WSAG17 – Proposal Budget

Integrating Green Stormwater Infrastructure Along the Ala Wai Canal

GRAND TOTAL (including match) $99,650
Subtotal for labor $90,150
Subtotal for materials $2,000
Subtotal for other actions $7,500

Introduction

The Ala Wai watershed is approximately 10,515 acres and includes three major drainage basins; Manoa, Makiki, and Palolo. Land use in the watershed includes single family and multi-family residential housing units, urban Waikiki, the University of Hawaii campus, and mauka conservation lands, which are managed by the Department of Land and Natural Resources (U.S. Environmental Protection Agency, 2002).

Much of the drainage from the Ala Wai watershed is directed to the Ala Wai Canal, which ultimately discharges to the ocean. The Ala Wai canal was created by the U.S. Army Corps of Engineers in 1927 to drain the natural wetland conditions in that area of Waikiki. The canal covers a 2 mile stretch varying from 51 to 83 m wide and is located directly behind the metropolis of Waikiki (Heinen De Carlo and Anthony, 2002).

The Ala Wai receives both stormwater and stream discharge from upstream communities, and is heavily polluted as a result, having a total maximum daily load (TMDL) limit for total nitrogen and total phosphorus, sediments, metals and pesticides (U.S. Environmental Protection Agency, 2002). Substantial water quality monitoring and modelling have been conducted to assess potential sources of pollutants, which can be broken into five main categories: 1) non-urban lands; 2) urban lands; 3) groundwater; 4) cesspools; and 5) unallocated reserves. The four main source areas of nutrient pollutants include 1) non-urban land, urban land, groundwater sources and cesspools.

According to the 1996-97 HIDOH study, the Ala Wai Canal exceeds State standards for total nitrogen concentrations by nearly six times and total phosphorus by nearly twice the standard. Elevated levels of nutrients have ancillary effects on water quality, including elevated turbidity, algae growth, and odors

from decomposing organic matter. Impervious surfaces in the more urbanized sections of the watershed contribute stormwater runoff to the canal, and can carry substantial pollutant loads. Despite high pollutant loads the canal supports species such as Hawaiian flagtail or *aholehole*, carracuda, mio, blue pincher crab, and many others yet they are too contaminated to safely eat (REF).

According to the 2002 EPA TMDL report, aggressive best management practices will be needed to reduce pollutant loads to the Ala Wai, one of which is stormwater retention and filtering practices (U.S. Environmental Protection Agency, 2002).

The City and County of Honolulu is one of the main contributors of pollutants to the canal through stormwater discharges from its stormwater collection system, which carry substantial pollutant loads from the impervious surfaces which they drain. The City is looking for innovative ways to reduce those inputs, while also engaging the community in water resource management education.

Green stormwater infrastructure (GSI) is an alternative to traditional stormwater infrastructure which has been shown to remove harmful pollutants in stormwater through physical filtration, biological uptake and breakdown, and chemical sorption, oxidation, and reduction processes (Davis, 2008; Dietz and Clausen, 2006; Hunt et al., 2008). They have also been shown to retain and detain stormwater volumes and reducing peak runoff velocities to more closely mimic pre-development hydrology (Lefevre et al., 2015).

The presence of bioretention systems in a landscape provides an opportunity to engage the community in a dialogue about water resources, while also improving habitat, and encouraging the use of native and pollinator friendly plants (Hurley and Forman, 2011). IF monitoring infrastructure is included in the designs, these systems also become living laboratories, where samples can be taken to assess performance, and provide educational opportunities for the community (Cording et al., 2016).

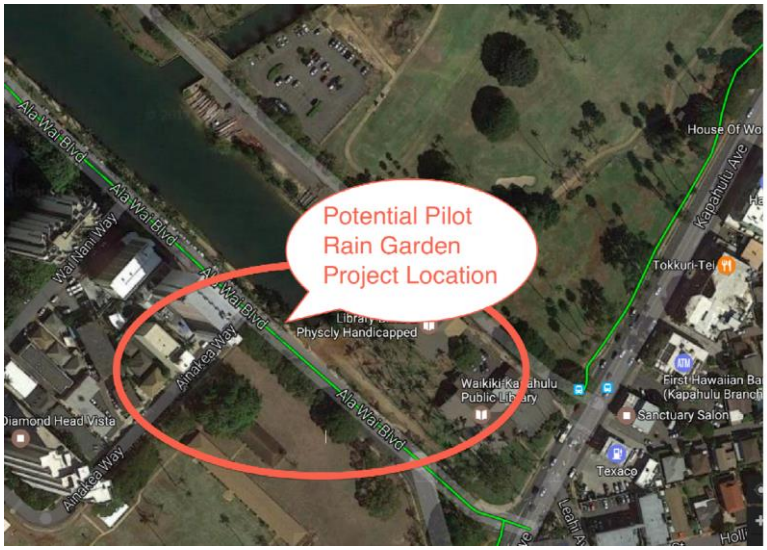
Green stormwater infrastructure techniques are increasingly becoming popular with residents and developers, as an aesthetic alternative to traditional stormwater treatment systems (Collins et al., 2010; Henderson et al., 2007; Stone, 2013), yet communities are often lacking visual examples of what these systems can look like in their neighborhoods.

