Ballona Restoration – What Would Nature Do?

By Bev-Sue Powers, www.BallonaPhotography.com

The Desire of Connection

All life, including humans, possess an innate tendency to seek connections with other forms of natural life. Conservationist E. O. Wilson coined the term ***Biophilia*** as "the urge to affiliate with other forms of life". In the past 100-150 years, during the buildup of cities, very little consideration was given to accommodating natural habitats and ecosystems, as most neighborhoods, business districts, and transportation centers were built on key ecosystems. Even parks were designed for beautification and human recreation, not wildlife. The result was that most wildlife was pushed out of cities and we became more disconnected and isolated from natural environments and the rhythms of life, itself. ***Biophilia*** acknowledges cities as human-designed ecosystems and studies how to design urban ecosystems to meet both human needs and indigenous flora, fauna/wildlife needs. Strong drivers of this relatively new framework are climate change, sea level rise, an unprecedented rate of wildlife species collapse, and peoples' isolation from the pulse of natural life.

The Design of Connection

Biomimicry Design mimics how Nature designs a lifeform's purpose, patterns, and functions. After all, Nature has been designing things a lot longer than humans have - for around 3.8 billion years! Most of the natural life we interact with has been here tens of thousands of years longer than us. We, humans, are among one the youngest species on the planet. Yet many humans have the peculiar attitude that we "know best". Compare the following examples of some of the natural patterns used to move fluids found throughout Nature with systems humans have designed to move fluids.

- In tributary systems, water flow starts with either a snow pack or series of natural springs, contain a myriad of tiny brooks, waterfalls, and streams threads, which cascade and merge into incrementally larger threads, eventually meeting the ocean. Depending on the innate design of an estuary's mouth - where the fresh water meets the ocean salt water - the design of the mouth will follow the natural functions of an open design function, a closed design and function, or mix of both. From the mouth's design, specific ecosystems form.
- In watersheds, water runs from higher to lower within the watershed starting with smaller threads, flowing into increasingly larger threads much like tributary systems.
- Capillary systems follow patterns similar to watershed and tributary systems: tiny capillaries send or receive fluids from slightly wider capillaries and veins, which send/receive fluids in successively wider veins and arteries.

Similar design patterns used to move fluids are evident throughout nature. Here are some examples:

In a tree's capillary system

How its trunk branches above ground

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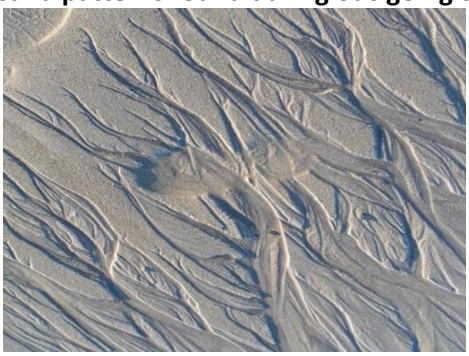
How its roots branch below ground

In leaves

Water moves from a plant's roots, to its branches, to each leaf. Leaves in turn, absorb carbon, which move the carbon in a similar, but reversed order, back to the roots, expelling the carbon back into the soil.

In sand patterns found during out-going tides



Even ocean waves create similar patterns while breaking sand into finer granularity so it's easier for the water to move and configure.

In our own veins and arteries.

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If all arteries, veins, and capillaries of the human circulatory system were laid end to end, the total length would be **60,000 miles**

In intact river systems and watersheds

This map shows the Ballona Watershed's original freshwater water flow patterns. (Source: Jeanette Vosburg)

The Ballona Watershed was once flush with freshwater above the ground, eventually descending to the Ballona Wetlands. From the top of the watershed, some of the downward streaming freshwater percolated into the ground, where it refreshed the groundwater and aquifers. The original watershed's design supported the myriad of ecosystems and this place flourished with wildlife. The freshwater met the ocean though a buffer of sand dunes, which had smaller, seasonal openings to the ocean than it presently does. The wetlands inside (to the east of) the sand dunes buffer zone contained more freshwater and less brackish water than it presently does.

The Design of Disconnect

Where did the Ballona Watershed's once abundant freshwater water go? Here's the naivety of human design: In the past century most of the freshwater streambeds have been covered with non-permeable surfaces and rerouted into straight, concrete channels (storm drains), which feed directly into the channelized Ballona Creek, bypassing the

wetlands, dumping straight into the ocean. For decades, these artificial surfaces and channels have disrupted the natural flow of the once abundant freshwater circulation, and blocked the collection and filtration of groundwater. In addition to most of our freshwater going "down the drain," the channel contains street runoff and storm water, primary sources of freshwater pollution. This has happened in urban areas across the globe.

At the ocean-end of the Ballona Watershed, the destruction of the sand dune buffer (over 100 years ago) also invited a larger swath of salt water into the Ballona Wetlands replacing some of the freshwater. Destruction of the sand dunes buffer zone has also left the Ballona Wetlands more vulnerable to oceanic storm surges and sea level rise.

The past 100-150 years approached land from a development framework: it's as if ecosystems contained inanimate objects – void of useful purpose and any resources there, were purely there for the extraction of and use by mankind. The Draft Environmental Impact Report (Draft EIR) seems to echo the "restoration" from this last-century perspective. For example, instead of restoring the Dune buffer zone, the Draft EIR Restoration plan would create miles of unnaturally tall berms inland and invite saltwater into areas where it doesn't currently exist and where freshwater used to be.

