

## ***The Changing Terrain of Stormwater Management***



**Matthew J. Gonser, AICP**  
**Extension Faculty, Community Planning and Design**  
**University of Hawai'i Sea Grant College Program**

Stormwater runoff is the result of rainwater flowing over compact ground and other impervious surfaces into streams, ponds, storm drains, and the sea.<sup>1</sup> Stormwater runoff is a major contributor to water quality impacts in the State of Hawai'i. For example, with separate storm drains and sewage systems, anything (water or otherwise) that enters the stormwater drainage system flows – untreated – directly to a stream or the ocean impacting water quality and nearshore environments.

The United States Environmental Protection Agency (US EPA) approaches stormwater management with a watershed and landscape infiltration philosophy of “slow it down, spread it out, and soak it in.” Though understood and appreciated, local practitioners cite Hawai'i's particular geographies (short and steep watersheds, diverse soils, high water tables), climate patterns, and limited land availabilities for landscape strategies in our urban areas as contextual challenges to certain stormwater management approaches. Still yet, other practitioners and researchers simply admit that we do not know. The discussion of best practices and their efficacy in Hawai'i is needed.

Practices and techniques to manage and utilize this water resource before it enters the storm sewer system include low impact development (LID) and green infrastructure (GI) practices, rainwater

<sup>1</sup> Arnold, C. and Gibbons, J. 1996. Impervious surface coverage, *Journal of the American Planning Association*, 62(2): 243-58.

# HAWAII PLANNING



American Planning Association  
Hawaii Chapter

*Making Great Communities Happen*

A Publication of the Hawaii Chapter of the American Planning Association

catchment, and a multitude of building and plumbing techniques for water capture, recycling, and reuse. In addition to the regulation of stormwater management at the parcel and building scale (e.g., infiltration, green/blue roofs, cisterns/rain barrels, rainwater and gray water reuse), there are opportunities for interventions within the public right-of-way (ROW) (e.g., biofiltration, street trees, flow through planters, and permeable surfaces) that can provide multiple benefits, including aesthetics, urban ecological systems, and enhanced environmental conditions and experience for walking and bicycling.

Over the past few years there have been many developments in the areas of stormwater regulation and management across the state. The U.S. Environmental Protection Agency (EPA) and Hawai'i Department of Health (HDOH) have conducted multiple audits of the Municipal Separate Storm Sewer System (MS4) and National Pollutant Discharge Elimination System (NPDES) for both the City and County of Honolulu and Hawai'i Community Development Authority (HCDA), specifically the Kaka'ako District. Several potential violations have been identified for both the post-construction best management practices (BMP) program and Storm Water Management Program. In February 2015 the city received a new MS4 NPDES permit. The permit requires, among other things, the city to update its "Rules Relating to Storm Drainage Standards" addressing post-construction runoff and LID for new development and redevelopment projects. The Hawai'i Department of Transportation (HDOT) also owns and operates a large MS4 on O'ahu. Additionally, an area in the County of Maui has been designated as an "Urbanized Area" in the last census and now Maui is required to prepare and obtain approval of MS4 and NPDES permits for this portion of the county.

The Hawai'i Chapter of the American Planning Association (APA-HI) has played a role in extending and sharing that information, specifically through our lunch presentation series in May 2015, when we organized and hosted the program, "Post-Construction Stormwater Best Management Practices – What Audits and New Permits Require for both the City and the State." The event objective was to hear from private and public sector program managers on what the program enhancements mean for planning and design work moving forward.

At this presentation several announcements were made:

- State of Hawai'i Department of Transportation Highways Division would release an updated Stormwater Permanent Best Management Practices Manual (effective October 2015)
- City and County of Honolulu must update its "Rules Relating to Storm Drainage Standards" by summer 2016 – this is forthcoming
- Practitioners and regulators are looking for ways to enhance educational opportunities and elevate best management practices

# HAWAII PLANNING



American Planning Association  
Hawaii Chapter

*Making Great Communities Happen*

A Publication of the Hawaii Chapter of the American Planning Association

- New practices and regulations emphasize infiltration as the priority best management practice (revised requirements are to prioritize infiltration, evapotranspiration, or harvesting/reuse of stormwater, followed by other practices that treat and release storm water)
- Hawai'i Governor David Ige signed into law Act 042 (May 06, 2015) – Relating to Stormwater Management (HB 1325 HD1 SD1), which authorizes the counties to establish and charge user fees for stormwater management: Hawai'i Revised Statutes Sec. 46-1.5 (E), “[Each county shall have the power to] Establish and charge user fees to create and maintain any stormwater management system or infrastructure” – this Act took effect upon its approval.

