Outlook) and by using an internal QA/QC program proven to be effective for complex field and data programs. A sample monthly report is included as Appendix B.

Experience that Provides Efficiencies and Reduces Delays.

Anchor QEA has a clear understanding of and experience with all phases of implementing a project with GWMA and the RMC. Project efficiencies are realized through established reporting and database templates, developed processes for CEDEN-formatted deliverables, and a RWQCB-accepted approach toward random station placement for sediment sampling.

We recognize GWMA and the RMC will depend on the leadership of our team to maintain project continuity and progress while addressing the program's priorities. Andrew's ability to effectively communicate, lead, and inspire the team, as well as navigate tasks through technical, multi-disciplinary issues that may arise, which is critical to delivering this contract in a cost-effective and efficient manner. Andrew will maintain regular communication with GWMA and the RMC to ensure that expectations are met, which is often accomplished during quarterly project meetings and providing detailed monthly invoices that include a review of tasks completed during the invoice period.

As Project Manager, Andrew's responsibilities include:

- Leading project and task kick-off meetings
- Coordinating the tasks conducted under this contract with the internal Anchor QEA team as well as our subcontractors
- Providing guidance and training
- Conducting periodic reviews of all project processes
- Creating and maintaining a project schedule
- Budgeting and overseeing resource control as well as coordinating regular communication with GWMA regarding scope and budget status
- Ensuring a mutual understanding of the project scope, schedule, budget, and project deliverables between GWMA, the RMC, and Anchor QEA

Monitoring Progress and Providing Cost Control

The most effective way to maintain control over cost and schedule is to properly scope the project; communicate the scope, cost, and schedule to the project team; and aggressively monitor progress through continuous communication. Andrew will monitor budget statements monthly. Data will be compared to in-progress and completed work, and if necessary, action will be taken to meet schedule commitments.

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Project schedules will be defined in coordination with GWMA and the RMC during project initiation. The schedule will be clearly communicated to the project team during the project kick-off meeting. Andrew will be responsible for maintaining project schedules. Schedules will be monitored against work progress through continuous communication with task leads and regularly scheduled internal team meetings.

QA/QC Process

Our clients recognize this difference and know that a key strength we bring to any project is our dedication to superior product quality. The technical nature of our work and the regulatory compliance needs of many of our work products require that Anchor QEA has a comprehensive QA/QC program. We initiate QA/QC at the beginning of each project, rather than waiting to conduct QA/QC at the deliverable stage. When a project is initiated at Anchor QEA, the Project Manager (Andrew Martin) and QA/QC Manager (Wendy Hovel) review critical information with all members of the project team, such as the overall project objectives, schedule and budget, data quality objectives, deliverable objectives, audience of the final deliverable, and potential uses for the work product(s).

Experience. Integrity. Quality.

Our clients recognize that the strength Anchor QEA brings to each and every project reflects our core values of technological leadership, integrity, superior product quality, and client satisfaction. We not only collect data following the appropriate regulations and protocols, but we also offer a comprehensive perspective and the necessary expertise to understand how these data may be used in strategic planning for Harbor Toxics TMDL management.

Deliverable QA/QC

The work product package is reviewed with the client throughout the process and includes preparing deliverable outlines, interim submittals and progress updates, and setting schedule milestones. We establish regular team meetings and document action items discussed at each meeting to ensure accountability for our technical leads. We ensure high-quality work by double checking every element of our work; performing senior review of data and technical approaches; documenting and keeping records of our work and calculations such that they can be repeated in the future; and implementing good communication practices across the entire project team.

Anchor QEA also has a dedicated production staff that consists of technical editors, CAD designers, GIS specialists, graphic designers, and project coordinators, who work closely with the project team to deliver high-quality products. To ensure the quality of our deliverables, we develop a production checklist and schedule to identify internal due dates to allow sufficient time for internal review, revisions, and technical editing prior to submitting the deliverable to the client or agency. In addition, all data compiled, summarized, and analyzed as part of each deliverable are reviewed for accuracy and quality as part of our internal QC process during the development of each deliverable. No work product is submitted to a client without a final review by a senior staff member and/or partner at Anchor QEA.





Data QA/QC

After each field event, field data collected using FieldScribe is imported to Anchor QEA's Environmental Quality Information System (EQUIS) database. Station coordinates are verified either by GIS post-processing the raw GPS data with Trimble software to improve location accuracy and/or plots the locations for a spatial QC review.

Laboratory data will be submitted to Anchor QEA in specified PDF reports and EDD formats. The EDDs will be submitted by the laboratory to the EQuIS Enterprise system, which involves an automated process that requires the laboratory to submit EDDs that conform to specific file-naming, formatting, and valid-value conventions to ensure data quality and efficiency. The laboratory data will then undergo in-house data validation, and any qualifiers will be applied after validation has been peer reviewed and finalized. After the validated data have been reviewed for accuracy and quality, data will be exported from EQuIS into summary tables for inclusion in the annual report. Data will also be exported annually from EQUIS in custom formats to meet CEDEN requirements.

REFERENCES FOR PERFORMANCE ON SIMILAR PROJECTS

Anchor QEA provides GWMA and the RMC the proven experience to successfully complete each element of the Harbor Toxics TMDL compliance monitoring and reporting program. In addition to our ongoing work for GWMA and the RMC, we have a strong reputation with local public agencies (e.g., the Ports of Long Beach and Los Angeles) and municipalities (e.g., City of Long Beach and City of Newport Beach) in supporting water, sediment, and tissue quality projects—from field collection, sample handling, and data analysis to data interpretation, reporting, and coordination with regulatory agencies. Together with our team members, we are involved in every major regional monitoring program in Southern California and with technical and scientific experts leading the industry in applied water and sediment quality, benthic community ecology, and fish ecology studies.

The following three projects, with key references, highlight our qualifications to complete this program. These projects illustrate our longstanding experience and active involvement in all aspects of the Harbor Toxics TMDL and recent experience in conducting a long-term, multi-disciplinary monitoring program with a similar scope of services at the City of Long Beach's Colorado Lagoon.





Harbor Toxics TMDL Compliance Monitoring for the Regional Monitoring Coalition

Gateway Water Management Authority



Client Contact

James Vernon, Manager of Water Quality Port of Long Beach | RMC Chairperson 562-283-7100 | James.Vernon@polb.com

Relevance to Project

- Anchor QEA, as the incumbent, has successfully performed all elements of the Harbor Toxics TMDL compliance monitoring and reporting program for the past 4 years.
- Anchor QEA has approved workplans and established processes for efficient data collection, data management, reporting, and data deliverable submittals.
- Anchor QEA coordinated monitoring resulting in uniform data collection, analysis and reporting, and substantial cost savings for municipal and agency members.

The Harbor Toxics TMDL provides an option for stakeholders to participate in a regional monitoring program in lieu of developing an independent monitoring and reporting program. Anchor QEA facilitated development of the RMC to satisfy the TMDL monitoring requirements. As a result, Anchor QEA now serves as the coordinating consultant for 11 cities, the Los Angeles County Flood Control District, the California Department of Transportation, and the Ports of Los Angeles and Long Beach to design and implement the long-term monitoring and reporting requirements as dictated by the Harbor Toxics TMDL. Anchor QEA developed the RMC's CCMRP. The development of this RMC pulled all the named responsible parties together, resulting in more than \$5 million in combined monitoring cost savings for the members.

Compliance monitoring activities consist of receiving water quality monitoring at 22 stations during two wet and one dry weather events annually, fish tissue sampling at four locations biennially, and sediment quality sampling at 22 stations twice in a 5-year period. As the lead firm supporting the RMC, Anchor QEA manages all aspects of monitoring efforts, including coordinating multiple subcontractors to conduct synoptic water quality monitoring across all major portions of the Greater Harbor Waters, identifying staff skilled in the collection of sediment and fish samples, reviewing and validating all analytical data results, and developing annual reports and CEDEN-formatted electronic deliverables. Results are compared to applicable regulatory criteria and TMDL targets, and Benthic Community SQO assessments are completed when sediment sampling is conducted. Anchor QEA participates in regional monitoring programs (e.g., Bight Program) on behalf of the RMC to confirm coordinated monitoring activities continue to meet the RMC's needs.

Anchor QEA's dedication to the project has ensured the RMC has met all Harbor Toxics TMDL compliance monitoring and reporting requirements.





Greater Harbor Waters Toxics TMDL Management Ports of Los Angeles and Long Beach



Client Contact

Andrew Jirik, Environmental Specialist Port of Los Angeles 310-732-3914 | ajirik@portla.org

Relevance to Project

- Anchor QEA has developed trusted working relationships with state and regional regulators and external peer reviewers.
- Anchor QEA supports the Ports with the continued development and implementation of a strategic approach toward TMDL compliance.

For the last 5 years, Anchor QEA has been providing comprehensive strategic and programmatic support to the Ports of Los Angeles and Long Beach for implementation and compliance with the Greater Harbor Waters Toxics TMDL adopted by the SWRCB in 2011. Prior to its adoption, Anchor QEA identified scientific shortcomings in the TMDL and worked closely with the Ports, other stakeholders, and regulators to inform initial changes to the Staff Report and Basin Plan Amendment. Since its adoption, our team has worked with the Ports to develop a strategy for TMDL implementation, assessment, and compliance. The Ports' approach has involved two key steps: 1) supporting the State and Regional Water Boards in their development of Human Health SQO Tier III assessment procedures and supporting development of frameworks for assessing TMDL compliance using the State's Benthic Community SQO assessment tools; and 2) providing the technical basis and scientific justification to support changes to the TMDL at the reconsideration.

Specific tasks completed to achieve program objectives have included development of the Benthic Community and Human Health SQO compliance framework for purposes of determining TMDL compliance, extensive data compilation and validation, PQAPP development, development and oversight of special studies designed to fill key data gaps (e.g., low detection limit water column study, and sediment and food web data collection programs), model development and calibration, compliance evaluations, implementation of a Human Health SQO Tier III assessment, and completion of a peer review of a linked, site-specific model describing hydrodynamic, sediment transport, chemical fate, and bioaccumulation processes. Ongoing work includes performing and interpreting long-term model simulations for evaluating the relative effectiveness of TMDL-specified management alternatives, and using the Human Health SQO assessment to predict future compliance with the TMDL for bioaccumulatives.





Colorado Lagoon TMDL Compliance City of Long Beach



Client Contact

Eric Lopez, Tidelands Capital Projects Program Manager City of Long Beach 562-570-5690 | Eric.Lopez@longbeach.gov

Relevance to Project

- Anchor QEA gained TMDL compliance monitoring program experience with similar scopes of service to the Harbor Toxics TMDL monitoring requirements, including water, sediment, and fish tissue monitoring.
- Anchor QEA successfully negotiated with RWQCB staff to modify compliance monitoring requirements.

Anchor QEA developed and implemented the City of Long Beach's compliance monitoring for the Colorado Lagoon TMDL. We successfully negotiated the modification of the compliance monitoring schedule with the RWQCB, which saved the City approximately \$100,000.

Colorado Lagoon is a Y-shaped waterbody comprising 29 acres in an urban watershed in Long Beach and is tidally connected to Alamitos Bay. Colorado Lagoon is impaired for sediment quality due to lead, zinc, chlordane, and PAHs. The Colorado Lagoon TMDL requires improvements to water and sediment quality. TMDL compliance monitoring requires measuring in situ water quality and collecting water quality samples for chemical analysis quarterly, as well as collecting sediment samples for chemical and toxicity analyses and fish and mussel samples for chemical analyses annually from multiple stations. The compliance monitoring also requires quarterly reporting and data submittals to the RWQCB. Sediment remediation and habitat restoration is ongoing. As part of the Phase 2B restoration effort, Anchor QEA performed water quality monitoring during dredge and fill operations to evaluate best management practice (i.e., single and double silt curtains) effectiveness at reducing turbidity and ensure compliance with the Section 401 Water Quality Certification. An improvement in sediment quality and the compliance with the TMDL targets is expected once the sediment remediation is completed.





Other Relevant Project Experience

The following four project summaries further illustrate our team's strength in completing compliance monitoring projects throughout Southern California. Unique aspects of these projects include capacity to mobilize sufficient resources in response to wet weather sampling events, successfully negotiate compliance monitoring requirements with regional regulatory staff, and conduct multi-year, multi-disciplinary monitoring programs.

Recognized Experts Teaming Together.

Together with fish and benthic ecology experts from Amec Foster Wheeler and ABC, our team is involved in every major regional monitoring program in Southern California.

Palos Verdes Peninsula CIMP Implementation City of Rancho Palos Verdes <i>Tracking storms and mobilizing field teams</i> <i>to conduct permit-required compliance</i> <i>monitoring</i>	Anchor QEA implements the Palos Verdes Peninsula Group's Coordinated Integrated Monitoring Program (CIMP), consisting of outfall and receiving water monitoring. A key element of the program is conducting outfall and receiving water monitoring activities that integrate objectives from multiple programs, including the Peninsula CIMP Group's MS4 Stormwater Outfall Monitoring, the Machado Lake Nutrients and Toxics TMDL, and the Santa Monica Bay PCB and DDTs TMDL. Other critical components of the program include coordinating all physical and chemical analyses with subcontract laboratories, performing data validation, and generating summary tables with comparisons to water quality-based effluent limitations or other applicable criteria.
Lower Newport Bay Water Quality Sampling City of Newport Beach Successful negotiation with RWQCB staff of compliance monitoring requirements and site-specific water quality criteria	Anchor QEA conducted a multi-year water quality compliance monitoring effort to support maintenance dredging operations within the Rhine Channel and the Lower Newport Bay Federal Channel in accordance with multiple Water Discharge Requirements (WDRs). Our team worked with the RWQCB to develop site-specific water quality criteria that were protective of site-specific marine resources. The RWQCB amended the permit language, thereby reducing water quality monitoring requirements.
San Diego Shipyards Sediment Site, North Shipyards BAE Systems, San Diego Innovative monitoring techniques to meet permit requirements; multiple lines of evidence data collection	Anchor QEA performed long-term water quality monitoring in accordance with multiple WDRs and maintained a series of automated water quality monitoring buoys for near-real time notification of water quality conditions. Anchor QEA is under contract to initiate long-term monitoring of the post-construction sediment surface. Monitoring will include surface sediment collection using a Van Veen grab sampler for chemical, benthic infauna, and toxicity analyses.
Regional Harbor Monitoring Program (conducted by Team Member Amec Foster Wheeler) Port of San Diego (lead agency), City of San Diego, City of Oceanside, and County of Orange Large-scale monitoring program coordinated with the Bight Program	Amec Foster Wheeler led a multi-disciplinary, region-wide harbor monitoring program consisting of the collection and analysis of sediment chemistry, benthic infauna, and toxicity at 75 sampling locations. A Benthic Community SQOs assessment was completed for each station, and comparison of results between harbors and other regional monitoring programs was completed. Water quality monitoring and macro benthic community assessments using trawling techniques were also conducted.

