WATERshed

“Shelter: Rethinking How We Live in Los Angeles”
A + D Architecture and Design Museum, Los Angeles
August 20 - November 6, 2015
According to current climate change projections by the United Nations, almost half the world’s population will be living in areas of high water stress by 2030. As California enters its fifth year of drought, mandatory municipal and statewide water restrictions have localized the issue to the point of further necessary action. Such measures currently lack a viable plan for sustainable urban growth in cities such as Los Angeles, reliant on imported natural resources. Meanwhile, recent speculations fail to recognize the Los Angeles River’s inherent iconic beauty and its potential as a critical ecological resource for water use and management in a densifying city.

Lorcan O’Herlihy Architects’ WATERshed examines the relationship between urbanization and water use to develop new models of densification that recognize and tap into existing ecological and infrastructural patterns.

By opportunistically occupying public and private land remnants and capitalizing on the redundancies created by an outdated land use and infrastructural network, an entirely new model for urban regeneration can emerge. In these traditionally overlooked residual spaces, Lorcan O’Herlihy Architects [LOHA] designed a system of interventions at multiple scales, combining living, public space and water-based infrastructure into a new hybrid patchwork that will capture, recycle, purify, loop, and reconnect ground and stormwater back to the water table and the Los Angeles River.

This speculative vision embraces the Los Angeles River as it currently exists and offers a key strategy for working within the urban fabric to add moments of amplified activity. The interventions establish a web of relations and dependencies to make the best use of limited space and finite ecological resources, developing an urban culture in microcosm that sets in motion critical regional transformations.
OBJECTIVES AND STRATEGIES

WATERshed reframes housing as an adaptable, localized response to the complex systems affecting urban dwellings, including the need for more effective water management strategies, new models of shared performative spaces, and improved public access policies.

LOHA’s proposed speculations along the Los Angeles River represent a means for working within the Elysian Valley’s existing context to plug in moments of intense, hybridized activity.

These new forms of speculation will hack into current urban and infrastructural systems along the Los Angeles River and establish a protocol for unlocking the potential of these sites, creating density through diversity, and replacing the infrastructural and temporal models of the past with a set of agile applications that adapt to a rapidly changing landscape.
LOHA proposes a series of plug-in interventions that address specific underperforming or absent functions in the water cycle. These interventions are located in residual spaces, often inappropriate for traditional development. The goal of WATERshed is not to create an autonomous replacement system, but to augment the existing water infrastructure in order to make the Los Angeles River a high-performance centerpiece for hydrology in the region.
WATERshed’s site along the Los Angeles River encompasses the Elysian Valley and surrounding areas. The larger square is the site of the topography models and the smaller square is the site of the large, axonometric drawing. Each dot represents an intervention that plugs into a water infrastructural network that activates the river as an ecological resource.
AXONOMETRIC DRAWING CLOSE-UPS
LOHA’s WATERshed encompasses a combination of existing and proposed storm and wastewater management strategies, creating a connected system between the interventions, community wells, the Los Angeles River, and the aquifer below.
SPONGE HOUSE

Located in yards and other underutilized remnants of an outdated zoning code, the Sponge House is composed of a sponge filtration system embedded in the house’s envelope. It intervenes in the connection between existing housing and the city’s stormwater system to collect, purify and distribute recycled water back to the neighborhood, in essence hacking an antiquated infrastructural system to enable a more localized and efficient treatment of limited water resources. The Sponge House connects to existing housing greywater (showers, sinks, irrigation, roof runoff, etc.) to treat and reuse recyclable water typically discarded directly into sewage or stormwater systems.

By short-circuiting existing runoff and drain systems, the Sponge House slows L.A.’s hydrology by acting as a conduit for stormwater on its way to the Los Angeles River, allowing for a longer retention, storage, and use period that captures and cleans water efficiently and appropriately.

In addition, the mass and fluctuating saturation of the sponge provides passive cooling to the internal spaces. Compared to typical construction, the use of a single building material makes it easier to recycle or repurpose for later use.