Specific to the third item – education – the University of Hawai'i Sea Grant College Program (Hawai'i Sea Grant) has recently placed greater resources and attention to the topics of stormwater management, green infrastructure (GI), low impact development (LID), and other water sensitive design practices:

**Smartphone Application** – provided Hawai'i-specific content to the Rain Garden mobile application developed by the University of Connecticut Center for Land Use Education and Research (UCONN CLEAR) and Connecticut Nonpoint Education for Municipal Officials (NEMO) Program. This content was compiled with the help of several local experts of LID and native plants.

**Training** – hosted NOAA's "Introducing Green Infrastructure for Coastal Resilience" training, which provided an introductory overview and highlighted local expertise and project highlights. Nearly 70 statewide practitioners attended this day-long activity, which qualified for 6 AICP CM credits.

**Web Materials** – with a summer research fellow from the UH Department of Civil and Environmental Engineering, developed educational web materials with focus a focus on GI for stormwater management; GI practices; tools and resources; quantity and quality; and external resources.

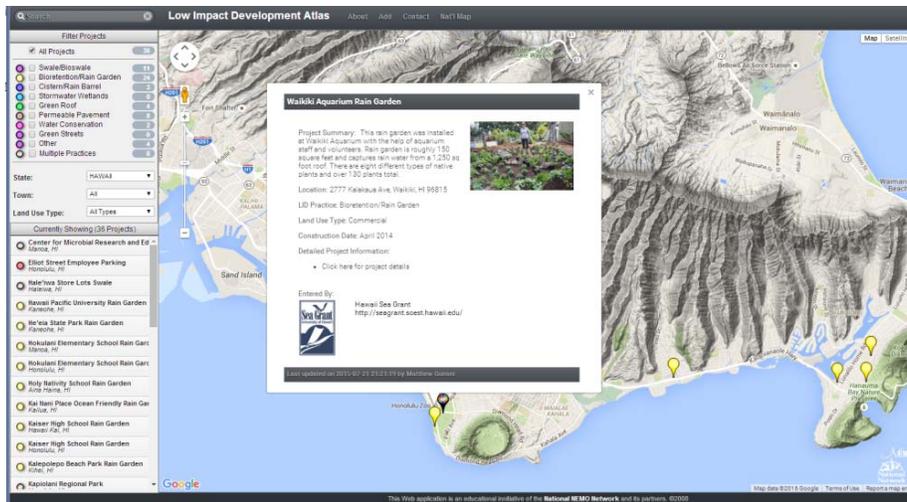
**Web Atlas** – in partnership with the National NEMO Network, populated and launched an on-line atlas of best management practices. It is an online resource, providing geo-referenced examples of GI and LID for stormwater management. You can browse the Atlas by either selecting an area, land use type, project type or simply clicking on a pinned site. This educational resource is to be continuously populated and actively seeks project entries! You can add your own project to the atlas by filling out the submission form here. The Atlas is slated to receive an overhaul in the near future – there are currently some issues with image display. The City and County of Honolulu Department of Facilities Maintenance has linked to the Atlas on its LID page.

# HAWAII PLANNING



American Planning Association  
**Hawaii Chapter**  
*Making Great Communities Happen*

A Publication of the Hawaii Chapter of the American Planning Association



**Conference** – Hawai'i Sea Grant received a National Sea Grant Office award for conference/workshop support. Be on the lookout for forthcoming information regarding this activity. The grant application received substantial support from both local and mainland agencies and organizations, including: AECOM Honolulu, Center for Watershed Protection, City and County of Honolulu Department of Planning and Permitting and Department of Facilities Maintenance, Hawai'i Chapters of both the American Planning Association and American Society of Landscape Architects, Hui o Ko'olaupoko, Ki Concepts, NOAA Office for Coastal Management, Smart Growth America, The Trust for Public Land Hawaiian Islands Program, and U.S.EPA. A local steering committee is actively working towards this multi-day event.

There is clear need and interest to further educate and learn best practices and policies for the objectives of water quantity and quality management that that can provide multiple benefits, including aesthetics, urban ecological systems, and enhanced environmental conditions and experience for active mobility. These efforts of community greening are critical for the success and health of our communities and environmental systems, and are becoming the expectation for our built environment, as evidenced by the City and County of Honolulu's recent RFP for the Kapālama Canal Catalytic Project – "The City would also like to use this project to implement green infrastructure and water quality improvements, erosion control..." We look forward to the opportunities to engage with this community of practice.

**-Matthew Gonser, AICP**, is an Extension Agent with the University of Hawai'i Sea Grant College Program (Hawai'i Sea Grant). He holds one of two Director-At-Large positions with APA-HI. Hawai'i Sea Grant supports an innovative program of research, education and extension services, directed to the improved understanding and stewardship of coastal and marine resources of the state, region, and nation - <http://seagrant.soest.hawaii.edu/>.