Harbor Toxics Regional Monitoring and Reporting Proposal Gateway Water Management Authority



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ABILITY TO PERFORM WORK

Anchor QEA has a proven record of successfully completing all aspects of the compliance and monitoring program, including quickly responding with sufficient resources to conduct wet weather monitoring synoptically across the harbors and Eastern San Pedro Bay, executing coordinated sediment and fish tissue sample collections, and developing and submitting annual reports and CEDEN-formatted electronic data in a timely manner. During the past 4 years, Anchor QEA continually evaluated program performance for more efficient approaches to implementation. We also evaluated historical compliance monitoring results to develop an alternative approach that we would negotiate with the RWQCB on behalf of the RMC that may result in substantial cost savings over the course of the contract. As evidenced by successful negotiations with the RWQCB, our strong relationships with staff from the SCCWRP, other agencies such as the City and Port of Los Angeles and Port of Long Beach, and other environmental consulting firms can help facilitate mutually beneficial coordination of the TMDL compliance monitoring and reporting program with other regional monitoring programs (e.g., Bight and the Ports' Biological Survey), when applicable.

Staff Availability and Expertise

Our team is fully committed and available to successfully deliver the services under this contract. Our field staff members were selected for the team based on their availability, accessibility, and expertise with the scope of services. In addition, we have dedicated three chemists and three data managers to support review of analytical data and development of summary results tables and CEDEN files. Our Project Manager, Andrew Martin, with technical oversight from Steve Cappellino and Chris Stransky, and the QA/QC Managers, Wendy Hovel and Chris Torell, will ensure GWMA's and the RMC's expectations are met and that data and deliverables provided are accurate and meet our QA standards. All field staff will be appropriately certified and trained as follows:

- Maintain current OSHA 40-hour HAZWOPER training certificates
- Trained in the Standard Operating Procedures for proper collection and handling of water, sediment, and fish tissue samples
- Assigned responsibility of operating vessels within the Greater Harbor Waters maintain current California Boater Education credentials

Furthermore, we understand the complexity of working within a fully operational harbor complex. We coordinate routinely with port staff and harbor personnel prior to sampling activities, and we maintain communication with working vessels to avoid disruptions of port operations during sampling activities.

Equipment Availability

Anchor QEA and our well-equipped team of field support subcontractors maintain a variety of water, sediment, and fish sampling equipment, including sampling vessels, water quality monitoring instruments, water samplers, sediment grab samplers, push cores, benthic infauna processing supplies, fish trawls and processing gear, safety equipment, GPS units, and decontamination supplies. The following equipment located at our Mission Viejo office is committed to this project:

- A 22-foot California Skiff outfitted for environmental sampling, modified with davit and winch for the deployment and retrieval of sampling apparatuses
 - Additional vessel support will be provided by Amec Foster Wheeler, ABC, MTS, Rincon, Seaventures, and SixSci.





- Seaventures owns and operates a 42-foot fishing vessel adapted for environmental monitoring. The vessel has a 14-foot A-frame, hydraulic winch and davit to support fish trawls.
- ABC maintains a similarly equipped vessel to support sediment collection and fish trawls.
- All vessels conform to all U.S. Coast Guard safety requirements and are equipped with proper safety equipment, VHF radio, and GPS.
- Three YSI EXO2 and two YSI 6920 V2 multiparameter sondes with handheld displays able to measure in situ water quality parameters, including dissolved oxygen, temperature, pH, conductivity, transmissivity, and turbidity, at specified depths throughout the water column
 - Additional multiparameter sondes will be provided by Amec Foster Wheeler, ABC, MTS, and Rincon.
 - All multiparameter sondes will be calibrated prior to deployment and are maintained according to manufacturer specifications.
- Three 8-liter horizontally deployed Van Dorn water samplers
 - Additional Van Dorn (or similar) water samplers will be provided by Amec Foster Wheeler, ABC, MTS, Rincon, and SixSci.
- Van Veen sediment sampler
 - Additional Van Veen sediment samplers will be provided by Amec Foster Wheeler, ABC, MTS, Rincon, and Seaventures.
- Benthic infauna processing equipment
 - Additional benthic infauna processing equipment will be provided by Amec Foster Wheeler, ABC, MTS, Rincon, and Seaventures.
- Fish sampling equipment (otter trawls, beam trawls, lampara nets, hook and line, etc.) will be provided by ABC and Seaventures.
- Three handheld GPS units
 - Additional GPS units will be provided by all subcontractor team members.
- Three field computers

PROJECT SCHEDULE

Base Program

The RMC requires compliance monitoring and reporting activities beginning in July 2019 and continuing through June 2024.

Water quality monitoring (one dry weather event and two wet weather events) will be conducted annually.

Sediment samples will be collected every 2 to 3 years to assess sediment quality per the State of California's SQOs Part 1. Per technical guidance for the SQOs Part 1 assessment process, sediment samples for chemistry, benthic infauna community analysis, and toxicity should be collected between June 1 and September 30.

Fish tissue samples will be collected biennially (i.e., once every 2 years). The RMC initiated fish tissue monitoring in 2014 with subsequent events in 2016 and 2018. The next fish tissue monitoring event would be scheduled for 2020.

Compliance monitoring reports will be submitted annually beginning in 2020 for the 2019/2020 monitoring year. Annual reporting for the 2018/2019 monitoring year will be developed as part of the RMC existing contract. Draft reports will be submitted to the RMC for review on September 1. Final reports will be submitted to the RWQCB by the RMC Chairperson.

RMC status update meetings will occur quarterly beginning in July 2019.

Alternate Program

The schedule for the alternate program would be identical to the base program except for fish tissue sampling events. Anchor QEA recommends that fish tissue sampling be conducted in conjunction with sediment sampling events (i.e., twice in a 5-year period or once every 2 to 3 years). In this scenario, fish tissue sampling will be conducted in 2020 and 2023.

A proposed schedule of monitoring activities is presented on the next page.







Notes:

weather conditions, these events may occur at any time during the wet weather season (October 1 to April 30). The first flush 1. The two wet weather receiving water events are shown to occur in October and January, however, depending on actual of the wet weather season will be monitored, and at least one event after January 1 will be monitored. 2. In 2023, sediment sampling for chemistry, benthic infauna analysis, and toxicity will be coordinated with the 2023 Southern California Bight Regional Monitoring Program.

3. The Harbor Toxics TMDL specifies sediment sampling be conducted twice in a 5-year period. For consistency with other regional programs and to be representative of greatest biological activity, sediment samples for itenthic infauna analyses should be conducted between June 1 and September 30. Anchor QEA proposes to sample in August. 4. The "base" program would continue fish tissue monitoring biennially. The proposed "alternate" program would recommend only sampling fish in conjunction with sediment sampling events, thereby shifting the first and second events for this contract period from 2020 and 2021, and 2023, jespectively.

Legends:

- Meeting, event or milestone
- Dry weather water quality monitoring
- Wet weather water quality monitoring
- O "Alternate" program fish tissue monitoring (see Note No. 4)
- Oraft and final reporting, and CEDEN data deliverables developed under a preceding contract
- Monitoring activities to be conducted under a subsequent contract



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OTHER INFORMATION

Recommended Changes to the Professional Services Agreement

Anchor QEA would appreciate GWMA to consider amending the proposed contract language, specifically that related to Indemnity, to align with the terms and conditions of our existing contract language for similar scopes of services.





Appendix B: Sample Monthly Report
27201 Puerta Real, Suite 350 Mission Viejo, California 92691 949.347.2780



March 30, 2017

Grace Kast Gateway Water Management Authority 16401 Paramount Boulevard Paramount, California 90723

Re: Invoice for Work Performed January 2017 – FY16/17 TMDL Compliance Monitoring Project Number: 141205-01.03

Dear Ms. Kast:

Please find enclosed our current invoice totaling \$45,591.55 for work conducted and subcontractor invoiced received in January 2017. Our work completed during this period includes:

- Meetings and Coordination
 - Preparation of meeting materials for January 2017 status update meeting
 - Attendance and facilitation of January 2017 status update meeting
- Field Monitoring
 - o Documentation and field data management for November 2016 field sampling event
- Laboratory Analysis
 - Analytical laboratory invoice for Fall 2016 wet weather water quality analysis
 - Analytical laboratory invoice for Summer 2016 sediment quality analysis
- Data Validation and Management
 - Coordination with analytical laboratories
 - o Review various analytical laboratory reports and update program database
- Reporting
 - o Toxicity report validation
 - Summer 2016 field sampling figures
- Project Management
 - Watching storm forecasts and field planning
 - o Start developing proposed approaches to field sampling
 - Review subcontractor invoices; invoicing

We appreciate the opportunity to continue to support the Regional Management Coalition and the Gateway Water Management Authority with Harbor Toxics TMDL compliance monitoring activities.

If you have any questions or comments regarding these charges, please call me at (949) 334-9630.

Sincerely,

Andrew Martin Anchor QEA, LLC

Cc: Tony Arevalo, City of Long Beach James Vernon, Port of Long Beach



720 Olive Way, Suite 1900 Seattle, WA 98101 T 206.287.9130 F 206.287.9131

Gateway Water Management Authority Regional Monitoring Coalition Compliance Monitoring Period of Services: January 2017

Contract Amount: \$2,086,658.00 Authorized Budget: \$1,153,733.00 Remaining Contract Capacity: \$932,925.00

Projects Description	Budget	Previously Invoiced	Invoice Number	Current Invoice	Remaining Balance	% Remaining
FY14/15 RMC Compliance Monitoring (NTP#1 & #2)	\$290,500.00	\$290,483.17	No Invoice	\$0.00	\$0.00	0.00%
FY15/16 RMC Compliance Monitoring (NTP#3)	\$259,210.00	\$259,192.34	No Invoice	\$0.00	\$17.66	0.00%
FY16/17 RMC Compliance Monitoring (NTP#4)	\$604,023.00	\$250,533.46	50859	\$45,591.55	\$307,897.99	50.97%
Project Totals	\$1,153,733.00	\$800,208.97		\$45,591.55	\$307,915.65	



720 Olive Way, Suite 1900 Seattle, WA 98101 T 206.287.9130 F 206.287.9131

			Project	No:	141205-01.03
Grace Kast			Invoice	No:	50859
Gateway Wat	er Management Autho	prity			
16401 Param	ount Blvd.				
Paramount, C	A 90723				
Project	141205-01.03	RMC Compliance Monitoring	FY16/17		
Professional	Services from Januar	v 01, 2017 to January 31, 2017			
Tack	01	RMC Meetings & Coordination			
I dSK Professional	Personnel	Kine meetings & coordination			
FIGIESSIGNAL	reisonnei	Hours	Rate	Amount	x
Managin	a Scientist				
Mar	tin, Colin	7.00	198.00	1,386.00	
Staff 2 -	Scientist				
Dolp	ohin, Claire	7.50	137.00	1,027.50	
Project C	Coordinator				
Sche	eumann, Terri	3.00	98.00	294.00	
	Totals	17.50		2,707.50	
	Total Labor				2,707.50
Reimbursabl	e Expenses	~			
Conferer	nce Calls			15.28	
	Total Reim	oursables	1.0 times	15.28	15.28
Unit Billing					
Mileage	- eff. 2017			38.52	
	Total Units			38.52	38.52
			Total thi	s Task	\$2,761.30
— — — — — Task		FY16/17 RMC Field Monitoring/Samp			
Professional	Personnel		0		
		Hours	Rate	Amount	
Staff 2 -	Scientist				
Dolp	ohin, Claire	2.50	137.00	342.50	
	Totals	2.50		342.50	
	Total Labor				342.50
			Total thi	s Task	\$342.50
		EV16/17 PMC Laboratory Analysis			
Task	05	FILOT AND LADORATORY ANALYSIS			

March 30, 2017

Project	141205-01.03	RMC Compliance Monitoring FY16/1	17	Invoice	50859
Reimburca	ble Expenses				
Lab Se	rvices			33,160.00	
200 00	Total Rein	nbursables	1.0 times	33,160.00	33,160.00
			Total th	is Tas k	\$33,160.00
 . Taak		EV16/17 PMC Data Validation & Mom			
lask Brofossion	04 Derconnel	FT10/17 KWC Data Validation & Wgm	ι		
Protession	lai Personnei	Hours	Rate	Amount	
Senior	Scientist				
Senior	scientist	2 00	173.00	346.00	
re Staff 2	Sciontist	2.00	1,0.00		
Stall S	- Sciencisc	5.00	152.00	760.00	
гіс г	elus, ciliuy Illor Iw	16.00	152.00	2.432.00	
FU	Totale	23.00	192.00	3,538.00	
	Total Labo	25.00		3,336.00	3.538.00
		<i>y</i> i	Total th	nis Task	\$2 528 00
Task	05	FY16/17 RMC Reporting			
Profession	al Personnel				
		Hours	Rate	Amount	
Manag	ging Scientist				
• O:	such, Christopher	3.75	198.00	742.50	
Senior	⁻ Scientist				
Ga	ardner, Christopher	.75	173.00	129.75	
Staff 2	2 - Scientist				
De	olphin, Claire	.50	137.00	68.50	
	Totals	5.00		940.75	
	Total Labo	or			940.75
			Total th	nis Task	\$940.75
		FY16/17 RMC Project Management			
Profession	nal Personnel				
		Hours	Rate	Amount	
Manad	aina Scientist				
H	ovel, Wendy	1.00	198.00	198.00	
M	lartin, Colin	22.50	198.00	4,455.00	
Proiec	t Coordinator				
Ve	entures, Ameedylyn	2.00	98.00	196.00	
	Totals	25.50		4,849.00	
	Total Lab	or			4,849.00
			Total t	nis Task	\$4,849.00
			Total this	Invoice	\$45 591.55
					÷