About those berms: The alternatives presented in the Draft EIR's restoration plans include reliance on heavy equipment (bulldozers, steam shovels, trucks), and the creation of artificial, unnaturally tall and wide berms to mitigate anticipated flooding (due to destructions of the sand dunes buffer zone). Wouldn't it be easier and **more cost effective** to just restore a version of the dunes closer to the mouth of the creek?

I didn't see a recommendation to remove industrial toxins from either the water or the soil except

1) by use of bioswales (bioswales are good, but additional bioremediation is possible, and no doubt needed)

2) by removing enormous amounts of soil completely. (There is mention of exporting between 10,000 and 110,000 cubic yards of excavated [polluted] wetlands soil via trucks or barges!)

Why does the soil need to be removed? Why not neutralize the soil toxicity **on-site** and keep the wetlands' soil in the wetlands? There are proven bioremediation techniques that could be employed in the Ballona Wetlands to clean up the soil (and water) rather than removing it:

- This bioremediation approach demonstrates Paul Stamet's work related to toxic soil & water cleanup using mushrooms, and
- This bioremediation approach demonstrates toxic water cleanup using Jonathan Todd's EcoMachine approach

On-site bioremediation rather than toxic soil removal would be a **significant cost savings** to the project; i.e., heavy trucks, steam shovels, and bulldozers wouldn't be required. Their absence automatically mitigates the constant noise and exhaust fumes, not to mention toxic dust clouds expected with moving such large amounts of soil around.

The Draft EIR also proposes closing some of the dangerous, toxic gas wells and pipes located on the wetlands. However, I did not see mention of actually closing the underground gas storage facilities or the gas control site itself. I only see decommissioning the wells and pipes (via lids or end caps), with post-restoration "inspections" as needed, whatever that means. The plan mentions the Gas Company plans to install replacement wells [of the closed wells] via directional drilling from their facilities. I didn't see mitigation plan for drilling-related leaks and explosions. How about using some of the restoration money to purchase the Gas Company's land and close the entire site down? (It is, after all, on the wetlands!) Another incentive to close the plant is use of fossil fuels as our primary energy source will not be true in 50 years. Let's plan for the future, not cling to the past.

Though it might be included, I didn't see mention of leveraging existing ground(fresh) water being pumped from under Playa Vista, which could be re-routed into existing places within the wetlands. If leveraged, it could provide greater

quantities of freshwater ponds, marshes, & rivulets to bring the wetlands closer to when it was freshwater marsh areas. Again, **this would be a significant cost savings to the restoration project.**

The proposed DEIR has many good suggestions, and a lot of data, but it also has some glaring gaps to address before realistically moving forward. The framing of the DEIR seems to be the same as it was 10 years ago, and the approach is clearly last-century thinking. Meanwhile, there have been leapfrogs of new 21st-century discoveries and approaches to restoration and new, proven, and scalable bioremediation solutions that are more widely used since the DEIR started. Aren't these at least worth a public discussion? **Let's save money** and improve our wetlands at the same time. It is possible. I just hope it's not too late.

The Imperative of Connection

Imagine what the Ballona Wetlands area was like 150-200 years ago. I imagine it was teeming with wildlife, including a much wider variety of land and sea mammals, shore, marsh, and riparian birds, and many other species and flora. Yet some of the original species have managed to endure, even as challenges to their very survival continue to mount. What does the Ballona Wetlands need to be like in 100-200 years? What will the relationships between people and wildlife be like then vs. now? Restoration must be for the benefit of future generations - humans and our wildlife neighbors alike.

Wildlife is not thriving with us in charge, yet ironically it can no longer survive without us. I hope for all our sakes we can make sure their progeny still has a home among ours a hundred years hence. Let's influence the restoration of Ballona Wetlands –a rare urban, coastal wetland – in a way that protects and preserves our existing wildlife neighbors and will gently regenerate more of our native biodiversity. Neither acknowledging nor considering the innate, natural design as the driving purpose for the Ballona Wetlands Ecological Reserve restoration, will fail us all. Instead, let's reweave this place together with nature's innate designs to more closely reflect the jewel it used to be.

Resources

Draft Environmental Impact Report's restoration plans

Ballona Wetlands – Wildlife Photographs

- Jonathan Coffin's (vast) Stonebird Wildlife Collection (Flickr)
- Bev-Sue Powers' Ballona Photography Blog

In-Place Bioremediation Techniques

- This one demonstrates Paul Stamet's work related to toxic soil & water cleanup using mushrooms, and
- this one demonstrates toxic water cleanup using Jonathan Todd's EcoMachine approach.

The Nature Of Cities is a website containing discussions about the challenges facing cities across the globe related to best practices and cutting edge work for restoring nature in urban environments.

- One current discussion pertinent to our dilemma is "Where Did the Rivers Go? The Hidden Waterways Beneath London".
- Another explores the theories, strategies and methodologies that can be used to re-nature our cities. How can we plan with nature? What are the models and approaches that can be used to enhance the presence of high-quality green spaces in our urban areas? And how to move from theory to practice?