Re-inventing the Nation's Urban Water Infrastructure (ReNUWIt)

Update to BACWA

Sebastien Tilmans, CR2C Exec Dir.
Richard G. Luthy, Stanford Univ.
ReNUWIt Director

BACWA Board Meeting, Oct. 18, 2019

NSF Site Visit May 22-23, 2019

IAB support is invaluable!

NSF Site Visit May 22-23, 2019

"At the end of Year 8 of this ERC, the testbeds contain a good mixture of developing and mature testbeds and there is significant potential for a number of these technologies to continue to move towards implementation by different stakeholders."

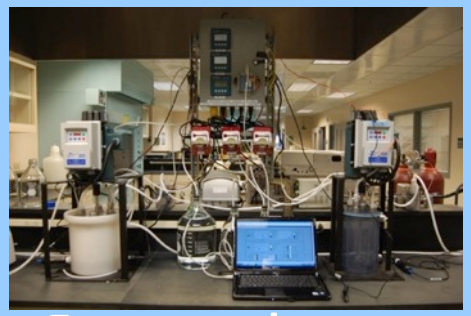
"The majority of the testbeds are on public utility sites, which makes the testbeds more relevant to stakeholders. A related strength is how engaged the IAB members are in the testbed partnerships."

IAB support is invaluable!

Systems-level Vision

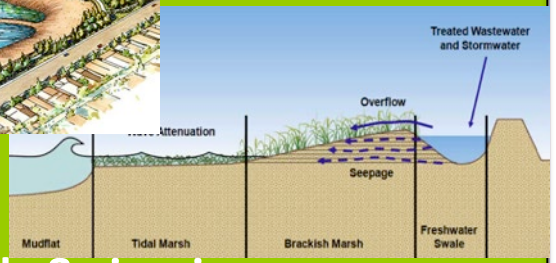
Urban Systems Integration and Institutions

Efficient Engineered Systems



Energy and resource recovery, potable reuse

Natural Water Infrastructure Systems

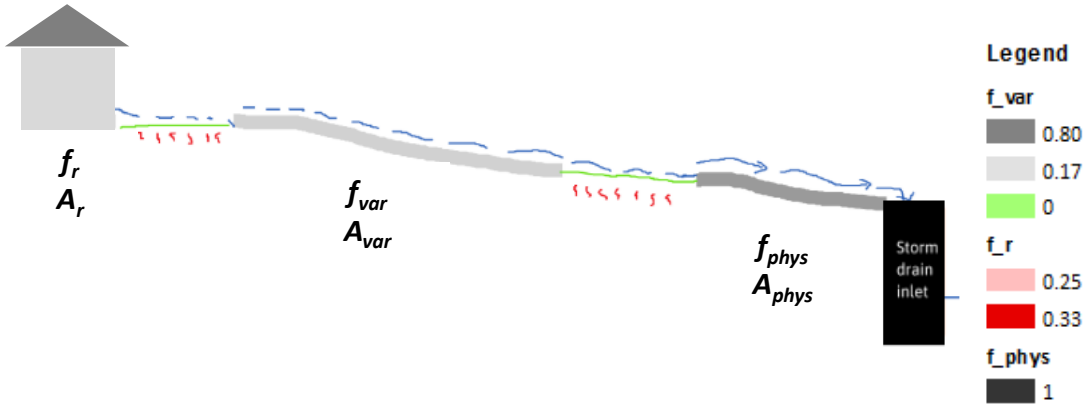


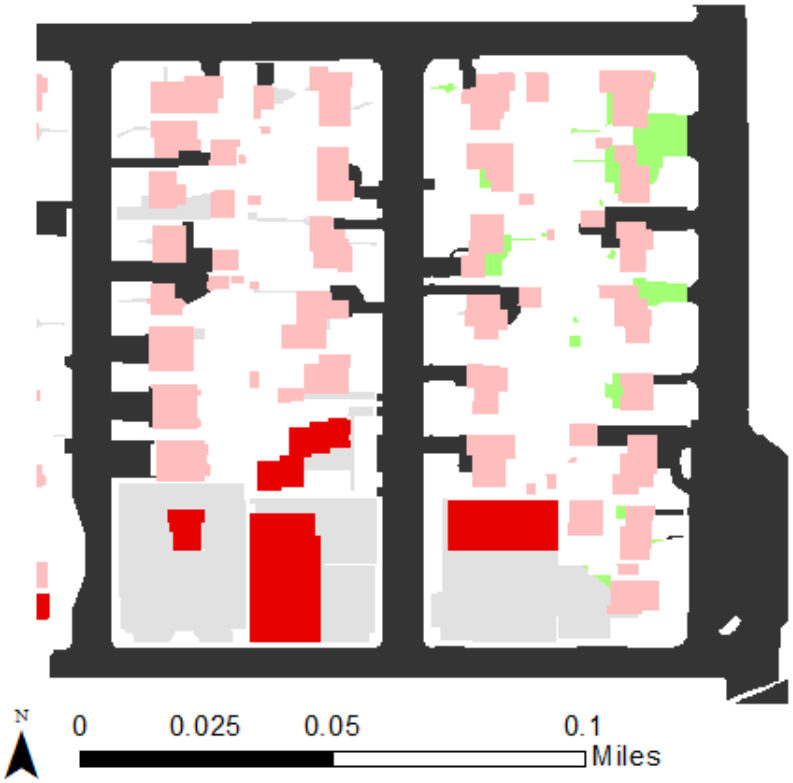
Wetlands & riparian zones, managed recharge, stormwater use