In collaboration with the City and County of Honolulu Stormwater Division, the goal of this project is to reduce pollutant loads through the implementation of GSI along the canal. At the same time, we aim to involve, empower, and collaborate with the local community members on the aesthetics of the system, and provide education about water pollution issues, and the solutions available to mitigate them.

This project includes two main components:

1. Development of a series of design charrettes for a specific area around the Ala Wai Canal where a GSI system will ultimately be constructed.
2. Design assistance to integrate monitoring infrastructure into the design, so we can accurately quantify the runoff that is filtered and recharged with this project, as well as provide educational opportunities for organizations and school groups as to the functioning of these systems.

Methodology



A design charrette is a community engagement tool that brings about new creative ideas by the community members and design professionals in a collaborative setting (Lindsey et al., 2009). The charrette is intended to engage an interdisciplinary group of professional in a structured process that identifies, evaluates and recommends strategies for implementing GSI. The goals for charrettes in this project include:

1. Help the community understand the purpose and aesthetic possibilities of GSI along the Ala Wai
2. Solicit feedback on design aesthetics
3. Outlining the important steps needed to achieve a tangible design
4. Develop a collaborative vision for the project
5. Develop a scaled design for GSI along the Ala Wai which achieves our design goals
6. Include educational component within the design, include stormwater monitoring infrastructure.

A charrette contains two main elements: an educational workshop and an interactive planning component (Lindsey et al., 2009). The steering committee will be utilized to determine which type of charrette is appropriate for this project. The three main types, and the purpose of each is shown below.

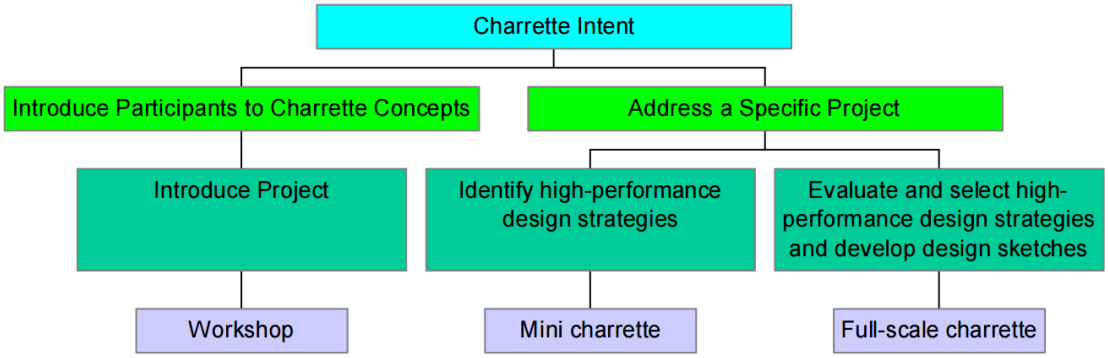


Table 1. Summary of Charrettes for High-Performance Projects

Event Type	Description	Length	Purpose
Workshop	Large-group presentations and discussions	½ day	Introduce participants with limited time to high-performance design concepts. Introduce participants to the charrette process. Educate participants about individual high-performance design strategies. Engage participants in "practice" charrette exercises. Conduct a low-cost high-performance event.
Minicharrette	Workshop plus interactive exercises	1 to 1½ days	Provide basic training in high-performance design topics (conduct in a workshop format). Conduct charrette activities within breakout groups for a specific project. Identify high-performance design strategies appropriate to consider for a specific project.
Full-scale charrette	Workshop plus intensive breakout group discussions	2 or more days	Discuss the high-performance design strategies that were identified while conducting the predesign energy analysis as being appropriate for the specific project (conduct in a workshop format). Select specific strategies to incorporate into the project. Develop sketches and drawings to be incorporated into the project design.

Timeline (Start Date September 1, 2017, End Date September 1, 2018)

The design charrette process will require planning and community engagement. After each event the team will incorporate design feedback prior to the next charrette. We are estimating three charrettes at this time. The charrettes themselves will be half-day sessions with groups of approximately 25-50 people in attendance.