Page 2



Project No. 141205-01.03 Conference Calls

Total Minutes	Tota	l Amount	Meeting Date	Meeting Name	Host Name	Project Number	Task
66	\$	2.51	1/4/2017	Quarterly RMC Meeting	Claire Dolphin	141205-01.03	01
16	\$	0.61	1/4/2017	Quarterly RMC Meeting	Claire Dolphin	141205-01.03	01
60	\$	2.28	1/4/2017	Quarterly RMC Meeting	Claire Dolphin	141205-01.03	01
69	\$	2.62	1/4/2017	Quarterly RMC Meeting	Claire Dolphin	141205-01.03	01
67	\$	2.55	1/4/2017	Quarterly RMC Meeting	Claire Dolphin	141205-01.03	01
66	\$	2.51	1/4/2017	Quarterly RMC Meeting	Claire Dolphin	141205-01.03	01
58	\$	2.20	1/4/2017	Quarterly RMC Meeting	Claire Dolphin	141205-01.03	01
Total	\$	15.28	×				



INTERNAL EXPENSES - MILEAGE (COMPANY TRUCK)

January 2017

Expense Code - A5513G

					# of truck	Reimb.	
Date	Driver	Project	Task	Description	miles	Exp/mile	Total Amount
1/4/17	Claire D.	141205-01.03	01	RMC Meeting at POLB Office	72	0.535	\$ 38.52
				Total Mileage	72		\$ 38.52

From: Anchor QEA MV Office 27201 Puerta Real Mission Viejo, CA 92691

To: Port of Long Beach Office 4801 Airport Plaza Drive Long Beach, CA





Calscience

2016-12-30 Date: Invoice Number:

1369320

Andy Martin

ANCHOR QEA, LLC 27201 Puerta Real

Suite 350 Mission Viejo, CA 92691-8306

Report Sent To: Work Order No: Project Name:

Andy Martin 16-11-2102 **GWMA - TMDL Compliance Monitoring**

Terms:

Test Code(s) Total

Total Amount Due in USD: \$ 12,960.00

Net 120

Test Code(s) Total				\$12.960.00	\$0.00	12,960.00
Sea WE SM 2540 D Total Suspended Solids	10	38	✓ \$15.00	\$570.00	\$0.00	\$570.00
Sea We EPA 8270C SIM PCB Congeners	10	14	✔ \$225.00	\$3,150.00	\$0.00	\$3,150.00
Sea Wa EPA 8081A Organochlorine Pesticides Marine - Low Leve	el 10	14	✓ \$140.00	\$1,960.00	\$0.00	\$1,960.00
Sea WE EPA 1640 Metals Zn, Pb, Cu, Cr, Cd, Total	10	14	🖌 \$175.00	\$2,450.00	\$0.00	\$2,450.00
Sea We EPA 1640 Metals Zn, Pb, Cu, Cr, Cd, Filtered	10	14	✓ \$175.00	\$2,450.00	\$0.00	\$2,450.00
Sea W∉ EPA 1631E Low Level Hg, Total	10	14	∢ \$85.00	\$1,190.00	\$0.00	\$1,190.00
Sea Wa EPA 1631E Low Level Hg, Filtered	10	14	✓ \$85.00	\$1,190.00	\$0.00	\$1,190.00
Matrix Test	TAT	Qty	Unit Cost	Subtotal	Surcharge	Total
					Rush	

\$12,960.00

Total Amount Due in USD:

\$12,960.00

Amounts not paid within terms are subject to a 1.5% per month service charge. Please include invoice number with your remittance.

Please remit to bank Lockbox: Eurofins Calscience, Inc. Dept #2332, PO BOX 11407, Birmingham, AL 35246-2332

Page 1 of 1



W # 1376 12017

Calscience

Date: 2016-12-27 Invoice Number:

1368844

Accounts Payable

ANCHOR QEA, LLC 27201 Puerta Real

Suite 350 Mission Viejo, CA 92691-8306

Report Sent To:	Andrew Martin
Work Order No:	16-08-1268
Project Name:	GWMA Sediment Sampling

Terms:

Net 120

Total Amount Due in USD: \$ 4,920.00

						<u>Rush</u>	
<u>Matrix</u>	Test	TAT	<u>Qtv</u>	Unit Cost	<u>Subtotal</u>	Surcharge	Total
Sedim	ASTM D4464 (M) Particle Size Laser	10	6	\$75.00	\$450.00	\$0.00	\$450.00
Sedim	EPA 7471A Mercury	10	6	\$30.00	\$180.00	\$0.00	\$180.00
Sedim	EPA 8081A Organochlorine Pesticides	10	6	\$140.00	\$840.00	\$0.00	\$840.00
Sedim	EPA 8270C SIM PAHs	10	6	\$150.00	\$900.00	\$0.00	\$900.00
Sedim	EPA 8270C SIM PCB Congeners	10	6	\$250.00	\$1,500.00	\$0.00	\$1,500.00
Sedim	EPA 9060A Total Organic Carbon	10	6	\$75.00	\$450.00	\$0.00	\$450.00
Sedim	SM 2540 B (M) Total Solids	10	6	\$15.00	\$90.00	\$0.00	\$90.00
Sedim	Subcontract Metals by EPA 1638 to Eurofins Frontier	10	6	\$85.00	\$510.00	\$0.00	\$510.00
************************			*****				

Test Code(s) Total

\$4,920.00

\$0.00

4,920.00

Total Amount Due in USD:

\$4,920.00



💸 eurofins

PE#1376

Calscience

2016-12-27 Date: Invoice Number: 1368845

Accounts Payable

ANCHOR QEA, LLC 27201 Puerta Real

Suite 350 Mission Viejo, CA 92691-8306

Report Sent To: Work Order No: Project Name:

Andrew Martin 16-08-1364 **GWMA Sediment Sampling**

Terms:

Total Amount Due in USD: \$ 5,740.00

Net 120

Test C	ode(s) Total				\$5.740.00	\$0.00	5,740.00
Sedim	Subcontract Metals by EPA 1638 to Eurofins Frontier	10	7	\$85.00	\$595.00	\$0.00	\$595.00
Sedim	SM 2540 B (M) Total Solids	10	7	✓ \$15.00	\$105.00	\$0.00	\$105.00
Sedim	EPA 9060A Total Organic Carbon	10	7	\$75.00	\$525.00	\$0.00	\$525.00
Sedim	EPA 8270C SIM PCB Congeners	10	7	✓ \$250.00	\$1,750.00	\$0.00	\$1,750.00
Sedim	EPA 8270C SIM PAHs	10	7	₩ \$150.00	\$1,050.00	\$0.00	\$1,050.00
Sedim	EPA 8081A Organochlorine Pesticides	10	7	V \$140.00	\$980.00	\$0.00	\$980.00
Sedim	EPA 7471A Mercury	10	7	✓ \$30.00	\$210.00	\$0.00	\$210.00
Sedim	ASTM D4464 (M) Particle Size Laser	10	7	∽ \$75.00	\$525.00	\$0.00	\$525.00
<u>Matrix</u>	Test	TAT	Qty	Unit Cost	Subtotal	Surcharge	Total
						Rush	

Test Code(s) Total

\$5,740.00

Total Amount Due in USD:

\$5,740.00





Calscience

Date: 2016-12-27 Invoice Number: 1368846

Accounts Payable

ANCHOR QEA, LLC 27201 Puerta Real

Suite 350 Mission Viejo, CA 92691-8306

Keport Sent 10:	WICH CAA MICH (11)
Work Order No:	16-08-1269
Project Name:	GWMA Sediment

Terms:

Net 120

Total Amount Due in USD: \$ 7,080.00

Test C	ode(s) Total				\$7,080.00	\$0.00	7,080.00
Sedim	Subcontract Metals by EPA 1638 to Eurofins Frontier	10	8	\$85.00	\$680.00	\$0.00	\$680.00
Sedim	SM 2540 B (M) Total Solids	10	8	\$15.00	\$120.00	\$0.00	\$120.00
Sedim	EPA 9060A Total Organic Carbon	10	8	\$75.00	\$600.00	\$0.00	\$600.00
Sedim	EPA 8270C SIM PCB Congeners	10	8	\$250.00	\$2,000.00	\$0.00	\$2,000.00
Sedim	EPA 8270C SIM PAHs	10	8	\$150.00	\$1,200.00	\$0.00	\$1,200.00
Sedim	EPA 8081A Organochlorine Pesticides	10	8	\$140.00	\$1,120.00	\$0.00	\$1,120.00
Sedim	EPA 7471A Mercury	10	8	\$30.00	\$240.00	\$0.00	\$240.00
Sedim	ASTM D4464 (M) Particle Size Laser	10	8	\$75.00	\$600.00	\$0.00	\$600.00
Sea Wa	EPA 1640 Metals Zn, Pb, Cu, Cr, Cd, Total	10	2	\$175.00	\$350.00	\$0.00	\$350.00
Sea Wa	EPA 1631E Low Level Hg, Total	10	2	\$85.00	\$170.00	\$0.00	\$170.00
Matrix	Test	<u>TAT</u>	Qty	Unit Cost	<u>Subtotal</u>	Surcharge	Total
						Rush	

Sampling

Test Code(s) Total

Total Amount Due in USD:

\$7,080.00

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Cal**sci**ence

Date: 2016-12-27 1368847 Invoice Number:

Accounts Payable

ANCHOR QEA, LLC 27201 Puerta Real

Suite 350 Mission Viejo, CA 92691-8306

Report Sent To:	Andrew Martin
Work Order No:	16-08-1487
Project Name:	GWMA Sediment Sampling

Net 120

Terms:

Total Amount Due in USD: \$ 2,460.00

Test C	st Code(s) Total \$2,460.00 \$0.00 2,460.00						
Sedim	Subcontract Metals by EPA 1638 to Eurofins Frontier	10	3	\$85.00	\$255.00	\$0.00	\$255.00
Sedim	SM 2540 B (M) Total Solids	10	3	\$15.00	\$45.00	\$0.00	\$45.00
Sedim	EPA 9060A Total Organic Carbon	10	3	\$75.00	\$225.00	\$0.00	\$225.00
Sedim	EPA 8270C SIM PCB Congeners	10	3	\$250.00	\$750.00	\$0.00	\$750.00
Sedim	EPA 8270C SIM PAHs	10	3	\$150.00	\$450.00	\$0.00	\$450.00
Sedim	EPA 8081A Organochlorine Pesticides	10	3	\$140.00	\$420.00	\$0.00	\$420.00
Sedim	EPA 7471A Mercury	10	3	\$30.00	\$90.00	\$0.00	\$90.00
Sedim	ASTM D4464 (M) Particle Size Laser	10	3	\$75.00	\$225.00	\$0.00	\$225.00
<u>Matrix</u>	Test	TAT	Qty	Unit Cost	Subtotal	Surcharge	Total
						Rush	

Total Amount Due in USD:



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ATTACHMENT "B"

RATE SHEET

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12664/0005/1725116-2

PROPOSAL FEE

Base Program

The Base Program cost estimate reflects the compliance monitoring and reporting requirements as specified in the Request for Proposal's scope of services. The Base Program assumes no changes are made to the compliance monitoring and reporting program during reconsideration of the Harbor Toxics TMDL scheduled for this year. Anchor QEA and our team members have developed the most cost-efficient solution with the highest quality for this program. All key members of the Anchor QEA team contributed to this solution through the following:

By consistently evaluating project performance and implementing more effective approaches, Anchor QEA has **identified nearly \$400,000 in cost-savings** compared to the initial contract period.

- Understanding all the program requirements
- Staffing locally
- Providing leadership in their fields and having experience performing these tasks for other similar regional programs
- Independently identifying and recommending more efficient approaches
- Having extensive working knowledge of the Greater Harbor Waters

The Base Program's annual costs is summarized in the table below, which shows a breakdown of costs for each monitoring element (water, sediment, and fish tissue). The specific scope of services and schedule for each element is presented in previous sections.

Water quality monitoring includes two wet weather and one dry weather monitoring event each year. For each monitoring event, three teams will be deployed to sample all 22 stations in a single day to accurately characterize receiving water quality conditions. Monitoring costs include mobilization, field collection, and chemical analysis.

Sediment sampling will be performed twice every 5 years and includes performing a Benthic Community SQO sediment triad assessment at 22 stations. Sampling costs include mobilization, surface sediment grab sampling, chemical analysis, toxicity testing, and benthic community analyses.

Fish tissue sampling will be performed once every 2 years and includes trawling at four stations. Sampling costs include mobilization, fish trawls, and chemical analysis of composite samples for target species.

Task 3 costs include data validation, database management, and development of annual compliance monitoring reports. Data validation and management costs were determined based on the estimated number of samples submitted for each analysis





Alternate Program

As discussed previously, there is an opportunity for the RMC to realize substantial cost savings through negotiation and implementation of a more efficient monitoring program. The following Alternate Program cost estimate reflects Anchor QEA's recommendations to the compliance monitoring requirements.

A more efficient monitoring approach has the **potential to save an additional \$260,000** in field labor and analytical chemistry costs.

