The Owens Lake Dust Control project represents a civil engineering project at a scale of production where the established agency of a maximally efficient approach to design seems well justified. The primary mandated function of the infrastructure is to control dust on half of a 108 square mile lake. The mostly dry lake, in the arid and scenic Owens valley, must be mitigated for dangerously microscopic dust produced by the diversion of water out of the lake’s watershed to feed the city of Los Angeles. The Public Trust Doctrine requires the dust control project’s manager, the Los Angeles Department of Water and Power (LADWP), to not only control dust, but also provide a variety of public trust values that would be appropriate to a lake, dry or not.

The LADWP has resorted to pouring water on the lake as a resource intensive way to manage dust, as well as provide baseline public trust values. It has found it challenging to adapt their more resource efficient designs to managing assessments of the public trust doctrine.

The Owens Lake Rapid Landscape Prototyping Machine was developed as a method to develop and calibrate dust control infrastructure to multiple values—respecting the agency
of infrastructural-scaled civil engineering as well as other values critical to ensuring “public trust”. The project proposes to create a methodological common ground that helps develop qualitatively and quantitatively acceptable designs. Rigor and improved design exploration is facilitated by means of a representationally enriched, but computationally powerful, set of custom tools, known as a Rapid Landscape Prototyping Machine (RLPM). At the center of the machine is a physical sand model manipulated with a six-axis robotic arm, illuminated by digital projection, and assessed by the combination of a laser scanner and a custom software suite.

As a medium for design, sand modeling represents a powerful layering of topologies, material behaviors, and representation power to have present in a studio environment. Paired with the precision of contemporary robotic technology, laser scanning, and projection, the medium can outstrip, but not entirely departs from the fundamental behaviors, computational qualities, and familiar associations of sand.

Featured in the ACADIA exhibition is the public outreach tool for the project (Figure 4). The system adapts the custom digital projection and analysis tool for the lab’s rapid landscape prototyping machine RLPM (Figure 6) to public use and outreach. The landscape player presents stakeholders with a selection of sixteen landscapes developed by the RLPM that can be pulled out and “played”. The landscapes are vacuum formed versions of the actual physically modeled landscapes and the system illuminates the white styrene forms with a projector while allowing a user to experience a coordinated first person perspective (Figure 2). A joystick and set of knobs and buttons (Figure 5) let users to move around and adjust environment and surface treatment of the landscape while receiving multiple and conflated feedback, including both quantitative, spatial analysis, and simulated experiential views (Figure 1). The system records user engagements to help understand and fortify user preferences and find thresholds for resource efficient, but public trust compatible landscape designs.
Projection of custom software illuminates the physical model with spatial analysis that corresponds to the first person view.
Alexander Robinson is an assistant professor in the University of Southern California, School of Architecture Landscape Architecture program. His research and practice explores the growing role of performance within landscape practice, both in terms of core landscape systems and landscape design within infrastructural territories. Robinson is the co-author of *Living Systems: Innovative Materials and Technologies for Landscape Architecture* (Birkhauser 2007). With his Landscape Morphologies Lab, he continues this research into the design of landscape infrastructures and other performance systems. He is a graduate of the Harvard Graduate School of Design MLA program.

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