IN THESE ENVIRONMENTALLY conscious times, the following statements are practically axioms for landscape architectural design:

Rainwater must be considered a resource, not a waste product.

Stormwater is most effectively managed on site at the source.

Taken together, these two ideas suggest an inspiring approach to stormwater management: on-site treatment where rain is celebrated as a resource—not just managed, but thoughtfully treated as a landscape amenity providing a rich experience for users. We call this approach “artful rainwater design.”

In an earlier article (see “Art for Rain’s Sake,” Landscape Architecture, September 2006) we proposed that study of award-winning projects can provide helpful information for landscape architects interested in undertaking artful rainwater design (ARD). Since 2005, we have engaged in case studies of 20 projects across the United States that vary in size, type, and design strategy. This study has helped us identify a range of “amenity goals” achievable through ARD.

An on-site stormwater management system can be an engaging opportunity to educate people about rainwater issues from promoting awareness of stormwater best management practices strategies to the site’s historical water condition. Many people don’t understand the hydrological cycle, the usefulness of wetlands, the role of plants in cleaning water, and the desirability of infiltration. Through ARD landscape architects also have the opportunity to help the public realize the value of nontraditional landscape designs that effectively address rainwater quantity and quality—for example, native plants in naturalized bioswale designs.

In the case studies we have discovered that education can be addressed through two basic strategies: The designer can encourage the visitor to discover something about rainwater through a puzzling or thought-provoking design, or the designer can pose a straightforward didactic lesson in the landscape, offering specific information about a rainwater issue. Stephen Epler Hall at Portland State University in Portland, Oregon, takes the first approach, while the Pierce County Environmental Services Facility in...
University Place, Washington, near Seattle, uses the second.

**Stephen Epler Hall**

Stephen Epler Hall presents an educational strategy that engages visitors in deciphering the intriguing puzzle of the stormwater management system. Located within the urban fabric of Portland, Epler Hall is a six-story, 130-unit residence hall that also houses classrooms and faculty offices on the first floor. The design of the building and landscape was strongly influenced by the university’s vision and values: In 2001, Portland State began the project intending to build a sustainable facility reflecting the university’s emerging commitment to environmental issues. The architecture/landscape architecture team of Mithun and Atlas Landscape Architecture took these intentions to heart, creating the first Leadership in Energy and Environmental Design-certified project on the Portland State campus and an ARD worth exploring.

A particularly engaging rainwater treatment and harvesting system is found in an intimate plaza enclosed by Stephen Epler Hall and King Albert Hall. First rain descends from the roof of Epler Hall via downspouts that follow three of the building columns. At the bottom of each downspout the rain disappears into a raised concrete basin filled with river rock. Observant

This stormwater courtyard at Portland State University was sited between two dormitories, offering students an opportune gathering place to decipher the intriguing stormwater treatment system. The plan below illustrates how water crosses the plaza from collection basins (labeled 2 on plan) via runnels to a stepped series of biopaddies (labeled 1 on plan). *At right* is a view of the rainwater trail from downspout to raised collection basin through scupper into granite-lined runnel.

**ECOLOGY**

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visitors will realize that the water seeps down through the river rock then flows out small scuppers at the bottom of each basin. From this point, the rainwater runs straight across the plaza in three runnels. This, too, requires some careful observation to notice, because each runnel is capped with granite pavers set just far enough apart that gaps between the pavers offer a glimpse of the water flowing below.

Each runnel leads to a sunken basin filled with plants (these were dubbed “biopaddies” by the designers), and a gap in the raised concrete edge surrounding each basin allows the runnel to extend all the way to the sunken planter’s edge. Curious visitors will realize that this gap lets rainwater fall from the runnel directly into the biopaddy. Visitors knowledgeable about riparian plants and stormwater management will notice that the sunken planters are filled with sedge, which serves as a biofilter for the rainwater.

Sleuthing visitors initially may be confused by perpendicular runnels that connect the five biopaddies, but if they notice that the basins descend a slight slope, they will realize that the design allows excess runoff to drain from one biopaddy to the next without flooding the plaza.

Not even the finest stormwater Sherlock will know that the biofiltered...
water is then collected in a 10,000-gallon tank, treated with ultraviolet light, and reused for irrigation and in first-floor toilets in Epler Hall. Nor would they know that the system was designed to divert runoff from entering the city’s stressed municipal sewer/stormwater system. The only information provided about all of the rainwater harvesting and reuse is found on signs in the first-floor restrooms of Epler Hall clarifying that water used in the toilets is rainwater harvested in the plaza.