A summary of the Alternate Program's annual costs is summarized in

the table below. Similarly, this table shows a breakdown of costs for each monitoring element (water, sediment, and fish tissue). The specific scope of services and schedule for each element is presented in previous sections.

Water quality monitoring includes two wet weather and one dry weather monitoring event each year. For each monitoring event, two teams will be deployed to sample 12 stations in a single day to accurately characterize receiving water quality conditions. Monitoring costs include mobilization, field collection, and chemical analysis.

Sediment sampling will be performed twice every 5 years and includes performing a Benthic Community SQO sediment triad assessment at 22 stations. Sampling costs include mobilization, surface sediment grab sampling, chemical analysis, toxicity testing, and benthic community analyses.

Fish tissue sampling will be performed in coordination with sediment sampling and includes trawling at four stations. Sampling costs include mobilization, fish trawls, and chemical analysis of composite samples for target species.

Task 3 costs include data validation, database management, and development of annual compliance monitoring reports. Data validation and management costs were determined based on the estimated number of samples submitted for each analysis.

Rate Sheets

Rate sheets for Anchor QEA and our team members are included in Appendix C.



Harbor Toxics Regional Monitoring and Reporting Proposal Gateway Water Management Authority



Base Program Fee

	2019/20	2020/21	2021/22	2022/23	2023/24
Task	Year 1	Year 2	Year 3	Year 4	Year 5
Task 1: Regional Monitoring Coalition Meeting Management					
Quarterly Meeting Support and Coordination	\$12,750	\$13,250	\$17,000	\$14,250	\$39,250
Task 2: Compliance Monitoring Field Activities					
Water					
2 Wet Events (Sample Collection and In Situ Monitoring at 22 stations)	\$ 34 ,250	\$ 3 5,250	\$ 3 6,250	\$37,500	\$ 3 8,750
1 Dry Event (Sample Collection and In Situ Monitoring at 22 stations)	\$17,000	\$17,750	\$18,250	\$18,750	\$1 9 ,500
Total Suspended Solids (22 stations x 3 depths + 4 QA/QC = 70 samples/event x 3 annual events = 210 samples/year)	\$2,650	\$2,725	\$2,800	\$2, 9 00	\$3,000
Total and Dissolved Metals, Organochlorine Pesticides, PCB Congeners (22 stations + 3 QA/QC = 25 samples/event x 3 annual events = 75 samples/year)	\$6 9 ,750	\$72,000	\$74,000	\$76,250	\$78,500
Sediment					
SQO Triad Assessment (Sample Collection and Processing at 22 stations)			\$70,000		\$74,250
TOC, Grain Size, Metals, PAHs, OC Pesticides, PCB Congeners (22 stations + 2 QA/QC = 24 samples)			\$24,750		\$25,500
Benthic Community Composition (22 samples)			\$38,500		\$41,000
Acute Amphipod Survival and Chronic Sub-Lethal Mussel Sediment-Water Interface (22 samples per test)			\$54,000		\$57,250
Tissue					
Trawling (Sample Collection and Processing at 4 stations)		\$58,000		\$61,500	
% Lipids, Organochlorine Pesticides, PCB Congeners ([3 stations x 3 species] + [1 station (CS) x 1 species]) x 3 composites = 30 samples)		\$17,500		\$18,550	
Task 3: Annual Reporting and Data Management					
Laboratory Analytical Data Validation and Data Management	\$1 9 ,250	\$24,250	\$27,750	\$25,750	\$29,500
Reporting	\$22,750	\$27,250	\$31,500	\$29,250	\$33,250
Project Management	\$1 3 ,500	\$19,750	\$29,250	\$21,000	\$ 3 2,750
Total Per Year	\$1 91,9 00	\$287,725	\$424,050	\$305,700	\$472,500
Contract Total					\$1,681,875





Alternative Program Fee

	2019/20	2020/21	2021/22	2022/23	2023/24
Task	Year 1	Year 2	Year 3	Year 4	Year 5
Task 1: Regional Monitoring Coalition Meeting Management					
Quarterly Meeting Support and Coordination	\$12,750	\$13,250	\$17,000	\$14,250	\$39,250
Task 2: Compliance Monitoring Field Activities					
Water					
2 Wet Events (Sample Collection and In Situ Monitoring at 12 stations)	\$25,000	\$25,750	\$26,500	\$27,500	\$28,250
1 Dry Event (Sample Collection and In Situ Monitoring at 12 stations)	\$12,500	\$13,000	\$13,250	\$13,750	\$14,250
Total Suspended Solids (12 stations x 2 depths + 2 QA/QC = 26 samples/event x 3 annual events = 78 samples/year)	\$ 99 0	\$1,020	\$1,050	\$1,080	\$1,110
Total and Dissolved Metals, Organochlorine Pesticides, PCB Congeners (12 stations + 2 QA/QC = 13 samples/event x 3 annual events = 39 samples/year)	\$ 39 ,750	\$41,000	\$42,200	\$43,450	\$44,750
Sediment					
SQO Triad Assessment (Sample Collection and Processing at 22 stations)			\$70,000		\$74,000
TOC, Grain Size, Metals, PAHs, OC Pesticides, PCB Congeners (22 stations + 2 QA/QC = 24 samples)			\$24,750	,,,.	\$25,500
Benthic Community Composition (22 samples)			\$38,500		\$41,000
Acute Amphipod Survival and Chronic Sub-Lethal Polychaete or Mussel (22 samples per test)			\$54,000		\$57,250
Tissue			,		
Trawling (Sample Collection and Processing at 4 stations)			\$50,000		\$52,750
% Lipids, Organochlorine Pesticides, PCB Congeners ([3 stations x 3 species] + [1 station (CS) x 1 species]) x 3 composites = 30 samples)			\$18,000		\$1 9 ,100
Task 3: Annual Reporting and Data Management					
Laboratory Analytical Data Validation and Data Management	\$1 9 ,250	\$24,250	\$27,750	\$25,750	\$29,500
Reporting	\$22,750	\$23,500	\$35,250	\$25,000	\$37,500
Project Management	\$1 3 ,250	\$14,250	\$33,750	\$15,000	\$ 3 7,250
Total Per Year	\$146,240	\$156,020	\$452,000	\$165,780	\$501,460
Contract Total					\$1,421,500





Fee Assumptions

- Source control investigative work such as toxicity identification evaluations (TIEs) or additional monitoring "upstream" of TMDL-specified monitoring locations will not be conducted.
- The RWQCB does not require any additional monitoring events, monitoring stations, and/or analytical parameters other than those already specified in the Harbor Toxics TMDL. Additional monitoring, as directed by the RWQCB, would incur additional costs.
- Coordination with other monitoring programs (e.g., MS4 permit monitoring requirements) other than SCCWRP's Regional Bight Monitoring Program does not occur. Although, some data collected as part of this program may be used by each RMC member to satisfy requirements of other programs, additional monitoring activities to satisfy all monitoring requirements of other programs would incur additional costs. Each RMC member can determine how data generated through Harbor Toxics TMDL compliance monitoring program may be used for other purposes.
- A 3% industry-average annual escalation rate was applied to the compliance monitoring and reporting cost estimate based on the following reasons:
 - Unforeseen coordination activities may be required in communications with the RWQCB and RMC or coordination with regional monitoring programs.
 - False starts in the stormwater sampling program are not included. We believe the 24-hour delay in sampling will prevent full mobilization for storms; however, internal preparation may still impact the budget. For example, laboratory coordination and staff time for equipment calibration and preparation.
- Reports will be submitted annually, including data from July 1 to June 30.
- RMC meetings will be held quarterly.
- Additional meeting effort will be required in 2023/24 for Bight Program coordination consisting of an estimated six Bight planning meetings, four Bight field subcommittee meetings, and two Bight program audit/training days hosted by SCCWRP.
- CEDEN data submittals required annually with report submittal for all matrices sampled.
- The analytical chemistry laboratory will not charge for matrix spike/matrix spike duplicate or trip blank samples.
- Field duplicates will be collected at a frequency of one duplicate per year for wet weather events and one duplicate per year for dry weather events (for a total of two field duplicates per year).
- Field equipment blanks will be analyzed for only metals, PCBs, DDTs, and constituents detected at less than one order of magnitude above the analytical practical quantitation limit. Field equipment blanks will be collected after data from the first storm have been evaluated.
- Two wet weather events and one dry weather event will be performed per monitoring year. In the event any of these three events are unable to be performed due to logistical constraints (e.g., small craft advisories preventing safe vessel operations and sample collection), additional costs may be incurred consistent with labor and equipment rates attached.
- Wet weather sampling events will be sampled within 12 to 36 hours after the start of the qualifying rain event. In the event of health and safety hazards (e.g., small craft advisory) preventing safe vessel operations, the sampling even may be delayed until conditions are deemed safe.





Appendix C: Rate Sheets

Anchor QEA, LLC

2018 CLIENT BILLING RATES

3% escalation starting July 1 each year

Professional Level Hourly Rates

Principal	\$256
Senior Manager	\$229
Manager	\$213
Senior Staff	\$190
Staff 3	\$167
Staff 2	\$149
Staff 1	\$126
Senior CAD ¹ Designer	\$132
CAD Designer	\$110
Technician	\$107
Senior Technical Editor	\$130
Technical Editor	\$110
Senior Project Coordinator	\$124
Project Coordinator	\$106

Special Hourly Rates

National expert consultant	. \$424
All work by a testifying expert1.5 times professional leve	el rate

EXPENSE BILLING RATES

FEE ON LABOR AND EXPENSE CHARGES

Subcontracts/subconsultants	5%
Travel and other direct costs	10%
Field equipment and supplies	10%

¹ CAD: Computer Aided Design

Anchor QEA, LLC Major Equipment Rental/Lease Rate

Equipment	Rate
Vehicle	\$100/day
Field computer	\$10/day
Survey boat	\$300/day
WAAS-Enabled Handheid GPS	\$20/day
Van Veen Sediment Sampler	\$50/day
Communication equipment	\$10/day/person
Digital camera	\$5/day
Multiparameter Water Quality Sonde	\$100/day
Van Dorn water sampler	\$30/day
Health and Safety Equipment	\$20/day/person
Fish Processing Equipment	\$35/day

Note:

WAAS: wide area augmentation system



AMEC FOSTER WHEELER ENVIRONMENT & INFRASTRUCTURE, INC. 2018 RATE SCHEDULE

The hourly labor rates set forth below are valid from January 1, 2018 and are subject to annual revision thereafter. Amec Foster Wheeler will provide CLIENT thirty days advance written notice of any such revisions.

PROFESSIONAL SERVICES

CLIENT agrees to reimburse Amec Foster Wheeler for all hours worked by professionals at the following classifications and associated hourly labor rates. For expert witness testimony and related services in connection with litigation, CLIENT agrees to reimburse Amec Foster Wheeler for all hours worked by professionals at the following classifications, but at one and one half times the associated hourly labor rates.

CLASSIFICATION	RATE/HOUR	CLASSIFICATION	RATE/HOUR
Professional Levels 1	\$55.00	Professional Level 19	\$165.00
Professional Levels 2	\$60.00	Professional Level 20	\$170.00
Professional Levels 3	\$65.00	Professional Level 21	\$180.00
Professional Level 4	\$70.00	Professional Level 22	\$190.00
Professional Level 5	\$75.00	Professional Level 23	\$200.00
Professional Level 6	\$80.00	Professional Level 24	\$210.00
Professional Level 7	\$85.00	Professional Level 25	\$220.00
Professional Level 8	\$90.00	Professional Level 26	\$240.00
Professional Level 9	\$95.00	Professional Level 27	\$250.00
Professional Level 10	\$100.00	Professional Level 28	\$260.00
Professional Level 11	\$105.00	Professional Level 29	\$270.00
Professional Level 12	\$110.00	Professional Level 30	\$280.00
Professional Level 13	\$115.00	Professional Level 31	\$290.00
Professional Level 14	\$120.00	Professional Level 32	\$300.00
Professional Level 15	\$130.00	Professional Level 33	\$310.00
Professional Level 16	\$140.00	Professional Level 34	\$320.00
Professional Level 17	\$145.00	Professional Level 35	\$330.00
Professional Level 18	\$150.00		

TECHNICIAN SERVICES

CLIENT agrees to reimburse Amec Foster Wheeler for all hours worked by technicians at the following classifications and associated hourly labor rates.

CLASSIFICATION	RATE/HOUR	OVERTIME	CLASSIFICATION	RATE/HOUR	OVERTIME
Technician Level 1	\$27.50	\$41.25	Technician Level 16	\$85.00	\$127.50
Technician Level 2	\$30.00	\$45.00	Technician Level 17	\$90.00	\$135.00
Technician Level 3	\$32.50	\$48.75	Technician Level 18	\$95.00	\$142.50
Technician Level 4	\$35.00	\$52.50	Technician Level 19	\$100.00	\$150.00
Technician Level 5	\$37.50	\$56.25	Technician Level 20	\$105.00	\$157.50
Technician Level 6	\$40.00	\$60.00	Technician Level 21	\$110.00	\$165.00
Technician Level 7	\$42.50	\$63.75	Technician Level 22	\$115.00	\$172.50
Technician Level 8	\$45.00	\$67.50	Technician Level 23	\$120.00	\$180.00
Technician Level 9	\$47.50	\$71.25	Technician Level 24	\$125.00	\$187.50
Technician Level 10	\$55.00	\$82.50	Technician Level 25	\$130.00	\$195.00
Technician Level 11	\$60.00	\$90.00	Technician Level 26	\$135.00	\$202.50
Technician Level 12	\$65.00	\$97.50	Technician Level 27	\$140.00	\$210.00
Technician Level 13	\$70.00	\$105.00	Technician Level 28	\$145.00	\$217.50
Technician Level 14	\$75.00	\$112.50	Technician Level 29	\$150.00	\$225.00
Technician Level 15	\$80.00	\$120.00			

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ADMINISTRATIVE SERVICES

CLIENT agrees to reimburse Amec Foster Wheeler for all hours worked by administrative staff at the following classifications and associated hourly labor rates.