U1.7 Mapping impervious connectivity

Case studies from Petaluma, CA, and Denver, CO

Key feature is mapping connected impervious area for siting distributed infrastructure; improved SWMM model and incorporation into GIS tool

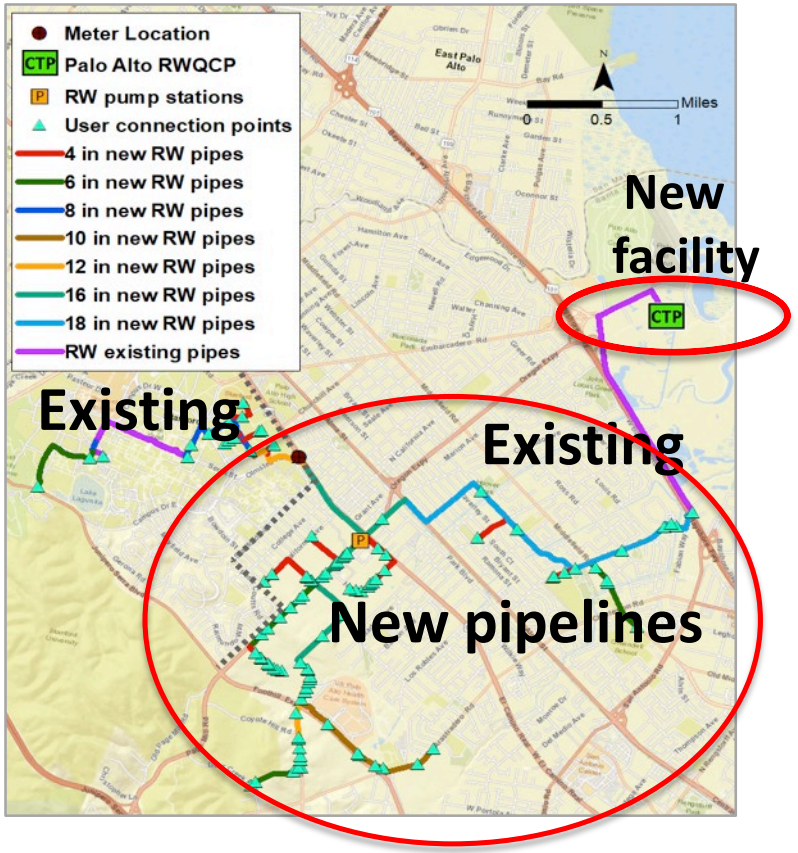




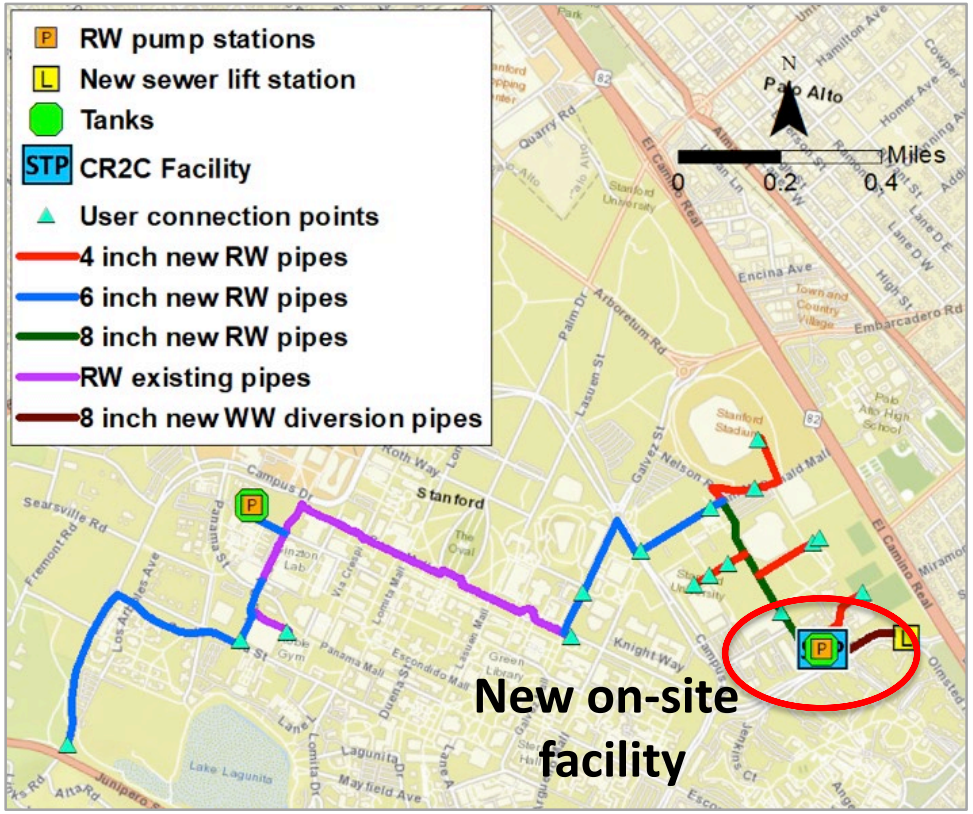
U1.2 Centralized vs. on-site water reuse