Date	Project Phase	Project Milestone
September (2017)	Community Engagement	Estimated Project Start Date
October	Community Engagement Planning for Charrette #1	
November		
December		Informational Session, Site Walk, Present Preliminary Ideas, ½ Day Design Charrette 1
January	Incorporate Design Feedback Planning for Charrette #2	
February		Present Design #1, ½ Design Charrette 2
March	Incorporate Design Feedback Planning for Charrette #3	
April		Present Design #2, ½ Day Design Charrette 3
May	Incorporate Design Feedback	
June	Prepare Final Designs	
July		Final Designs are Completed
August		
September (2018)		Project Out to Bid

Some specific steps needed to achieve our goals include the following:

3 months prior to the event

- Create a steering committee (or utilize one that has already been created)
- Determine the event date and location

2 months prior to the event

1. Develop and agenda
2. Confirm availability of key event players
3. Give presentation guidelines to speakers
4. Invite participants and track responses
5. Finalize budget, expenditures, resources
6. Make logistical arrangements (facility, food, etc)
7. Assemble and distribute participant resources and materials
8. Develop evaluation forms
9. Make arrangements for any Continued Education Units (CEUs) that may be offered

The day before the event

1. Visit the facility
2. Check supplies and participant materials
3. Meet with the facilitators and speakers

The day of the event

1. Verify logistical arrangements
2. Welcome everyone and set the state with the opening session
3. Describe the project and charrette expectations, goals
4. Introductions of participants
5. Implement charrette

Within one month after the Event

1. Old debriefing meeting
2. Prepare a report of the results
3. Analyze the evaluations
4. Set up link/repository for follow-up materials
5. Follow up with participants with a thank you, link to repository and next steps (or date or next mini-charrette)

Within three months of the Event

1. Summarize design feedback
2. Integrate feedback into preliminary designs, with photo realistic renderings
3. Repeat design charrette (if necessary)

Final Outcomes

1. Submit final design to the City and County for the Ala Wai GSI System, which includes monitoring infrastructure and educational design components.

Expected Results

This project will facilitate collaborative design in an area that will visually impact people's lives. It also presents a crucial opportunity to educate the community with regards to stormwater pollution and green stormwater infrastructure solutions available to mitigate that pollution. The final GSI design will include stormwater monitoring infrastructure designs, which will allow onsite real-time monitoring of the performance of whatever system is selected. Through monitoring, we will quantify the volume of stormwater that is successfully recharged after it is filters, as well as providing a living laboratory site for science, technology, engineering and math (STEM) educational opportunities.

Innovation

The end result will include a treatment system for stormwater along the Ala Wai Canal, which will provide an opportunity for monitoring, community education, and water filtration so that it may be recharged into the groundwater.

Project Outreach, Visibility and Demonstration Value

Public outreach efforts will target local residents, property managers, and community organizations along the canal. The goals of the outreach programs will be to gain community input and feedback on conceptual designs for stormwater treatment and recharge along the canal using LID features, including bioretention, tree boxes, and others.

A series of design charrettes will be hosted for the community stakeholders, design engineers, planners and professionals to collaborate on a vision improvements along the canal. This will give the project team an opportunity to not only gain feedback from the community, but also to provide environmental education regarding the ways these systems work, the potential water quality benefits they can provide, and how they can be integrated in other projects.

Potential Challenges

The design charrette process is dependent on community participation. Logistical concerns, including event locations, mobility access during site walks, and a compressed time period to hear from stakeholders may present challenges, and will need to be carefully considered. The 12-month timeframe to execute design and put the project out to bid will require coordination and project management. To ensure that the charrette process captures the representative community, extensive efforts will need to be made in order to engage with local organizations and neighbors. To have a successful charrette, we will need to provide high quality information on which to base decisions, and a quick turnaround time when more information is needed for the next phase of the charrette. We will need to gather that information in advance, and accurately anticipate what kinds of questions or ancillary data will be needed to have at the ready during informational brainstorming sessions.

Partnerships

The project team will consist of leading experts in Green Stormwater Infrastructure (GSI) who can provide relevant technical information, landscape design services, realistic renderings for visualizations, as well as City and County leaders, engineering staff and design consultants, as well as a charrette facilitator.