CLASSIFICATION	RATE/HOUR	OVERTIME	CLASSIFICATION	RATE/HOUR	OVERTIME
Administrative Level 1	\$35.00	\$52.50	Administrative Level 8	\$70.00	\$105.00
Administrative Level 2	\$40.00	\$60.00	Administrative Level 9	\$75.00	\$112.50
Administrative Level 3	\$45.00	\$67.50	Administrative Level 10	\$80.00	\$120.00
Administrative Level 4	\$50.00	\$75.00	Administrative Level 11	\$85.00	\$127.50
Administrative Level 5	\$55.00	\$82.50	Administrative Level 12	\$90.00	\$135.00
Administrative Level 6	\$60.00	\$90.00	Administrative Level 13	\$100.00	\$150.00
Administrative Level 7	\$65.00	\$97.50	Administrative Level 14	\$110.00	\$165.00

OTHER DIRECT EXPENSES

CLIENT agrees to reimburse Amec Foster Wheeler for all other direct expenses incurred at the following rates, except as otherwise specified by Amec Foster Wheeler in its proposal:

Travel Expenses: Transportation (mileage, air travel, car rental, etc.), lodging, meals, & incidental expenses	Cost plus 10%
Subcontract Expenses: Supplies or services furnished to Amec Foster Wheeler in support of project activities by any supplier or firm, except temporary agency or consultant staff charged at above hourly rates	Cost plus 10%
Direct Expenses: Other expenses in support of project activities	Cost Plus 10%



2018 Fee Schedule for Field Equipment

MARINE SCIENCES

Small Vessel and Trailer (15' Whater).	\$550.00/day
Tender Boat and Trailer (10' Jon Boat)	
ADCP Racks	100.00/wk
ADCP Racks	400.00/mo
Boat Instrument Mount	100.00/day
CTD Profiler (SBE 19)	
Field Digital Camera	
Dive Tanks	
Eckman Grab	
Field Computer	
GPS (Differential)	50.00/day
GPS WAAS Enabled (Garmin GPS76 Map)	25.00/day
GPS GEOXH	100.00/day
LISST Particle Size Analyzer	
Peristaltic Pump	50.00/day
Ponar Grab	50.00/day
Push Core	
Tablet PC	75.00/day
Tool Box	
Transect Tapes (30m)	10.00/day
Transect Tapes (100m)	15.00/day
Underwater Video Camera	
Underwater Digital Camera	
Real-time Underwater Video Camera	
Van Dorn Bottle	
Van Veen	200.00/day
Van Veen Grab	100.00/day

TERRESTRIAL BIOLOGY

Burrow Camera	50.00/day
Burrow Doors	5.00/day
Destron Pit Tag Reader	20.00/day
Digital Camera	25.00/day
Electroshocker	100.00/day
Field Laptop Computer	75.00/week
Gaiters	10.00/day
Hand Auger (4" diameter)	35.00/day
Radiotelemetry Receiver	25.00/day
Raptor Traps	20.00/day
Salinity Meter	20.00/day
Small Mammal Traps	25.00/day
Sampling Boat	50.00/day
Special Equipment Rental	10.00/hr
Tool Box	10.00/day
Water Pump	20.00/day

GEOGRAPHICAL INFORMATION SYSTEM

Advanced GPS with ArcPad	100.00/day
CADD Computer	25.00/hr
Computer Usage Fee	10.00/hr
Data Collection Tablet PC	75.00/day
Standard GPS with ArcPad	25.00/day
Plot – A-Size Final Map (8.5X11)	1.00/plot
Plot – B-Size Final Map (11x17)	2.00/plot
Size C 2.75 s, ft .(line/ B&W)	6.20/plot
Size C 2.75 sq. ft. (full color)	12.40/plot
Size C 2.75 sg. ft. (image)	20.60/plot
Size D 6 sg. ft. (line/ B&W)	13.50/plot
Size D 6 sq ft. (full color)	27.00/plot
Size D 6 sg. ft (image)	45.00/plot
Size E 12 sq. ft. (line/B&W)	27.00/plot



Size E 12 sq. ft (full color)	54.00/plot
Size E 12 sq. ft (image)	90.00/plot
Field Maps, Size E, 12 sq. ft	20.00/plot
Field Maps, Size D, 6 sq. ft	10.00/plot
Field Maps, Size C, 2.75 sq. ft	5.00/plot

VEHICLES

2-Wheel Drive Vehicle Fee	Current IRS Rate
4-Wheel Drive Vehicle Fee	Current IRS Rate
Daily Vehicle Rate	65.00/day

MISCELLANEOUS

CD Burning	5.00 each
DVD Burning	6.00 each
Photocopies, B/W (8 ½ x 11)	0.12 each
Photocopies, Colored (8 ½ x 11)	1.50 each
Photocopies, B/W (11 x 17)	1.00 each
Photocopies, Colored (11 x 17)	3.00 each
Transparencies, BW (8 ½ X11)	0.50 each
Transparencies, Colored (8 ½ X11)	4.00 each
Tabs	1.00 each
3" Binder	15.00 each
2 ½ " Binder	15.00 each
2" Binder	14.00 each
1 ½" Binder	12.00 each
1" Binder	12.00 each
%" Binder	8.00 each
½" Binder	8.00 each



Harbor Toxics Program RFP

Toxicity Testing Quote (by Chris Stransky, Amec Foster Wheeler) Provided to Anchor QEA - 3/26/18

		 	Pe	r Sa	mple Cos	t²		
Test	Species	2019	2020		2021		2022	2023
Solid-Phase Sediment Water Interface Test	Mytilus galloprovincialis	\$ 1,050	\$ 1,082	\$	1,114	\$	1,147	\$ 1,182
10-Day Solid-Phase Amphipod	Eohaustorius estuarius	\$ 1,150	\$ 1,185	\$	1,220	\$	1,257	\$ 1,294

1. Tests will be in conducted in accordance with the State of CA Sediment Quality Objective (SQO) Guidelines (Bay et al 2014), and the latest regional Bight '18 Regional Monitoring requirements.

2. Assumes sampling and testing will occur every 2-3 years at 22 locations per event in accordance with Table 4 of the CCMRP. Annual escalation fee of 3%.

Amec Foster Wheeler Environmental Laboratory 4905 Morena Blvd, Suite 1303 San Diego, CA 92117 858-299-5368



Assumptions:

1. Aquatic Bioassay follows Bight and Southern California Association of Marine Invertebrate Taxonomist (SCAMIT) guidelines for sorting and identification.

2. Samples will be sent for QAQC analysis upon request.

Task	Subtask	Price per Sample	#	Total Price
2021				
Taxonomy				
1. Sample Sor	ting of Benthic Infauna	\$445	22	\$9,790
2. Taxonomic	Identification of Benthic Infauna			
Benthic I	nfauna	\$687	22	\$15,114
3. QAQC samp	les			
Secondar Reporting	y Identifications, Reconciliations, I	\$2,005	3	\$6,015
4. Voucher Sp	ecimens			
Vouchers	at \$13/Sample, estimated cost			\$2,975
5. Reporting				
Taxa/Abu	Indance List (included)	\$0		
Benthic I RIVPAC)	nfauna SQO Indices (IBI, RBI, BRI,			<u>\$610</u>
Codiment Torrisitu			Subtotal	\$34,504
		\$900	22	¢10 800
1. TO day Eonal 2 Bivalve cedin	nent interface (Mytilus sn)	\$1.300	22	\$28,600
	nent interface (Hytilus sp)	+ 2/000	Subtotal	\$48,400
		Total Co	st (2021)	\$82,904

1



Task	Subtask	Price per Sample	#	Total Price
2023				
Taxon	omy			
1.	Sample Sorting of Benthic Infauna	\$462	22	\$10,164
2.	Taxonomic Identification of Benthic Infauna			
	Non-Bight Samples	\$703	NA	NA
	Bight 23 Samples	\$887	NA	NA
3.	QAQC samples (Non-Bight) ¹ Secondary Identifications, Reconciliations, Reporting	\$2,022	3	\$6,066
4.	Voucher Specimens Non-Bight Vouchers at \$13/Sample, estimated cost			\$2,975
	Bight Vouchers at \$13/Sample, estimated cost			\$5,091
5.	Reporting			
	Taxa/Abundance List (included)	\$0		
	Benthic Infauna SQO Indices (IBI, RBI, BRI, RIVPAC)			<u>\$610</u>
Sedim	ent Toxicity			
1.	10 day Eohaustorius estuaries	\$900	22	\$19,800
2.	Bivalve sediment interface (Mytilus sp)	\$1,300	22 Subtotal	<u>\$28,600</u> \$48,400

1. Bight QC is completed by the Bight 23 infauna taxonomist as part of the Bight program.

Program	Phase	Task/Analyte	Personnel/Method	Price	/Rate OT F	late	Hours	OT Hours	Days	Cost	OT	Cost 1	ask Total
star Quality, Monitorios	Water Ouslity Sampling	Personnel (Mobilization)	Senior Biologist	\$	110 \$	150	∞		н	\$	880 \$		
	Crew hoat equipment	Peronnel (ship time) Crew1	Senior Biologist	ŝ	110 \$	150	∞	2	-	Ş	880 \$	300	
		Peronnel (ship time) Crew1	Field Technician	Ŷ	80 \$	135	ø	2	7	Ŷ	640 \$	270	
		Equipment	Boat (SCMI Whaler)	ŝ	945		, -1		ч	Ş	945		
		Equipment	Materials and supplies	\$	500				1	ş	500		
		Equipment	YSI	\$	400		1		1	\$	400	Ş	4,815
				ĩ	011		0			v	880		
Senthic Sediments Monitoring	Sediment Sampling	Personnel (mobilization)	Senior biologist	۰	1 11		0 0	•	4 1	` `	, , ,	0.0	
		Personnel (ship time)	Senior Biologist	ა	110 \$	165	×	4	-1	л	88U \$	naa	
		Personnel (ship time)	Biologist	ŝ	100 \$	150	00	4	ч	Ş	800 \$	600	
		Personnel (ship time)	Field Technician	ŝ	80 \$	135	∞	4	1	ŝ	640 \$	540	
		Fauipment	Boat (SCMI Yellowfin)	ŝ	4,311				۳	\$ 4	,311		
		Equipment	Van veen, nets, preservatives	ŝ	500				1	\$	500	\$	9,811
iich Tissue Sampling	Trawt Sampling Bioaccumulation	Personnel (mobilization)	Senior Biologist	ŝ	110 \$	165	8		1	\$	880		
rawi Ria Siana Collections		Peronnel (ship time)	Senior Biologist	ŝ	110 \$	165	80	4	1	Ş	880 \$	660	
		Peronnel (ship time)	Biologist	ŝ	100 \$	150	8	4	1	Ş	800 \$	600	
achidas Eish Tavonomist		Peronnel (ship time)	Biologist	ŝ	100 \$	150	8	4	7	Ş	800 \$	600	
		Peronnel (ship time)	Field Technician	ŝ	80 \$	120	80	4	٦	Ŷ	640 \$	480	
		Eauipment	Boat (SCMI Yellowfin)	Ŷ	4,569		2		Ч	ۍ 4	,569		
		Eauipment	Trawl nets, preservatives	Ŷ	500				1	\$	500	\$	11,409

Aquatic Bioassay Consulting Laboratories, Inc. GWMA Harbor Toxics TMDL Sampling Quote to Anchor QEA, Inc. 🔅 eurofins

Analytical Services Quotation

Calscience

Quote No. <u>964680</u> Last Revised on <u>2018-04-03</u> by <u>Michele Castro</u>

Client Info	ormation	Project Information
Name: Client:	Andrew Martin ANCHOR QEA, LLC	Project ID: GWMA Location:
Address:	27201 Puerta Real Suite 350 Mission Viejo, CA 92691-8306	Expected Start Date: 2/2/2018 Quote Valid Until: 2/2/2019
Phone: Fax: E-mail:	949-347-2780 949-347-2781 amartin@anchorqea.com	Analytical Fees Include : ✓ Courier Services ✓ Sample Disposal ✓ EDD

Motrix	Test	Quantity	тат	Unit Costs	Subtotal 1	<u>Rush</u> Surcharge	Subtotal 2
Maurix		Quantity	<u>17 11</u>	<u>01111 00000</u>	<u>00010101 1</u>	<u>curcharge</u>	¢05.00
Tissue	% Lipids via MeCl2 Ext. (NOAA 1993a)	1	15	\$25.00	\$25.00	Φ 0.00	φ25.00
Tissue	ASTM D-2216 (M) Moisture Content	1	15	\$12.00	\$12.00	\$0.00	\$12.00
Sediment	ASTM D4464 (M) Particle Size Laser	1	10	\$75.00	\$75.00	\$0.00	\$75.00
Sea Water	EPA 1631E Low Level Hg, Filtered	1	10	\$85.00	\$85.00	\$0.00	\$85.00
Sea Water	EPA 1631E Low Level Hg, Total	1	10	\$85.00	\$85.00	\$0.00	\$85.00
Sea Water	EPA 1640 Metals Zn, Pb, Cu, Cr, Cd, Filtered	1	10	\$175.00	\$175.00	\$0.00	\$175.00
Sea Water	EPA 1640 Metals Zn, Pb, Cu, Cr, Cd, Total	1	10	\$175.00	\$175.00	\$0.00	\$175.00
Sediment	EPA 6020 Cd, Cr, Cu Pb Zn	1	10	\$85.00	\$85.00	\$0.00	\$85.00
Sediment	EPA 7471A Mercury	1	10	\$30.00	\$30.00	\$0.00	\$30.00
Sea Water	EPA 8081A Organochlorine Pesticides Marine - Low Level	1	10	\$140.00	\$140.00	\$0.00	\$140.00
Sediment	EPA 8081A Toxaphene Only	1	5	\$80.00	\$80.00	\$0.00	\$80.00
Tissue	EPA 8081A Toxaphene Only	1	5	\$80.00	\$80.00	\$0.00	\$80.00
Sediment	EPA 8270C SIM OC Pesticides	1	10	\$140.00	\$140.00	\$0.00	\$140.00
Tissue	EPA 8270C SIM OC Pesticides	1	15	\$140.00	\$140.00	\$0.00	\$140.00
Sediment	EPA 8270C SIM PAHs	1	10	\$150.00	\$150.00	\$0.00	\$150.00
Sea Water	EPA 8270C SIM PCB Congeners	1	10	\$250.00	\$250.00	\$0.00	\$250.00
Sediment	EPA 8270C SIM PCB Congeners	1	10	\$275.00	\$275.00	\$0.00	\$275.00
Tissue	EPA 8270C SIM PCB Congeners	1	15	\$275.00	\$275.00	\$0.00	\$275.00
Sediment	EPA 9060A Total Organic Carbon	1	10	\$75.00	\$75.00	\$0.00	\$75.00

The Chain-of-Custody form is a legally binding document - be sure it is filled Page 1 of 3 out legibly, correctly, and completely!

