

Sakai Intermediate School



FLOOR SPACE: 60,000 ft.²

BUDGET: \$ 14 million including site (\$233 ft.²)

BUILDING POPULATION: 600 5th & 6th Grade Students

CONSTRUCTION DATES: 1999

OWNER: Bainbridge Island School District

ARCHITECT: Wise Miller Architects

GENERAL CONTRACTOR: Leo Finnegan Construction Company

SITE CONTRACTORS: Seton Construction

STRUCTURAL & CIVIL ENGINEERS: KPFF Consulting Engineers

MECHANICAL ENGINEERS: Hultz & Associates

ELECTRICAL ENGINEERS: Sparling

LANDSCAPE ARCHITECTS: Thomas Rengstorf & Associates

SUSTAINABILITY CONSULTANT: O'Brien & Company, Inc.

PROJECT NOTES

SITE AND WATER

- **Erosion and Sedimentation Control:** Site construction was phased to prevent erosion and runoff and protect the salmon-bearing stream adjacent to the site. Measures included: establishing monitoring procedures, erecting siltation barriers, establishing the most appropriate site entrances, and placing hay bales. Hydroseeding helped protect bare soils from exposure and erosion. A three-cell sedimentation pond was erected to capture and filter stormwater.
- **Stormwater Management:** Runoff from the parking lots and other paved areas is directed into bioswales.
- **Multi-Story Structure:** The building was multi-story to reduce impervious surfaces and increase the stream buffer area; playfield was reduced to increase buffer as well.
- **Preservation:** On-site wetlands were protected during construction and enhanced by using 'level spreaders' to reintroduce groundwater that was captured and kept separate from stormwater, avoiding eventual starvation of the wetland.
- **Integrated Pest Management (IPM) Program:** Pesticides were eliminated and fertilizers used were organic when deemed necessary. Concrete mowing strips were used under fences and around buildings to eliminate the need for weeding where lawnmowers can't reach.

MATERIALS AND RESOURCES

- **Recycled Content Products:** Asphalt paving and sub-base, parking lot tire stops, concrete, soil amendments and hydro mulch, insulation, bathroom partitions, door cores, countertops, paint, countertops, carpet cushions, ceramic tile, flooring, acoustical ceiling tiles, and drywall all contained recycled content.
- **Low Maintenance and Long Life:** Steel framing helps with achieving no-pesticide use and is more flexible for future remodeling projects.
- **Construction Waste Management:** Significant waste reduction was achieved through recycling efforts.

INDOOR ENVIRONMENTAL QUALITY

- **Ventilation:** Ventilation and air circulation systems were designed to go beyond code in providing sufficient air changes per hour to ensure plenty of fresh air (20 cfm vs 15 cfm).
- **Indoor Air Quality:** Low toxic and low emitting materials, which contribute to healthier indoor air, included paints, adhesives, sealants, laminate, plywood, cabinetry, caulking, and paneling.
- **HVAC Design:** The HVAC system was designed to minimize ductliner, locate intake vents away from potential pollutant sources, and provide efficient filtration. Combustion systems were designed to avoid backdrafting or spillage when harmful gases could leak into occupied areas.

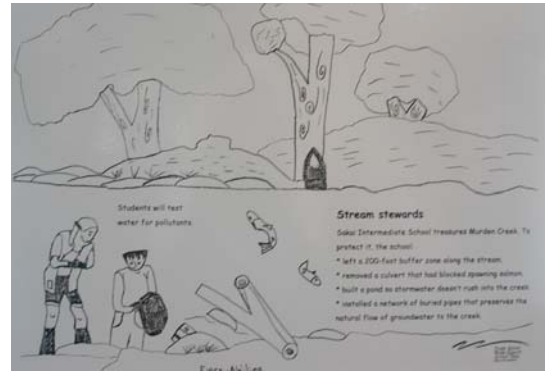
USING THE BUILDING TO TEACH SUSTAINABILITY

An important aspect of the Sakai School project was the effort made to ensure that the building itself be a learning tool. In particular, Richard Best, Capital Projects Director and Doug Olsen, 6th grade science teacher with the Bainbridge Island School District wanted to make sure that children attending the school, their parents, and the community in general, understood what went into making the school “green” and why it was so important.

O’Brien & Company successfully applied on behalf of the Bainbridge Island School District for a Puget Sound Action Team PIE (Public Information & Education) grant to fund getting the word out. As part of this grant, the sustainable building consultant worked with teachers to create lesson plans on integrated pest management, stormwater management, and resource-efficient materials. They also worked directly with students, including helping the 5th grade English class who would be entering the school when it opened to prepare an article for the community newspaper (The Bainbridge Review). The article focused on recycled building products used in the school. In addition, sixth graders interviewed David Schwarz of KPFF for information on the innovative stormwater management system. The students created hand drawn illustrations for permanent signage (see photo) and staffed stations during the school open house describing the features of the school that protected the adjacent salmon stream and water quality in general. The PIE Grant also funded development of a brochure for visitors to the school: “What’s So Special About Our New School.”

In addition to designing in protection for the salmon stream, the construction project included developing a streamside classroom (see photo) and specialized access portals allowing students to monitor ground and surface water quality.

Retention cells helped slow the site runoff to allow time for sediment to settle out before reaching the adjacent stream. Shown during construction, below, and during use, right.



Above: Students illustrated signs explaining “What’s So Special About Our New School.” Below: David Schultz of KPFF (the civil engineer on the Sakai School) gives a presentation on the project’s ecosystem protection strategies in the outdoor classroom to architects, engineers, and other working professionals visiting the project.



Best practices on the site, such as this rock construction entrance prevented silt from being tracked onto roads and back into nearby waterways, a major concern on the Sakai project which was sited adjacent to a salmon stream.



A system of level spreaders allowed surface water to infiltrate the site more naturally. This allowed a wetland downslope of the Sakai Intermediate School, Bainbridge Island, Washington, to be fed rather than starved for water.