Budget

Compensation and Payment Schedule

#	Deliverable/Task/Activity	Grant Amount ($)	Matching Cash ($)	Matching In-Kind	Total Amount ($)
1	Time and Date for First Charrette	5,000			5,000
2	Charrette 1	10,000	10,000		20,000
3	Charrette 2	10,000	10,000		20,000
4	Semi-annual Narrative Report	2,000			2,000
5	Charrette 3	10,000	10,000		20,000
6	Final Designs	10,000	20,000		30,000
7	Final Narrative Report	2,650			2,650
	Total Budget	49,650	50,000	0	99,650

Budget Category	Total Requested	Proposed Grant Budget	Matching Cash	Matching In-Kind	Total Budget
Contractual	**3,000**				
Charrette Facilitator 3 days @ $125/hour		3,000			3,000
Materials and Supplies	**2,000**	2,000			2,000
(Large large maps, overlays to allow sketching, boards to display applicable information, large newsprint, AV needs)					
Food and Beverage	**1,500**	1,500			1,500
$500/charrette					
Facility Rental	**3,000**	3,000			3,000
$1000/charrette					
Salary and Benefits	**40,150**				
Design 5 hrs/week/20 weeks@$45/hr		4,500	10,000		14,500
Engineering 5 hrs/week/20 weeks @$60/hr		6,000	35,000		41,000
Landscape Architecture 3 hours/week/20 weeks @ 40/hr		2,400	5,000		7,400
Monitoring Infrastructure Design 3 hours/week/20 weeks@$60/hr		3,600			3,600
Project Management 20 hours/week/52 weeks @ $35/hour)		20,000			20,000
Fringe Benefits (10%)		$ 3,650.0			$ 3,650
Total Budget	**49,650**	$ 49,650	$ 50,000		**$ 99,650**

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ECOSOLUTIONS
innovative designs – living systems

Executive Summary

Leadership, uncompromising quality, breathtaking aesthetic, and unparalleded innovation. These are the tenants of our company. At EcoSolutions, we push the boundaries, verify the results, and design for future generations. Our interdisciplinary team of engineers, scientists, landscape architects, and planners create showcase projects that leave a lasting legacy.

EcoSolutions, LLC (www.ecosoldesigns.com) is an engineering, consulting, design, and construction company that specializes in Low Impact Design and Development (LID), wastewater and stormwater treatment, greywater re-use, rainwater harvesting, natural chemical free swimming pools, erosion control, and ecological site planning. Our headquarters and East Coast office is located in Westford, Vermont. Our Pacific Regional Office is located in Honolulu, Hawaii. EcoSolutions is dedicated to working with our clients to develop designs that fulfill their visions and meet their budgets. We offer construction and maintenance services on all design projects, to ensure the successful implementation and long-term operation of each and every system. Our multidiscplinary approach to ecologically-based site design is built on the foundation of science which allows us to blend natural systems into the human environment with engineering.

Executive Leadership Team:

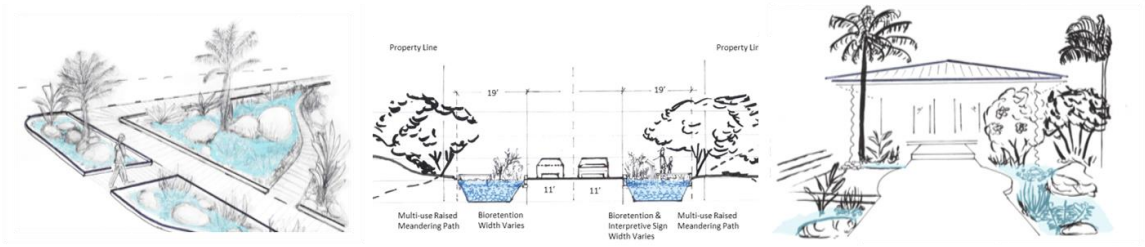
David Whitney, P.E., is the CEO and founder of EcoSolutions LLC. Dave's goal is to improve water quality through functional ecological design. He is a civil engineer with over 15 years of civil engineering experience in the U.S. and internationally. Dave earned his master's degree in environmental engineering from the University of Vermont (UVM), where he continues to inspire the next generation as adjunct faculty. Dave's world-class team is motivated to go above and beyond, every time. His vision and ability to transform wastewater and stormwater into a valuable community amenity is unparalleled.

Amanda Cording, Ph.D., is the Pacific Director of EcoSolutions, based in Honolulu, Hawaii. She has been working to improve water quality both nationally and internationally as an ecological designer, scientist, and policy advisor for over a decade. Amanda earned her PhD from the University of Vermont (UVM), and is extending the boundaries of pollutant removal performance in LID through research as affiliate faculty UH Manoa, WRRC. Her extensive technical design experience results in tangible solutions that have a stunning visual aesthetic.