In a major rain event, the educational component of this ARD transforms from puzzle to entertaining show. According to the architects, the display of moving rainwater becomes so theatrical that students emerge from their dorm rooms to watch (elegantly aided by two benches under freestanding roofs that face the water show).

At Epler Hall the education strategy focuses on engaging and intriguing visitors rather than stoking their brains with rainwater treatment facts. This strategy seems appropriate for the site and demographic contexts: a plaza designed not only for passing through but also for lingering and living, peopled by university faculty and students who have both the intellectual inclination and the opportunity to take some time here, observe, deduce, and be both delighted and enlightened. “Learn, live, work, relax, and be green” is a manifesto at Portland State that is clearly exhibited in this engaging ARD.

**Pierce County Environmental Services**

The Pierce County Environmental Services facilities comprise a 50,000-square-foot office building on a 20-acre site, parking, public play fields, a labyrinth garden, and pedestrian and bike trails that link this site to adjacent neighborhoods. For more than 100 years the site was mined for gravel; today it is the first major project developed according to a 50-year master plan focused on “Reclaiming Our Resources.”
for the 900-plus-acre Chambers Creek Properties, a public–private partnership focused on transforming the massive gravel mine into a system of environmentally responsible public amenities.

The project won an American Institute of Architects/Committee on the Environment Top Ten Green Projects Award in 2004. Lead architect Miller Hull Partnership and landscape architect Bruce Dees & Associates put into practice what the master plan moniker proclaims—especially when it comes to recognizing rainwater as a resource. At the suggestion of the design team, Pierce County Public Works and Utilities committed significant funds for an interpretive system. The result is a nationally recognized green facility that goes to great lengths to teach the visiting public about sustainable design and construction.

Pierce County’s “flow-splitter plaza” ends the bioswale axis with three aligned valve heads. Signs explain that the valves split runoff into two treatment swales, one grass-lined and one gravel-lined, while the third diverter awaits development of future treatment strategies.
The strategy of educating visitors about rainwater at the Pierce County site is multifaceted and highly effective. First, a very clear rainwater trail displays a variety of stormwater management strategies while defining the anchoring spine of the entire site design: an axis that visually links distant Mount Rainier and Mount Olympus.

The water treatment axis begins at the northwest corner of the building, where rainwater falls dramatically from a scupper on the roof into a concrete basin incised with a spiral runnel.
Rainwater spirals from the basin into a treatment wetland that visitors are encouraged to enjoy by following an elegantly meandering boardwalk.

The water treatment trail is briefly broken by the entrance drive; it reappears on the other side in the form of a 250-foot-long axial bioswale whose materials suggest its function: The bioswale is lined with river rock and riparian plants, occasionally embellished with driftwood. The design ensures that visitors will notice this long bioswale axis as it runs along a walkway that not only links visitor parking with the public building entrance but also serves as a popular trail for pedestrians and bicyclists from surrounding neighborhoods.

As it heads southeast, the water treatment trail disappears again under a drive to reappear in a particularly intriguing part of the landscape design: a plaza with three visible valve heads on axis with the long bioswale. Signs explain that this is a “flow-splitter plaza” that sends runoff into two different treatment swales—one grass lined and one gravel lined. The third diverter awaits development of future treatment strategies.

While the water treatment trail design offers an intriguing educational experience, signs in this landscape ensure that visitors will not only notice, but will leave the site with real “lessons learned.” First, the signs each offer a small, easily digested tidbit of information about the design strategy, materials, and plants that can be read at a glance. Second, the signs are strategically located along major pedestrian routes so that visitors can’t traverse the site without encountering these engaging info bites. And third, the signs are bright yellow in color, making them highly visible in the landscape. We found the cumulative result very effective at cajoling us into learning about the site.

The education strategy undertaken at the Pierce County Environmental Services site is strongly and clearly didactic, focused on providing the visiting public useful information about environmentally responsible landscape strategies. This educational approach is particularly appropriate to the project context and intent: The site is a destination and civic amenity for both neighboring and countywide residents thanks to facility tours and on-site public play fields.
and a garden. The combined strategy of a clear water trail demonstrating various stormwater management types plus engaging interpretive signage presents an effective educational package aimed at ensuring widespread impact on general public understanding of rainwater issues.

Education is one of the amenity goals that landscape architects can address through ARD. The two projects presented here—Stephen Epler Hall and the Pierce County Environmental Services Facility—present divergent educational strategies in ARD, with each design team paying careful attention to context and tailoring the educational strategy to site and audience. Both offer useful lessons for designers interested in artful rainwater design.

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Resources
- “Art for Rain’s Sake,” by Stuart P. Echols, ASLA, and Eliza Pennypacker, ASLA; Landscape Architecture, September 2006.