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Analytical Services Quotation

Calscience

InstructInstructInstructInstructInstructInstructInstructTissueSample Homogenization (whole fish)115\$20.00\$20.00\$0.00\$TissueSample Homogenization (whole fish)115\$35.00\$35.00\$0.00\$TissueSample Homogenization Prey Fish115\$45.00\$45.00\$0.00\$TissueSample Homogenization Prey Fish115\$45.00\$45.00\$0.00\$SedimentSM 2540 B (M) Total Solids110\$12.00\$12.00\$0.00\$	<u>1</u> Irge Subtotal 2
TissueSample Homogenization (whole fish filet no skin)115\$35.00\$35.00\$0.00\$TissueSample Homogenization Prey Fish (special instruction)115\$45.00\$45.00\$0.00\$SedimentSM 2540 B (M) Total Solids110\$12.00\$12.00\$0.00\$.00 \$20.00
Tissue Sample Homogenization Prey Fish 1 15 \$45.00 \$0.00 \$ (special instruction) Sediment SM 2540 B (M) Total Solids 1 10 \$12.00 \$0.00 \$.00 \$35.00
Sediment SM 2540 B (M) Total Solids 1 10 \$12.00 \$12.00 \$0.00 \$.00 \$45.00
	.00 \$12.00
Sea Water SM 2540 D Total Suspended Solids 1 10 \$12.00 \$12.00 \$0.00 \$.00 \$12.00
Sediment Subcontract EPA 1638M (200.8) 1 20 \$100.00 \$0.00 \$7 Cd, Cr, Cu, Pb, Zn to EFGS 1 20 \$100.00 \$100.00 \$0.00 \$7	.00 \$100.00
ADDITIONAL_ITEMS Cu analysis by EPA 1640 for lab provided water ECI Water (per gallon) Eurofins Frontier EB/FB Water (1 week advance notice required) Lab filtration for dissolved metals Total For Additional Items: \$ Total for Testcodes : \$2	<u>COST</u> \$85.00 \$30.00 \$35.00 \$10.00 \$160.00 \$2,576.00
Quote total: \$2,	\$2,736.00

Quote No. <u>964680</u> Last Revised on <u>2018-04-03</u> by <u>Michele Castro</u>

Comments: 3% yearly escalation. Duplicates, MS/MSD's, and shipment to Eurofins Frontier included in price.

Standard level II deliverable is included. Add 10% for level III or IV.

Additional charges may be incurred for non-standard or specialized EDD's not requested at the time of bidding.

Client will be responsible for paying for any additional analyses or services requested after the issuance of this quote, please request a revised quote if additional analytes or services are needed.

Please provide 3 working days' advance notice to your project manager for preparation of containers/bottle sets. Large orders may require additional time. Shipping outside of local area may increase delivery time.

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Analytical Services Quotation

Calscience

Quote No. 964680 Last Revised on 2018-04-03 by Michele Castro

Your Project Manager will be : <u>Richard Villafania , RichardVillafania@eurofinsUS.com</u>.

Please contact him/her prior to sampling activities to order sampling supplies (e.g. bottles, coolers) or to confirm proper containers and volume requirements.

Our normal business hours are 0830 to 1730 (5:30 pm). If you plan to use a Eurofins Calscience courier for sample pickup, be advised that samples picked up after 1530 (3:30 pm) on a given day will likely be logged in for the following business day (that is, your turnaround time calculation begins the next day). This does not apply to Rush samples of Same Day, 24 hrs, 48 hrs, or 72 hrs. For Rush samples, the turnaround time begins the day of pickup if scheduled during normal business hours.

When ordering sampling containers, order only what is needed. Unused sample containers cannot be returned to Eurofins Calscience for reuse due to possible contamination issues. Eurofins Calscience can only dispose of unused containers. If a client insists on returning unused containers for disposal, a \$100 minimum disposal fee applies.

Unless otherwise stated, all analytical work conducted by Eurofins Calscience is subject to its standard terms and conditions, a copy of which is available upon request.

Disposal of solid and aqueous samples will occur 28 days following sample receipt unless other arrangements are made. Air samples will be retained only until analysis is completed.

In the absence of any other agreement, data package (level III/IV) preparation fees will be either \$200 or 10% of the laboratory testing fees, whichever is greater.

The Chain-of-Custody form is a legally binding document - be sure it is filled Page 3 of 3 out legibly, correctly, and completely!



2019 SCHEDULE OF FEES

Effective January 1, 2019

Functional	Level	Hourly
Title	Classification	Rate
Principal	303	\$155
Associate	301	\$140
Senior	205	\$125
Staff	203	\$105
Technician	201	\$85
Controller	103	\$75
Administrative	101	\$60

* Overtime (in excess of 8 hours per day) and weekend hours will be charged at 1.5 to 2.0 times the above rates for non-exempt personnel.

Notes:

- 1. An employee's degree and career path determine their technical track (e.g. Scientist, Engineer, Geologist, Technician, etc.). Thus, complete Functional Titles are determined by the above level classification and their degree and career track combined (e.g. Principal Scientist, Senior Engineer, Staff Geologist, Associate Technician, etc.).
- 2. Mileage will be billed based on the current IRS reimbursement rate of 0.535 cents per mile.
- 3. Equipment purchase and rental, consumable equipment purchase, vendor and subcontractor services, and other expenses incurred in the completion of a project will be charged at cost plus ten percent (10%).
- 4. Equipment owned by FMF Pandion will charged based upon the current FMF Pandion equipment rental fee schedule.
- 5. Invoices will be issued monthly and are payable within thirty (30) days, unless otherwise agreed. Interest at the rate of one and one half percent (1.5%) per month will be payable on any amounts not paid within thirty (30) days.
- 6. FMF Pandion does not bill phone charges, office fees, or technology fees.
- 7. Rates and Equipment Rental subject to 3% annual escalation.



2019 RENTAL FEE SCHEDULE

Effective January 1, 2019

RENTAL PERIOD	DAY	WEEK	MONTH	YEAR
	General Field Tool	st, i i		
Waterproof Digital Camera	\$5	\$13	\$44	\$263
GPS	\$5	\$13	\$44	\$263
Range Finder	\$5	\$13	\$44	\$263
Binoculars	\$5	\$13	\$44	\$263
Survey Gear	\$14	\$38	\$125	\$750
Tool Box	\$5	\$13	\$44	\$263
Cordless Power Tools Kit	\$14	\$38	\$125	\$750
Fall Protection	\$28	\$77	\$250	\$1,500
Climbing Rated Rope	\$5	\$13	\$44	\$263
Power Invertor	\$5	\$13	\$44	\$263
	Sampling Equipme	nt		
Grab Pole	\$5	\$13	\$44	\$263
Grab Bucket	\$5	\$13	\$44	\$263
	Traffic Control	eren († 1. september :		
Traffic Cones	\$5	\$13	\$44	\$263
Traffic Barriers	\$5	\$13	\$44	\$263
Traffic Flashing Lights	\$5	\$13	\$44	\$263

Notes:

1. Rental fees are applicable to FMF Pandion owned equipment only. If FMF Pandion owned equipment is not available, equipment will be rented and treated as a project expense.



POSITION DESCRIPTIONS

Functional Title	Position Description
Principal	A staff person with a professional degree and more than 15 years of experience who is responsible for staffing and overall quality assurance and quality control. The Principal has the authority to commit resources and authorize contracts on behalf of the company.
Associate	A staff person with a professional degree and more than 10 years of experience in a project management role who acts as the point of contact for the client and is responsible for all of the day-to-day progress of the project. The Associate is capable of managing large, complex projects with a high degree of controversy. The Associate is responsible for the overall performance of the work and service to the client.
Senior	A staff person with a professional degree and more than 5 years of experience with environmental investigations who acts as the secondary point of contact for the client. The Senior is capable of managing small to medium projects. The Senior regularly checks in with the Associate on project status.
Staff	A staff person with a professional degree and 2-5 years of experience with environmental investigations. Staff may have client interaction and supervisory responsibilities.
Technician	A staff person with a professional degree and 0-2 years of experience with environmental investigations. Staff in this position work to support projects under the supervision of the Staff. Non-degreed staff regardless of experience are classified as Technician.
Controller	A staff person with a professional degree and more than 2 years of experience who is responsible for financial control of a project. The Controller works directly with the Associate and Principal to help define the project's goals and objectives, create and maintain a project's budget and schedule, labor rates, equipment rates, maintain appropriate insurance, project audits, analyze progress reported against the work schedules, and recommend actions to improve progress.
Administrative	A staff person with experience providing support services such as scheduling meetings and conference calls, document production and reproduction, word processing, and record keeping.



Andrew Martin Managing Environmental Scientist Anchor QEA LLC 27201 Puerta Real, Suite 350 Mission Viejo, CA 92691

March 19, 2018

Re: Support Services for the Harbor Toxics TMDL Compliance Monitoring Program

Dear Andy:

Thank you for contacting Marine Taxonomic Systems to support your marine sampling programs. We are excited by the potential to work with Anchor QEA to support the Harbor Toxics TMDL Compliance Monitoring Program. The below work approach conceptualizes the discussions we have had regarding potential project requirements relating to water and sediment sampling.

Task 1: Sediment Sampling Support

Under this task, MTS would provide an associate level biologist to work with your team during sediment sampling operations. We assume work would occur onboard a vessel with appropriate sampling equipment including a grab sampler, sieve stand, sediment sieves, and filtered saltwater rinse. The MTS biologist would help with sample collection and would be responsible for sieving samples for infaunal organisms. Collected organisms would be properly placed into storage containers and preserved.

The costs to provide a single staff person along with sample containers and preservative totals \$1,600 per day. The fees include travel and accommodation for working in Los Angeles / Long Beach. The fees are valid for the remainder of 2018 and can be used for subsequent years if escalated 3% per year.

Task 2: Water Sampling Support

Under this task, MTS would provide a vessel, operator, and datasonde to support harbor and offshore water sampling and water quality data collection. MTS understands that the work schedule is dependent upon receiving qualifying storm events to trigger sampling. As such there can be time associated with preparing for events that do not occur.

The costs to perform the water sampling support total \$2,344 per vessel/operator combination assuming current rates. Given your request for sampling in subsequent years, we have proposed to escalate the rates 3% per year for your planning purposes.

Please refer to Table 1. For escalated rates on both tasks. I have also attached a current rate sheet. Our rate sheet includes pricing for infaunal sample sorting and taxonomy using Bight protocols. Pricing can always be adjusted for individual projects dependent upon the protocol required.

I look forward to the opportunity to work with you on this project.

Sincerely,

Robert Mooney, Ph.D. Principal Marine Scientist

CALIFORNIA OFFICE | 920 RANCHEROS DRIVE SUITE F-1 | SAN MARCOS CA 92069 | 858.232.1958 OREGON OFFICE | 5125 NW CRESCENT VALLEY DRIVE | CORVALLIS OR 97330 | 541.753.7609 WWW.MARINETAXONOMICSERVICES.COM

Task	Description	Year	Price	Units
Task 1	Sediment Sampling Support	2018	\$1,600.00	Per person day
		2019	\$1,648.00	Per person day
		2020	\$1,697.00	Per person day
		2021	\$1,748.00	Per person day
		2022	\$1,800.00	Per person day
		2023	\$1,854.00	Per person day
		2024	\$1,910.00	Per person day
Task 2	Water Sampling Support	2019/2020 Season	\$2,487.00	Per vessel & operator
	• • • •	2020/2021 Season	\$2,561.00	Per vessel & operator
		2021/2022 Season	\$2,638.00	Per vessel & operator
		2022/2023 Season	\$2,717.00	Per vessel & operator
		2023/2024 Season	\$2,800.00	Per vessel & operator

Table 1. Prop	posed fees pe	r task based on v	vear or rain season	of service.
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SCHEDULE OF FEES *Effective January 2017*

CONSULTING AND LABOR RATES	
PRINCIPAL SCIENTIST	\$150 / hour
PROJECT MANAGER	\$125 / hour
SENIOR BIOLOGIST	\$110 / hour
ASSOCIATE BIOLOGIST	\$90 / hour
GIS TECHNICIAN	\$90 / hour
MARINE TECHNICIAN	\$80 / hour
FIELD TECHNICIAN	\$65 / hour
SENIOR DIVE TECHNICIAN	\$125 / hour
DIVE TECHNICIAN	\$100 / hour
ADMINISTRATIVE SUPPORT	\$55 / hour
VEHICLES AND VESSELS	
VEHICLE MILEAGE (2017 IRS rate)	\$0.535 / mile
TOW VEHICLE	\$50 / day + mileage
SURVEY / DIVE VESSEL	\$450 / day
SMALL SURVEY VESSEL	\$300 / day
MARINE SURVEY EQUIPMENT	
REMOTELY OPERATED VEHICLE (ROV)	\$750 / day
TOWED VIDEO CAMERA	\$200 / day
SIDE-SCAN SONAR	\$400 / day