Michael Dunne, M.B.A., is the Senior Project Manager at EcoSolutions. He has over 20 years of experience with the sales, management, design and commissioning of onsite wastewater treatment systems. His attention to detail and practical experience with biological systems makes him a key asset to the success of every project. His business background and experience helps to address client's concerns about the bottom line on all projects where he clearly addresses the installation as well as long term operating costs.

HAWAI‘I PROJECTS

Stormwater Treatment with Low Impact Development: Mākena Golf & Beach Resort, Maui



This mixed-use residential community and village will be a “zero water quality impact” development project on the island of Maui. By integrating low impact development (LID) techniques into this large scale project, we are able to retain and treat the increase in runoff from the 100-year 1-hr storm event (3.0 in/hr), as opposed to the 50-year event (2.5 in/hr), which is the minimum county requirement. LID features include porous materials, green roofs, bioretention areas, naturals slope stabilization techniques, xeriscaping, reforestation, constructed wetlands and complete green streets. All systems will be monitored by EcoSolutions to assess performance. Project is currently in progress (2017).

Wastewater Treatment, Greywater Re-use and Low Impact Design for Stormwater Runoff: Kahalu‘u, Kamehameha Schools, Hawai‘i Island

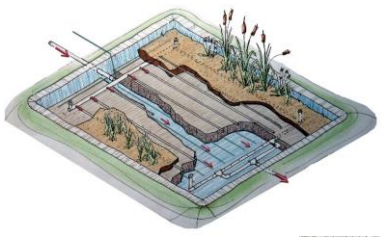
The Hawai’ian Cultural Education Center will utilize low impact development features to treat all stormwater and wastewater generated onsite. Constructed wetlands will utilize native plant species, engineered soil, and natural microbial breakdown processes to purify the water before it is reused onsite for landscape irrigation. Bioretention rain gardens and bioswales will receive and treat stormwater runoff that is combined with harvested rainwater for irrigation. These features have been designed to seamlessly integrate into the landscape. Engineering was completed in 2015.

HAWAIʻI PROJECTS

Bioretention (Rain Gardens): Windward Mall, Kaneʻohe, Oʻahu


Three commercial scale bioretention (rain garden) systems were engineered and constructed by EcoSolutions at the Windward Mall in Kaneʻohe, Oʻahu in 2015. This project includes innovative components designed to remove nutrients which harm coral reefs, and demonstrates how to incorporate ecological design into a highly urban environment.

Wastewater Treatment Wetland: Kaiser Permanente, Hawaiʻi Island




EcoSolutions designed, engineered, and installed a constructed wetland that treats the wastewater generated by the Kaiser Permanente medical office building in Kona. The wetlands purify the wastewater prior to being reused onsite for landscape irrigation and are planted with native Hawaiʻian species which provides habitat for birds, butterflies and other wildlife in a landscape that is surrounded by lava rock.

WASTEWATER PROJECTS

Aiken Building Eco-Machine: University of Vermont, Burlington, VT


EcoSolutions designed an innovative wastewater treatment system called an Eco-Machine to treat all of the wastewater generated from the University of Vermont's Aiken Center, which is a classroom building located on the main campus. The Eco-Machine uses plants and bacteria to treat the wastewater in a compact footprint located inside of the building's entrance atrium. The treated effluent is reused for toilet flushing within the building. The project design was completed in 2012.

Sharon Rest Area Living Machine: I-89 Northbound, Sharon, VT


EcoSolutions was a partner in the design and installation of this Living Machine, at this public rest area located on the Interstate 89 in Vermont. The Living Machine uses plants and bacteria to treat the wastewater in a compact footprint located within an attached glass atrium with a viewing catwalk. The Living Machine uses plants and bacteria to treat the entire facility's wastewater, and the treated effluent is reused for toilet flushing. The system has been operating since 2005.

Turning Wastewater to Power: Jasper Hill Farm, Greensboro, VT

EcoSolutions designed an innovative wastewater treatment system consisting of an anaerobic digester and an advanced botanical system to treat the liquid manure, cheese whey, and cheese processing wastewater. The anaerobic digester produces gas reused onsite to heat pasteurization water. The system consists of multiple recirculating constructed wetland cells located in a greenhouse. The treated effluent from this process is reused as drip irrigation for a fruit orchard located on the farm. The project was completed in 2012.

Rose Hill Subdivision Constructed Wetland: Fairfax, VT

Rose Hill is a low impact housing development located in Fairfax, VT. EcoSolutions performed the site layout, wastewater and stormwater designs for this project, as well as facilitating all necessary permits. This development features clustered houses, conservation land, an Advanced Wetland Treatment System® for wastewater treatment, and low impact design stormwater systems. This project was completed in 2009.

