PHOTO COURTESY ARCH NEXUS

WATER PETAL CASE STUDY
ARCH NEXUS SAC

LOCATION
SACRAMENTO, CA

TYPE
OFFICE

SIZE
8,252 SQUARE FEET

OCCUPANTS
40 FULL-TIME
10 VISITORS PER WEEK

RAINWATER HARVESTED/YEAR
26,624 GALLONS

WATER USE INTENSITY (WUI)
1.5 GALLONS/SF/YEAR

AVERAGE WUI*
14.2 GALLONS/SF/YEAR

CLIMATE
MEDITERRANEAN
18.5 inches of rain/year
63 days of precipitation/year

**Average WUI by building type according to Seattle 2030 District data*

In January of 2017, Architectural Nexus moved in to its newly renovated office in Sacramento, CA, hoping to be the first Living Building certified in California. In response to California's recent and reoccurring droughts and energy crises, Arch Nexus designed the building (dubbed Arch Nexus SAC) to lay a framework for how to operate in such conditions. Through looking to nature for her concept and looking to place for her roots, the project is an educational and community asset for California. In April of 2018, the project became the first Living Certified project in California, where the State legislature just mandated the consolidation of small water systems. As part of their advocacy process, the team created a Water Permitting Map as a valuable visual tool to identify code barriers and generate solutions.

SYSTEMS

Arch Nexus SAC is equipped to provide all of its own water from rain that falls on the roof. Additionally, any wastewater that is created is treated onsite.

RAINWATER HARVESTING

Rainwater runs off the roof into two large cisterns sunk into the ground and secured with helical piers. The system uses a Netafim microbial filter followed by Blue Future sand filtration system with Aquatec recirculation pump and a Viqua UV filter.

GREYWATER REUSE

All greywater remains in the building. After being treated via a Blue Future gravel and sand filtration system with Aquatec recirculation pump, it's used to irrigate a green wall and to flush toilets.

BLACKWATER TREATMENT

The project uses a Phoenix composter with wall mounted JETS vacuum flush toileting system. The in-ground leachate tank is produced by Oldcastle.

LIVING WALL AT ARCH NEXUS SAC


PHOTO COURTESY ARCH NEXUS

WATER PETAL CASE STUDY
POLICY SOLUTIONS

RAINWATER HARVESTING

Though California has made it slightly easier for project teams to permit greywater and domestic sewage systems, the State has lagged in allowing for innovative potable water sources, specifically rainwater harvesting. The road became especially difficult when the California legislature passed a law in early 2017 forbidding the creation of a new water district within an existing water district. The law intends to consolidate the water districts so there are fewer jurisdictions to manage, and specifically targets very small cities. It does not take into account the existence of individual buildings that, due to the amount of people they serve, may be considered a “water district” and subject to the same rules.

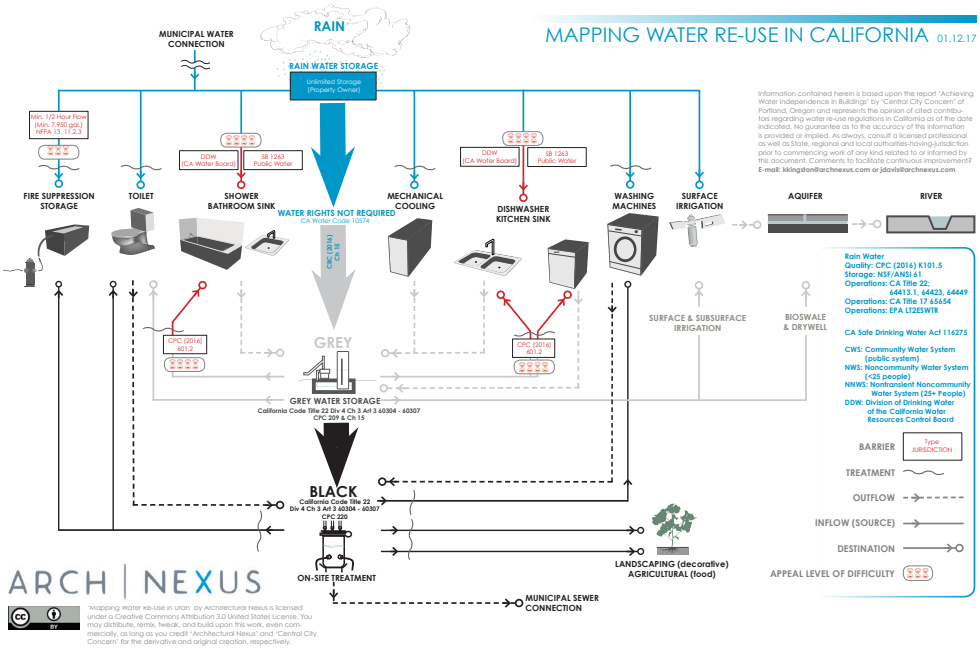
Though it’s currently connected to municipal drinking water, the Arch Nexus team is collecting, treating and testing rainwater to accumulate a breadth of operating data to present to the State. Once it has enough data to make a compelling case, the team will ask the State for permission to operate as a pilot.

WATER PERMIT MAPPING

In the course of their efforts to permit their water systems, the Arch Nexus team found themselves frequently overwhelmed, trying to figure out whether each system had an existing code pathway, which jurisdiction had authority and what advocacy had already been done. They found a valuable tool in a 2011 resource from ILFI - a visual map explaining the current state of affairs for permitting various water systems in Oregon. Crucially, this resource was marked with a creative commons logo, allowing them to adapt it to their own situation.

The California Water Permitting Map they created (below) helped the team to track and identify barriers to achieving Net Positive Water for Arch Nexus SAC. The red text indicates pathways that are blocked, and the hourglasses indicate a subjective estimate of the time and effort needed to overcome these barriers. As a group of architects without experience in this realm, creating a permitting map was an invaluable exercise. As Kenner Kingston, President of Arch Nexus says, “The Living Building Challenge turns architects into advocates.”

WATER PERMITTING MAP (COURTESY ARCH NEXUS)



The Arch Nexus team is committed to keeping their Water Permitting Maps open source, so that anyone can download and create a map for their own region. They’ve already created an additional map for the state of Utah.

To learn more about the Water Permitting Maps, and to create one of your own, please visit https://living-future.org/policy-advocacy/#permit-maps