Case study of Palo Alto and Stanford University

Develop decision tool for non-potable reuse



Treatment at Palo Alto



Treatment at Stanford

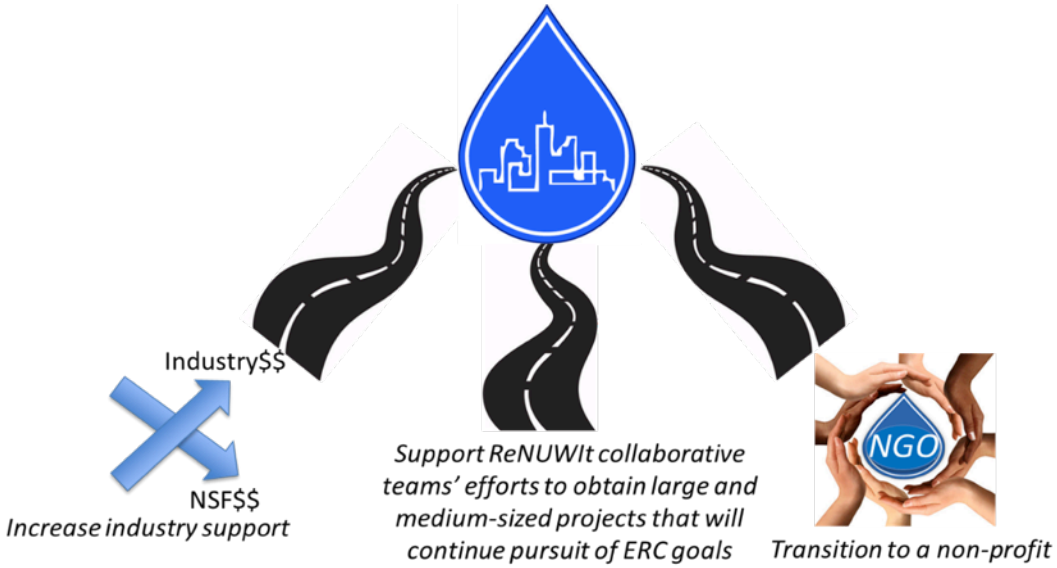
E2.11 Staged anaerobic fluidized bed MBR

Silicon Valley Clean Water, Suez, Singapore PUB (further scale-up in construction)

86% COD removal at energy consumption of 0.27 kWh/m^3 and produced biogas with an electrical energy value of 0.27 kWh/m^3 (~Energy Neutral)

When coupled with disinfection, RO, and UV/AOP, SAF-MBR effluent exhibits lower flux decline than aerobic effluents & 3-6 fold lower concentrations of disinfection byproducts

Planning for the Post-ERC Funding Era



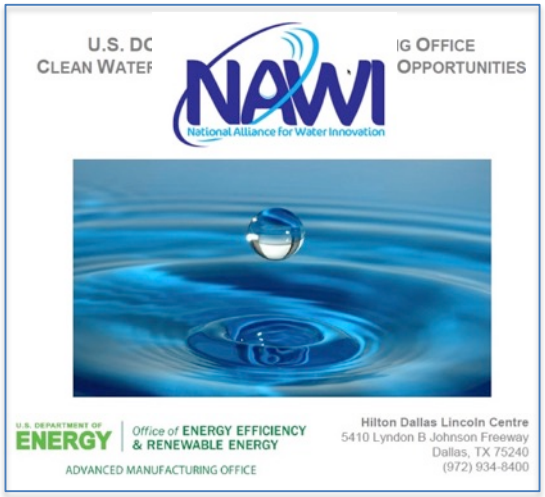
Sources of Support

IAB Members

NSF Programs

SERDP (DoD)

USGS



NWRI National Water Research Institute

THE Water Research FOUNDATION

National Alliance for Water Innovation

NAWI is a research alliance headquartered at Lawrence Berkeley Lab to advance technologies in which 90% of nontraditional water sources – such as **seawater, brackish water, and produced waters** – can be cost-competitive with existing water sources within 10 years.

LBL-ReNUWIt team driving force for this initiative