STORMWATER PROJECTS

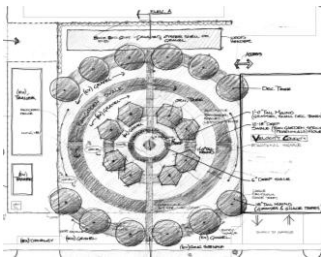
*2nd Place in the 2017 Ultra-Urban BMPs Competition

Urban Stormwater Retrofit with Bioretention: Washington, DC

The North of Massachusetts Avenue Buisness District (NoMa BID) LID stormwater retrofit demonstration project was engineered, permitted, and constructed by EcoSolutions for the District Department of the Environment (DDOE) in Constitution Square. The bioretention systems collect and infiltrate runoff and divert overflow surges away from the District combined sewer system. By working closely with municipal agencies, utility companies, and stakeholders, EcoSolutions provided a highly functional LID system that enhances its urban surroundings. Construction was completed in 2012.

*Surfrider National Award Winning Project

Demonstration Bioretention: Washington, DC Navy Yard

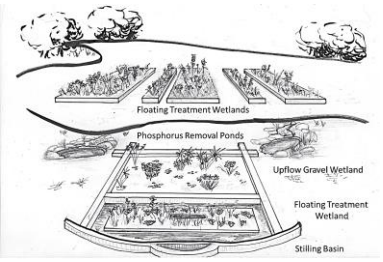


EcoSolutions designed this innovative demonstration bioretention (rain garden) system near the Washington Nationals baseball stadium. EcoSolutions worked with the Surfrider Foundation to provide educational outreach in the Chesapeake Bay. Construction was completed in 2011.

Floating Treatment Wetlands for Algae Reduction in Lake Champlain: Burlington, VT

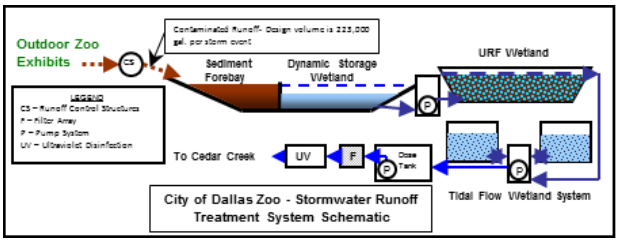
EcoSolutions partnered with the City of Burlington to pilot a floating treatment wetland (FTW) combined with state-of-the-at phosphorus removal and recovery systems (PRRS) technology, to reduce algae at the North Beach Boathouse. Algae blooms in the Lake are due to P-loading and can results in beach closures and illness if the algae are of the toxic variety. FTWs were found to significantly reduce chlorophyll *a* concentrations (a measure of algal biomass) in the areas surrounding the floating treatment wetland. The pilot demonstration project was completed in 2016.

Lake Restoration Floating Treatment Wetlands: East Fishkill, NY



Stormwater is treated before entering the lake within a constructed wetland and phosphorus removal and recovery system (PRRS), while in-lake water is circulated through a floating treatment wetland (FTW). Both systems were also designed to provide educational opportunities through signage and strategic access pathways. Construction begins in 2017.

Dallas Zoo Stormwater Improvement Project: Dallas, TX



Outdoor animal exhibits at the City of Dallas Zoo generate contaminated stormwater runoff that flows into Cedar Creek, impairing water quality. EcoSolutions worked with Aqua Nova Engineering and Living Machine Systems to design a unique wetland system to treat the contaminated runoff from the Zoo. The system included a shallow wetland, gravel wetland filter and tidal flow wetlands that polish the stormwater runoff before discharging directly into an adjacent waterway. Construction was completed in 2013.

Shelburne Farms Dairy Runoff: Shelburne, VT

Shelburne Farms is located on the shores of Lake Champlain, and is a 1400-acre working dairy farm, National Historic Site and educational institution dedicated to sustainability. EcoSolutions developed an ecological stormwater design to treat runoff from their 26-acre dairy operation. Pollutant sources were identified and an Advanced Wetland Stormwater Filter (AWSF) was selected to remove total suspended solids (TSS), nutrients, and reduce biological oxygen demand. The treatment system has become an educational asset to the University of Vermont's Service Learning Program and was constructed in 2009.

INTERNATIONAL PROJECTS

United States Consulate: Rabaat, Morocco

EcoSolutions designed a wastewater treatment and reuse system to serve the US Consulate in Morocco. This design features an architecturally integrated constructed wetland treatment system and an ornamental water feature. Treated effluent is reused onsite for drip irrigation. Construction was completed in 2013.