MAIN OFFICE | 920 RANCHEROS DRIVE SUITE F-1 | SAN MARCOS CA 92069 | 760.410.8392 OREGON OFFICE | 5125 NW CRESCENT VALLEY DRIVE | CORVALLIS OR 97330 | 541.753.7609



SINGLE-BEAM SONAR	\$300 / day
MULTI-BEAM SONAR	\$2200 / day
BENTHIC SAMPLING EQUIPMENT	
BENTHIC SEDIMENT SAMPLER	\$200 / day
DIVER OPERATED SEDIMENT SAMPLER	\$50 / day
SIEVE STAND RENTAL - Price per Project	\$300
WATER MONITORING EQUIPMENT MULTI-PARAMETER WATER QUALITY SONDE	\$250 / day
TRANSMISSOMETER	\$200 / day
VAN DORN WATER SAMPLER	\$50 / day
TIDAL MONITORING STATION	\$3500
FISHERIES SAMPLING EQUIPMENT	
OTTER TRAWL	\$300 / day
BEACH SEINE	\$100 / day
LONG LINE	\$100 / day
STREAM ASSESSMENT BUNDLE	\$100 / day
ELECTRO-FISHING EQUIPMENT	\$750 / day
GENERAL FIELD EQUIPMENT	
DIFFERENTIAL GPS	\$75 / day
TERRESTRIAL & FORESTRY BUNDLE (includes GPS)	\$100 / day
SPECIALIZED DIVE SUPPORT EQUIPMEN SCUBA DIVE GEAR	I T Included with diver
REBREATHER DIVE GEAR (to 200 ft)	\$250 / day

MAIN OFFICE | 920 RANCHEROS DRIVE SUITE F-1 | SAN MARCOS CA 92069 | 760.410.8392 OREGON OFFICE | 5125 NW CRESCENT VALLEY DRIVE | CORVALLIS OR 97330 | 541.753.7609



CAMERA & UNDERWATER HOUSING	\$50 / day
CATHODIC PROTECTION METER	\$100 / day
UNDERWATER METAL DETECTOR	\$350 / day
SALVAGE EQUIPMENT (assorted lift bags and rigging)	\$500 / day
DIVER COMMUNICATIONS EQUIPMENT	\$100 / day
DIVER OPERATED SUCTION DREDGE	\$500 / day
Ι ΔΒΟΒΔΤΟΒΥ*	
TRANSFER OF SAMPLES TO ISOPROPYL ALCOHOL	\$25 / sample
TRANSFER OF SAMPLES TO DENATURED ETHANOL	\$45 / sample
TRANSFER OF SAMPLES TO PURE ETHANOL	\$65 / sample
BENTHOS ARCHIVING	\$10 / sample per year
STANDARD BENTHIC SORTING & TAXONOMY PNW	\$800 / sample
STANDARD BENTHIC SORTING & TAXONOMY CALIF.	\$1000 / sample
TAXONOMY TO SO. CAL. SCCWRP STANDARDS	\$1500-\$4000 / sample
*Discount for larger sample set	

		Takel and				
PHYSIS - ANCHOR GWMA Harbor Toxics TMD	L SOW - 3/31/18 Method	Units	Physis MDL	Physis RL	GWMA TRL	> 592 Physis Cost
Total Suspended Solids	SM 2540D	mg/L	0.5	0.5	2	\$ 15
Trace Metals - Total & Dissolved	EPA 1640	μg/L				\$ 294
Cadmium			0.0025	0.005	0.03	inc.
Chromium			0.0125	0.025	0.5	inc.
Copper			0.005	0.01	0.03	inc.
Lead			0.0025	0.005	0.03	inc.
Zinc		-0	0.0025	0.005	0.5	inc. 6 85
Mercury - Total & Dissolved	EPA 1631E	μg/L	100.0	0.0002	0.0005	\$ 174
Organochlorine Pesticides	EPA 625	ng/L	0 512	2	2	inc.
4,4+001			0.312	2	2	inc.
2,4 (00)			0.792	2	2	inc.
4,4 000 3.4-000			1.068	2	2	inc.
4 4'-DDE			0.772	2	2	inc.
2.4'-DDE			0.800	2.	2	inc.
alpha-Chlordane			0.748	2	2	inc.
gamma-Chlordane			0.716	2	2	inc.
cis-nonachlor			0.768	2	2	inc.
trans-nonachlor			0.744	2	2	inc.
oxychlordane			1.000	2	2	inc.
dieldrin			1	2	2	inc.
Toxaphene	EPA 625-NCI	ng/L	10	25	25	1\$ 24
PCB Congeners	EPA 625	ng/L	0.000	<u> </u>	<u>, 1988</u>	inc.
PCB-8			0.068	2	2	inc
PCB-18			0.002	2	2	inc
PCB-28			0.092	2	2	inc.
PC8-37			0.112	2	2	inc.
PCB-44			0.144	2	2	inc.
PCB-43			0.048	2	2	inc.
PCB-66			0.108	2	2	inc.
PCB-70			0.092	2	2	inc.
PCB-74			0.084	2	2	inc.
PCB-77			0.072	2	2	inc.
PCB-81			0.336	2	2	inc.
PCB-87			0.324	2	2	inc.
PCB-99			0.112	2	2	inc.
PCB-101			0.108	2	2	inc.
PCB-105			0.188	2	2	inc.
PCB-110			0.296	2	2	inc.
PCB-114			0.288	2	2	inc.
PCB-118			0.276	2	2	inc.
PCB-119			0.284	2	2	inc
PCB-123			0.072	2	2	inc.
PCB-120			0.374	2	2	inc.
PCB-128			0.228	2	2	inc.
PCB-135			0.368	2	2	inc.
PCB-151			0.292	2	2	inc.
PCB-153			0.260	2	2	inc.
PCB-156			0.356	2	2	inc.
PCB-157			0.412	2	2	inc.
PCB-158			0.296	2	2	inc.
PCB-167			0.196	2	2	inc.
PCB-168			0.376	2	2	inc.
PCB-169			0.464	2	2	inc.
PCB-170			0.472	2	2	inc.
PCB-177			0.340	2	2	inc.
PCB-180			010.0	2	2	inc
PCB-183			0.224	2	2	inc.
PUB-18/			0.072	2	2	inc.
PUB-109			0.656	2	2	inc.
PCD-105			0.372	2	2	inc.
PCB-201			0.416	2	2	inc.
PCB-206			0.620	2	2	inc.
PCB-209			0.464	2	2	inc.
Custom EQUIS EDD format					(per report)	inc.
Courier Services	\$60/hr Normal Rou	nd Trip \$90/hr Afte	er-Hours Round Trip			inc.

					/	Physis Cost
HYSIS - ANCHOR GWMA Harbor Toxics TMD	NL SOW - 3/31/18				Total per Sample:	\$ 8/1
Sediment-Analyte	Method	Units	PRVSIS MUL	Physic RL	OWINA IRL	¢ 65
Particle Size Distribution	SIM 25000	70	0.03	0.05	0.1	\$ 15
Percent Solids	FPA 9060	% Dry Weight	0.01	0.01	0.05	\$ 55
Trace Metals	EPA 6020	ug/g dry wt				\$ 154
Cadmium		0.0 1	0.0025	0.005	0.1	inc.
Chromium			0.0025	0.005	0.2	inc.
Copper			0.0025	0.005	0.1	inc.
Lead			0.0025	0.005	0.03	inc.
Zinc			0.025	0.05	0.1	inc.
Mercury	EPA 245.7		0.01	0.02	30	\$ 35
AHs	EPA 8270D	ng/g dry wt				\$ 174
1-Methylnaphthalene			0.084	0.5	20	inc.
1-Methylphenanthrene			0.076	0.5	20	inc.
2,6-Dimethylnaphthalene			0.065	0.5	20	inc.
2-Methylnaphthalene			0.106	0.5	20	inc.
Acenaphthene			0.078	0.5	20	inc.
Anthracene			0.046	0.5	20	inc.
Benz[a]anthracene			0.107	0.5	20	inc.
Benzo[a]pyrene			0.106	0.5	20	inc.
Benzo[e]pyrene			0.098	0.5	20	inc.
Biphenyl			0.092	0.5	20	inc.
Chrysene			0.067	0.5	20	inc.
Dibenz[a,h]anthracene			0.106	0.5	20	inc.
Fluoranthene			0.035	0.5	20	Inc.
Indeno[1,2,3-c,d]pyrene			0.087	0.5	20	inč.
Naphthalene			0.187	0.5	20	inc.
Perylene			0.114	0.5	20	inc.
Phenanthrene			0.074	0.5	20	inc.
Pyrene			0.048	0.5	20	Inc.
rganochlorine Pesticides	EPA 8270D	ng/g dry wt	0.430	<u>^</u>	<u>ог</u>	3 1/4
4,4'-DDT			0.128	0.5	0.5	inc.
2,4'-DDT			0.194	0.5	0.5	inc.
4,4*-DDD			0.198	0.5	0.5	inc.
2,4'-DDD			0.267	0.5	0.5	inc.
4,4'-DDE			0.193	0.5	0.5	inc.
2,4'-DDE			0.200	0.5	0.5	inc.
alpha-Chlordane			0.187	0.5	0.5	inc.
gamma-Chlordane			0.179	0.5	0.5	inc.
cis-nonachior			0.192	0.5	0.5	inc.
trans-nonachior			0.160	0.5	0.5	inc.
oxychiordane			0.230	0.5	0.5	inc.
aleidrin	EDA 8270 NCL	nala dayud	0.10	5.2	5	\$ 25
oxapnene	EFA 62/0-INCI	iig/g uiy wi			-	inc.
DCB Constants	EDA 92700	ng/g dry wt				\$ 174
PCB Congeners	EFABLIND	-	0.017	0.2	0.2	inc.
PCB-8			0.029	0.2	0.2	inc.
PCD-10			0.023	0.2	0.2	inc.
DCB-27			0.060	0.2	0.2	inc.
DCB-74			0.028	0.2	0.2	inc.
DCR_AQ		1	0.036	0.2	0.2	inc.
PCR-52		1	0.012	0.2	0.2	inc.
PCB.66			0.027	0.2	0.2	inc.
PCR.70			0.023	0.2	0.2	inc.
PCB-74			0.021	0.2	0.2	inc.
PCB-77			0.018	0.2	0.2	inc.
PCB-81			0.084	0.2	0.2	inc.
P(R.97			0.081	0.2	0.2	inc.
PCR-99			0.028	0.2	0.2	inc.
PCB-101		1	0.027	0.2	0.2	inc.
PCB-105			0.047	0.2	0.2	inc.
PCB-110			0.074	0.2	0.2	inc.
PCB-114			0.072	0.2	0.2	inc.
PCB-118		and the second second	0.069	0.2	0.2	inc.
PCB-119			0.071	0.2	0.2	inc.
PCB-123			0.018	0.2	0.2	inc.
PCB-126			0.086	0.2	0.2	inc.
PCB-128			0.081	0.2	0.2	ìnc.
PCB-138			0.057	0.2	0.2	inc.
PCB-149			0.092	0.2	0.2	inc.
PCB-151			0.073	0.2	0.2	inc.

PCB-153		0.065	0.2	0.2	inc.
PCB-156		0.089	0.2	0.2	inc.
PCB-157		0.103	0.2	0.2	inc.
PCB-158		0.074	0.2	0.2	inc.
PCB-167		0.049	0.2	0.2	inc.
PCB-168		0.094	0.2	0.2	inc.
PCB-169		0.116	0.2	0.2	inc.
PCB-170		0.118	0.2	0.2	inc.
PCB-177		0.085	0.2	0.2	inc.
PCB-180		0.154	0.2	0.2	inc.
PCB-183		0.056	0.2	0.2	inc.
PC8-187		0.168	0.2	0.2	inc.
PCB-189		0.109	0.2	0.2	inc.
PCB-194		0.164	0.2	0.2	inc.
PCB-195		0.093	0.2	0.2	inc.
PCB-201		0.104	0.2	0.2	inc.
PCB-206		0.155	0.2	0.2	inc.
PCB-209		0.116	0.2	0.2	inc.
Sediment Sample Processing - Inc. Ho	mogenization, Composite Sample Creation				inc.
Custom EQuIS EDD format				(per report)	inc.
Courier Services	\$60/hr Normal Round Trip \$90/hr Aft	er-Hours Round Trip			inc.