Providing an alternative proposal for L.A.’s affordability problem, the Sponge House introduces spaces able to accommodate different types of program (markets, bodegas, restaurants, salons) as income-generating businesses or rentable units, reflective of the current, hybridized way land is being used in these communities.
BLADDER HOUSE

Utilizing a variable ratio of captured water and air as its primary building material, the Bladder House collects and stores water during seasonal high-volume rain events. During the wet season, these bladders become one of the primary water storage areas for later community-wide access during periods of sustained drought. Each house plays a part in a much larger, interconnected network of stored rain and recycled water, creating a greywater collection system for irrigation and plumbing purposes.

By externalizing and making water use visible, the Bladder House serves to educate about pressing environmental issues in a way that makes potential solutions more a part of daily life.

In addition to incorporating passive techniques for purification, including exposure to UV sunlight, the Bladder House’s combination of water and air also provides insulative qualities, acting similarly to a thermal mass. This increases interior comfort and reduces dependence on AC and other climate control measures.

Its inflatable structure responds quickly to changing programmatic needs, popping up in the interstitial, irregular-shaped space between existing structures. The flexible design creates temporary structures that can take on different uses reflective of specific needs that change over time, while allowing local proprietors to exert more control and responsibility over their land.

Inherent to its flexible nature, the Bladder House addresses the issue of affordability by providing the space for income-generating, co-op commercial and residential programs that activate underutilized land typically leftover on single-family lots.
TRANSIT HUB

Situated in the residual space left at the confluence of the Metrolink rail, Figueroa Bridge, the I-5 and 110 freeways, the Arroyo-Seco, Los Angeles River, and a proposed bike path extension of the L.A. River Greenway Trail, this proposal negotiates and reconciles these currently disparate elements while providing a hybridized program of multi-unit housing, public space, transportation and water infrastructure.

Translating the stormwater treatment principles traditionally applied at smaller scales to a multi-unit development, this project captures and purifies water with a gravity-fed system that provides recycled water to the residential units, public space, and ultimately, the Los Angeles River. Collected and recycled greywater is used to passively cool the entire facility.
RIVER BRIDGE CAP

The Los Angeles River Bridge Cap combines housing and water filtration infrastructure, while providing a much-needed connective public space across the Los Angeles River. During high volume seasonal rain events, when the water level rises from 4 inches to 16 feet, the River Bridge Cap removes and collects large debris from the river so that it may be recycled and distributed for renewed use.

Powered by the energy generated during periods of intensified river flow, this proposal feeds a two-way system of underground stormwater pipes that extract water from the river during high-capacity rain events. This water is cleaned and stored in the network of interventions and community wells, and eventually the aquifer, for later use. Any excess water that remains after passing through this system and filling storage infrastructure is returned back to the river, as treated water. Located at each dead end road that terminates at the river, these two-way pumps expand the city’s capacity to respond to future short, intense, volatile rain storms.

In addition, the River Bridge Cap maintains and protects public river access from the surrounding community by activating the river as a public park space and discouraging the privatization of the river’s edge.
ADDITIONAL TYPOLOGIES

Watertower House: Connects to existing roof drainage systems to collect and store water. Helping to alleviate Los Angeles's affordable housing crisis, the Watertower House can be built on existing commercial or residential structures as either standalone homes or accessory dwelling units.

Reservoir House: Following EPA regulations, many open-air reservoirs in Los Angeles are being covered to prevent water-loss through evaporation. The Reservoir Houses cap the Elysian Reservoir with a substrate buoyant enough to support housing. Collectively, all rainwater, water in the reservoir, and greywater, is treated, purified and recycled for use within the reservoir housing complex.

Pump House: Where the utilization of gravity as a singular strategy is not an option, the various interventions that compose WATERshed are connected through a system of pressurized pipes. The Pump House feeds water through this infrastructure, connecting the interventions, wells and stormwater drainage pipes to the aquifer and the Los Angeles River.
For more information and images, please contact:

Patricia Bacalao
Business Development + Communications
pb@loharchitects.com
424.278.2114