United States Embassy: Vientiane, Laos

This stormwater treatment system treats runoff at the U.S. embassy compound located in Vientiane, Laos. The stormwater system includes gravel wetland filters and features three cascading ponds in series that will treat and recirculate stormwater throughout the compound, creating a stunning visual effect. Construction was completed in 2013.

IWCAM Watershed Improvement: Trinidad, W.I.

EcoSolutions partnered with Jacob's Fish Processing Plant on the island of Trinidad in the West Indies, to treat wastewater from this facility. Fish processing plants are a significant source of nutrient pollution that is causing harmful algae blooms that impact coral reefs. Engineered wetlands are extremely effective at removing nutrients, have relatively few mechanical components, and are well suited to the climate. This project included the training of local personnel on the design, installation and maintenance of this technology. Designed and constructed in 2010.

United States Embassy: Ouagadougou, Burkina Faso

The Advanced Wetland Treatment System® was designed to treat all of the wastewater at the US Embassy at Burkina Faso. The treated effluent is reused onsite as the sole source of drip irrigation. Installation completed in 2009.

IWCAM Watershed Improvement: St. Lucia, W.I.

EcoSolutions worked with students from the University of Vermont to develop a wetland wastewater treatment technology for single family homes in the Au Leon settlement in St. Lucia. This project was funded by the World Bank and the United Nations Environmental Program (UNEP). EcoSolutions traveled with students to assist with the installation of a demonstration system and train the local people on installation techniques and sizing requirements. Four additional systems have been installed by the locally trained team. The project was completed in January 2009.

United States Consulate: Karachi, Pakistan

The Advanced Wetland Treatment System® treats all of the wastewater at teh US Consulate in Karachi, Pakistan. The treated effluent is reused onsite as the sole source of drip irrigation. Project was completed in 2009.

Finca Rio Machuca: San Mateo, Costa Rica

Finca Rio Machuca is an eco-tourism development located in the highlands of Costa Rica. EcoSolutions designed an innovative wastewater treatment and reuse system to serve the community of more than 40 condominiums. Grass lined swales, rain gardens and storage ponds were used to treat stormwater. Construction was completed in 2009.

Natural Swimming Pools

Natural swimming pools (NSP) are an alternative to highly mechanized and chemically treated pools. NSPs combine plants, sunlight, and microbiology within a rejuvenating natural visual aesthetic that results in a pristine swimming pool that is both clean and safe. Each NSP design is customized for the site and can range in style from a natural pond to a modern lap pool.

Lap Pool

The lap pool is typically arranged as a separate distinct feature from the vegetative treatment elements of the NSP. Filtered and disinfected water enters the lap pool at multiple locations along the bottom and overflows to a receiving pond at the opposite end of the system.

Regenerative Zone

The regenerative zone is the heart of the treatment system. Water is pumped from the lap pool and filtered through an engineered ecosystem where carefully selected plants and soils remove nutrients and provide habitat for a wide range of aquatic biology that consume bacteria, viruses, and pathogens. Shallow water depths, combined with open water surfaces, allow for sunlight to penetrate the water and provide disinfection. Aerators located within this zone mix oxygen into the system.

Water then flows through a sinuous path before typically spilling out over a water feature. It continues through a gravel filter and into a ultraviolet (UV) disinfection unit, that treats the water to a level of quality comparable to drinking water. The UV unit is contained within a buried vault so that it can be accessed for servicing, monitoring, and repair.

Retrofit an Existing Pool

Existing pools can also be easily retrofitted with filters specially designed to eliminate the need for chemicals. We offer comprehensive testing and maintenance agreements to ensure that all systems provide a healthy, enjoyable, chemical free swimming environment.

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 Ulu`ohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

KIRK CALDWELL
MAYOR

ROSS S. SASAMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

EDUARDO P. MANGLALLAN
DEPUTY DIRECTOR

IN REPLY REFER TO:
SWQ 17-062 (D)

April 20, 2017

Mr. Jeremy Kimura, Procurement Officer
State of Hawaii, Department of Land and Natural Resources
Commission on Water Resource Management
1151 Punchbowl Street, Room 227
Honolulu, Hawaii 96813

Attention: Water Security Advisory Group (WSAG)

Dear Mr. Kimura:

Subject: Letter of Commitment
Act 172: 2017 Implementation of Water Security Projects and Programs Integrating Green Storm Water Infrastructure along the Ala Wai Canal

In accordance to the recent Request for Proposals WSAG No. 17 that was posted by your department, we hereby submit our Letter of Commitment that describes the planned pilot project focused on improving water quality along the Ala Wai Boulevard and adjacent to the Ala Wai Canal. Included as Exhibit "A" is a reference taken from City Ordinance 16-15, Bill 15 (2016), CD2, FD1 that describes the approved Fiscal Year 2017 Capital Improvement Project planning and design funds in the total amount of $250,000 that were allocated towards this project to implement various water quality improvements including green infrastructure. These funds are intended to be used as City matching funds towards the grant application. The bill was signed and adopted by City Council on June 1, 2016.