					Physis Cost		
					Total per Sample:	\$ 487	
HYSIS - ANCHOR GWMA Harbor Toxics TMDL SC	W - 3/31/18				Total Analyses:	\$ 413	
Tissue-Analyte	Method	Units	Physis MDL	Physis RL	GWMA TRL	Physis Cost	
Percent Solids	SM 2540 B	%	0.1	0.1	0.5	\$ 15 6 95	
Percent Lipids	Gravimetric	%	0.01	0,3	0.5	2 23 C 17/	
Organochlorine Pesticides	EPA 8270D	ng/g wet wt	0.120	0.5	10		
4,4 -DDT			0.128	0.5	10	inc.	
2,4+001			0.194	0.5	0 A	inc.	
4,4-000			0.198	0.5	4	inc.	
2,4-000			0.207	0.5	4	inc.	
4,4'-DDE			0.193	0.5	4	inc.	
2,4-DUE			0.200	0.5	4	inc	
alpha-Chlordane			0.187	0.5	4	inc.	
gamma-Chlordane			0.179	0.5	4	inc.	
cis-nonachior			0.192	0.3	2	inc.	
trans-nonachior			0.180	0.5	2	inc.	
oxychlordane			0.250	0.5 	2	inc.	
dieldrin			L	2 E0		c 25	
oxaphene	EPA 8270-NCI	ng/g wet wt	10	50		3 <u>23</u>	
		ng/g wet wt				C 174 a	
PCB Congeners	EPA 8270D		0.017	0.4	0.4	3 174 c	
PCB-8			0.017	0.4	0.4	inc.	
PCB-18			0.029	0.4	0.4	inc.	
PCB-28			0.023	0.4	0.4	inc.	
PCB-37			0.060	0.4	0.4	inc.	
PCB-44			0.028	0.4	0.4	inc.	
PCB-49			0.036	0.4	0.4	inc.	
PCB-52			0.012	0.4	0.4	inc.	
PCB-66			0.027	0.4	0.4	inc.	
PCB-70			0.023	0.4	0.4	inc.	
PCB-74			0.021	0.4	0.4	inc.	
PCB-77			0.018	0.4	0.4	inc.	
PCB-81			0.084	0.4	0.4	inc.	
PCB-87			0.081	0.4	0.4	inc.	
PCB-99			0.028	0.4	0.4	inc.	
PCB-101	A.4.		0.027	0.4	0.4	inc.	
PCB-105			0.047	0.4	0.4	inc.	
PCB-110			0.074	0.4	0.4	inc.	
PCB-114			0.072	0.4	0.4	inc.	
PCB-118			0.069	0.4	0.4	inc.	
PCB-119	1		0.071	0.4	0.4	inc.	
PCB-123			0.018	0.4	0.4	inc.	
PCB-126			0.086	0.4	0.4	inc.	
PCB-128			0.081	0.4	0.4	inc.	
PCB-138			0.057	0.4	0.4	inc.	
PC8-149		1.12	0.092	0.4	0.4	inc.	
PCB-151			0.073	0.4	0.4	inc.	
P(B-153			0.065	0.4	0.4	inc.	
PCB-156			0.089	0.4	0.4	inc.	
PCB-157	1		0.103	0.4	0.4	inc.	
PCB-158			0.074	0.4	0.4	inc.	
PCB.167			0.049	0.4	0.4	inc.	
PCB,169			0.094	0.4	0.4	inc.	
PCB.160			0.116	0.4	0.4	inc.	
PCB-105 PCB.370			0.118	0.4	0.4	inc.	
DCR.177			0.085	0.4	0.4	inc.	
PC0-1/7			0.154	0.4	0.4	inc.	
PC0-100			0.056	0.4	0.4	inc.	
PUD-103			0.050	0.4	1 0.4	inc	
PLD-187			0.100	0.4	0.4	inc	
PCD-189			0.103	0.4	0.4	inc	
PLB-194			0.104	0.4	0.4	inc	
PCB-195			0.093	0.4	0.4	inc.	
PCB-201	-		0.104	0.4	0.4	inc.	
PCB-206			0.155	0.4	0.4	inc.	
PCB-209	1		0.116	0.4	0.4	ніс. е уж	
Ish Sample Processing - inc. Filleting/Homogeniz	ation/Composite Sa	mple Creation			(per sample)	- 74 ire	
ish Length Measurement					(per tish)	inc.	



Rincon Consultants, Inc.

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March 30, 2018 Project #: 18-05535

Andrew Martin Managing Environmental Scientist ANCHOR QEA, LLC 27201 Puerta Real, Suite 350 Mission Viejo, California 92691 amartin@anchorgea.com

Subject: Proposal to Provide Anchor QEA with TMDL Monitoring Coalition Support Services in the Port of Long Beach/Los Angeles and Eastern San Pedro Bay

Dear Mr. Martin:

Rincon Consultants, Inc. is pleased to submit this proposal to provide Anchor QEA with field support services for TMDL Coalition monitoring in the Ports of Long Beach/Los Angeles and Eastern San Pedro Bay for the remainder of 2018 and for five continuous years starting in 2019, pending contract award. The TMDL monitoring coalition includes the City of Los Angeles and City of Long Beach as well as their associated Ports and integrated stakeholders. Rincon understands that the TMDL monitoring in the Ports requires data collection at up to 22 locations and involves multiple types of sampling strategies, methods, and time frames. Rincon maintains two vessels, marine scientists and equipment to perform physical and biological TMDL data collection tasks upon notification and under the direction of Anchor QEA. Rincon understands that the TMDL monitoring has critical time components and that some of the monitoring must be conducted within 24 hours of threshold rain events. Rincon can commit to being available to support Anchor QEA over the entire five year time frame of the monitoring program. The following provides a detailed Scope of Work and Cost Estimate for providing various levels of support for individual tasks, use of equipment, and marine scientist labor.

Scope of Work

Our proposed Scope of Work is segregated into two distinct tasks, which include the collection of physical and biological TMDL data while aboard or operating Rincon vessels and/or aboard vessels of opportunity under contract with Anchor QEA. Rincon maintains a comprehensive marine insurance policy for its vessels that includes property and liability for the vessel, crew and passengers. Rincon also maintains Longshoreman and Harbor Workers Act and Marine Employers Liability coverages as part of the Workers Compensation coverage that provides Rincon employees seamless coverage for in-water or overwater work activities. The proposed tasks are described in detail below.

Engineers



Port of Long Beach/Los Angeles TMDL Monitoring Support Services Anchor QEA Page 2

Task 1 – Water Quality Monitoring

Water quality monitoring support services will occur three times per year with two wet weather events and one dry weather event occurring annually. Rincon will at a minimum provide a vessel, operator, and all vessel integrated navigation and safety equipment to the Port of Long Beach or Port of Los Angeles within 24 hours of notification of a scheduled monitoring activity. Daily costs associated with each monitoring event include a vehicle, mileage, and up to 3 hours' time for participating staff scientists to trailer the vessel(s) to the Ports and conduct sampling for up to 8 hours per day of on-water data collection. Rincon maintains two separate vessels: 1). 20 ft. Boston Whaler Center Console (150 HP Outboard) and 2). 24 ft. Radon Pilothouse (350 HP I/O) charged at slightly different daily rates. Both vessels are well equipped for coastal operation and include depth sounders, navigational instrumentation, all USCG required safety gear, dry storage areas, and have areas that provide wind/rain protection.

Task 1.1 – 20 Foot Boston Whaler (One Crew)

This subtask day rate includes Rincon's Boston Whaler, qualified operator/marine scientist, and vessel navigation/safety equipment for 8 hours of on-water operation per day. The day rate includes a consumable fuel charge of \$50 per day. All time beyond 8 hours on the water will be billed on a time and material basis at \$145/hour to account for overtime. **Day Rate = \$2,145**

Task 1.2 – 20 Foot Boston Whaler (Two Crew)

This subtask day rate includes Rincon's Boston Whaler, two qualified operators/marine scientists, and vessel navigation/safety equipment for 8 hours of on-water operation per day. The day rate includes a consumable fuel charge of \$50 per day. All time beyond 8 hours on the water will be billed on a time and material basis at \$145/hour per person to account for overtime. **Day Rate = \$3,565**

Task 1.3 – 24 Foot Radon Pilothouse (One Crew)

This subtask day rate includes Rincon's Radon Pilothouse, qualified operator/marine scientist, and vessel navigation/safety equipment for 8 hours of on-water operation per day. The day rate includes a consumable fuel charge of \$50 per day. All time beyond 8 hours on the water will be billed on a time and material basis at \$145/hour to account for overtime. Day Rate = \$2,345

Task 1.4 – 24 Foot Radon Pilothouse (Two Crew)

This subtask day rate includes Rincon's Radon Pilothouse, two qualified operators/marine scientists, and vessel navigation/safety equipment for 8 hours of on-water operation per day. The day rate includes a consumable fuel charge of \$50 per day. All time beyond 8 hours on the water will be billed on a time and material basis at \$145/hour per person to account for overtime. **Day Rate = \$3,765**

Task 1.5 - Multi-parameter Water Quality Instrument (YSI ProDSS with Datalogger/GPS) Rental

This subtask provides a day rate for use of Rincon's multi-parameter water quality instrument (YSI ProDSS with Datalogger/GPS). Use of the instrument includes all equipment, batteries, probes, calibration standards, and deionized water to adequately calibrate and operate the unit for one day of water quality monitoring. The YSI-ProDSS is equipped with probes to collect temperature, conductivity, pH, dissolved oxygen, and turbidity. Additional probe options are available if necessary but may require removal or existing probes or piggy backing an additional instrument if necessary. **Day Rate = \$200**

Planners



Port of Long Beach/Los Angeles TMDL Monitoring Support Services Anchor QEA Page 3

Assumptions:

- Rincon will be notified of a TMDL monitoring rain event a minimum of 24 hours prior to required sampling
- Subtask day rates will be charged in full unless cancellation is received by the Rincon PM a least 12 hours prior to monitoring
- Rincon personnel will maintain current TWIC identifications while on the water or in Port properties
- No night work
- No holidays
- Work beyond 8 hours per day on the water will be billed as time and material at \$145/hour.

Task 2 - Benthic Sediment Processing and Identification

Rincon has multiple marine scientists experienced in the collection, processing and identification of benthic macrofauna sufficient to support Anchor QEA for TMDL monitoring. Participating marine scientist are assumed to work 12 hours per day for four consecutive days and charge federal per diem rates (Los Angeles) for lodging and meals. Task costs include a vehicle and up to three hours for travel time round trip to the Port of Long Beach or Port of Los Angeles and a marine equipment fee of \$200 to cover all deck and safety gear needed for the Rincon marine scientist to work aboard the support vessel. The event rate is all inclusive and incorporates all hours, equipment and per diem.

Event Rate = \$7,700

Assumptions:

- Task work is based on 12 hours per day
- Rincon marine scientists will come prepared with foul weather gear, boots, PFD, hard hat, gloves and eye protection
- Per diem rate is based on the Federal Per Diem rate for Los Angeles and will apply for all four days
- Rincon will bill on a per day basis but travel time and equipment charges shall apply in full for any
 partial trips or weather cancellations

Task 3 – Fish Collections, Processing and Identification

Rincon has multiple marine scientists experienced in the collection, processing and identification of fish sufficient to support Anchor QEA for TMDL monitoring. Participating marine scientist are assumed to work 12 hours per day for three consecutive days and charge federal per diem rates (Los Angeles) for lodging and meals. Task costs include a vehicle and up to three hours for travel time round trip to the Port of Long Beach or Port of Los Angeles and a marine equipment fee of \$200 to cover all deck and safety gear needed for the Rincon marine scientist to work aboard the support vessel. The event rate is all inclusive and incorporates all hours, equipment and per diem.

Event Rate = \$6,100

Assumptions:

- Task work is based on 12 hours per day
- Rincon marine scientists will come prepared with foul weather gear, boots, PFD, hard hat, gloves and eye protection
- Per diem rate is based on the Federal Per Diem rate for Los Angeles and will apply for all four days



Port of Long Beach/Los Angeles TMDL Monitoring Support Services Anchor QEA Page 4

 Rincon will bill on a per day basis but travel time and equipment charges shall apply in full for any partial trips or weather cancellations

Rincon proposes an annual rate escalation of four percent (4%) per year for individual task and subtask costs.

Thank you for the opportunity to provide marine support services to Anchor QEA for this Project. Please contact Derek Lerma if you have any questions or need additional information to support this request. Derek can be reached at (805) 644-4455 or dlerma@rinconconsultants.com.

Sincerely, RINCON CONSULTANTS, INC.

Derek Lerma

Leveld Men-

Marine Resources Program Manager

Lacrissa Davis Principal

Planners

SEAVENTURES 2016 PRICE LIST

- Early Bird II charter is \$3,305 per ten hour day, plus fuel, and other direct costs. Weather or stand-by rate is \$2,477 per day plus other direct costs. We can also provide food (snacks and meals) and drinks at a reasonable cost based on the number of people and duration.
- Overtime after ten hours \$405 per hour.
- Per Diem is commensurate with GSA rates for specific location.
- Benthic wash table and screen is \$220 for the first day and includes mob and demob; \$55 per day thereafter.
- Framed, stainless steel double Van Veen grab or 0.1 m² box core is \$350 for the first day and includes mob and demob; \$250 per day thereafter.
- Pipe dredge is \$110 per day.
- Trawl nets are \$220 for the first day which includes mob and demob; \$110 per day thereafter. Does not include cost to repair any damage or replacement. Trawl net replacement cost is \$900 for the net and \$250 for the doors.
- Lampara net mob/demob is \$2,400, with a day rate of \$600. Does not include cost to repair any damage or replacement. Net replacement is \$10,000.
- Skiff (14 foot Carolina with 25 Yamaha four cycle outboard) is \$395 for first day and includes mob and demob, \$175 per day thereafter.
- Multi-beam bracket mob and demob is \$100.

The prices listed above are for the more common services, please contact us if you have any questions, special requirements, or equipment needs.

CONTACT INFORMATION:

The individuals authorized to negotiate, represent, and contractually bind Seaventures are listed below with contact information.

Bob Lohrman Telephone: 949-500-1615 E-mail: lohrmanline@cox.net

Ken Nielsen Telephone: 949-637-2433 E-mail: fishermansalley@cox.net



RV Early Bird II conducting surveys at San Clemente Island



SIX SCIENTIFIC SERVICE

SCIENTIFIC SERVICE Produce generation in factors	5 year Schedule of Fees						
Title	Rates						
	2019	2020	2021	2022	2023		
Senior Marine Scientist	\$92.50	\$97.10	\$97.10	\$102.00	\$102.00		
Administration	\$40.00	\$40.00	\$40.00	\$40.00	\$40.00		
17 foot Vessel/Day	\$350.00	\$350.00	\$350.00	\$350.00	\$350.00		

*Mileage will be charged at the Federal yearly rate

**Vessel towing mileage will be charged at \$0.75/mile or a \$75 flat rate

Should you need any additional information with regards to our rates, please feel free to contact me at any time.

Respectfully,

Chris Clark Senior Marine Scientist Cell: 760-908-5753 cclark@sixscientificservice.com

900 Viking Ln, San Marcos, CA 92069 | 760-908-5753