If you have any questions, please feel free to contact me at 768-3242, or via email at rwakumoto@honolulu.gov.

Sincerely,

Randall R. Wakumoto, P.E.
Branch Head

Attachments: Exhibit "A"
WSAG 17 Budget Proposal

Exhibit "A"

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

ORDINANCE 16-15

BILL 15 (2016), CD2, FD1

A BILL FOR AN ORDINANCE

PROJECT NUMBER	FUNCTIONS, PROGRAMS & PROJECTS	WORK PHASE	SOURCE OF FUNDS	TOTAL ALL FUNDS
2003135	STORM DRAIN OUTLETS NEAR ALA WAI CANAL	50,000 P 200,000 D	250,000 HI	250,000
	Plan and design structural Best Management Practices improvements for storm drains near Ala Wai Canal.			

TRANSMITTAL and OFFER LETTER RFP WSAGI7

Name of Organization: EcoSolutions

Point of Contact: Amanda Cording, PhD
Pacific Director

Phone: [redacted]
Email: amanda@ecosoldesigns.com

Water Security Advisory Group
Department of Land and Natural Resources, Commission on Water Resource Management
Punchbowl Street, Room 227
Honolulu, Hawaii 96813

The undersigned has carefully read and understands the terms and conditions specified in RFP WSAG17, the Special Provisions attached hereto, and hereby submits the following offer to perform the work specified herein, all in accordance with the true intent and meaning thereof. The undersigned further understands and agrees that by submitting this offer, 1) he/she is declaring his/her offer is not in violation of Chapter 84, Hawaii Revised Statues, concerning prohibited State contracts, and 2) he/she is certifying that the price submitted was independently arrived at without collusion.

A list of secured and required permits necessary to implement the project are hereto attached.

Proposal Title: Integrating Green Stormwater Infrastructure Along the Ala Wai Canal

Total Amount of Proposal: $ 99,650 (including match)

If awarded, the contract with the State would be made with the following entity (please use the **exact legal name** as registered with the Dept. of Commerce and Consumer Affairs):

ECOSOLUTIONS, LLC
Legal name

1440 Alewa Drive E-1 Honolulu, HI 96817
Address (Contract and Billing Address must be the same)

-in progress-
State Tax ID No. (GE)

[redacted]
Federal Tax ID No.

Amanda Cording 4/20/17
Offeror Signature Date

AMANDA CORDING, Pacific Director
Print Name Title

OFFER FORM OF-1
2017 IMPLEMENTATION OF WATER SECURITY PROJECTS AND PROGRAMS
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES
RFP-WSAG17

Procurement Officer
Department of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii 96813

Dear Procurement Officer:

The undersigned has carefully read and understands the terms and conditions specified in the Specifications and Special Provisions; and hereby submits the following offer to perform the work specified herein, all in accordance with the true intent and meaning thereof. The undersigned further understands and agrees that by submitting this offer, 1) he/she is declaring his/her offer is not in violation of Chapter 84, Hawaii Revised Statutes, concerning prohibited State contracts, and 2) he/she is certifying that the price(s) submitted was (were) independently arrived at without collusion.

Offeror is: ☐ Sole Proprietor ☐ Partnership ☒ *Corporation ☐ Joint Venture
☐ Other _____
*State of incorporation: Vermont

Hawaii General Excise Tax License I.D. No. -in progress-

Federal I.D. No. [redacted]

Payment address (other than street address below): 1440 Alewa Dr. E-1
City, State, Zip Code: Honolulu, HI 96817

Business address (street address): 1440 Alewa Dr. E-1
City, State, Zip Code: Honolulu, HI 96817

Respectfully submitted:
Date: 4/20/17

(x) Amanda Cording
Authorized (Original) Signature

Telephone No.: [redacted]

Amanda Cording, Pacific Director
Name and Title (Please Type or Print)

Fax No.: _____

E-mail Address: amanda@ecosoldesigns.com

** ECOSOLUTIONS, LLC
Exact Legal Name of Company (Offeror)

**If Offeror is a "dba" or a "division" of a corporation, furnish the exact legal name of the corporation under which the awarded contract will be executed.