

Remembering Schoolhouse Creek

By Rebecca Sutton

12/2/2

In a secluded corner of sandy Berkeley shoreline, a great concrete pipe emerges from a sheltered inlet and extends into the Bay. From its mouth flows sometimes a trickle, sometimes a powerful rush of water. Storm drains stretching into the Berkeley hills, many marked with faded images of dragonflies and salamanders, channel this water to the sea. Miles of pipe, now a pale reminder of Schoolhouse Creek. But a few tiny patches of natural stream habitat, hidden among homes in the flatlands and the hills, provide a glimpse of the ecological opportunity flowing a few feet underground.

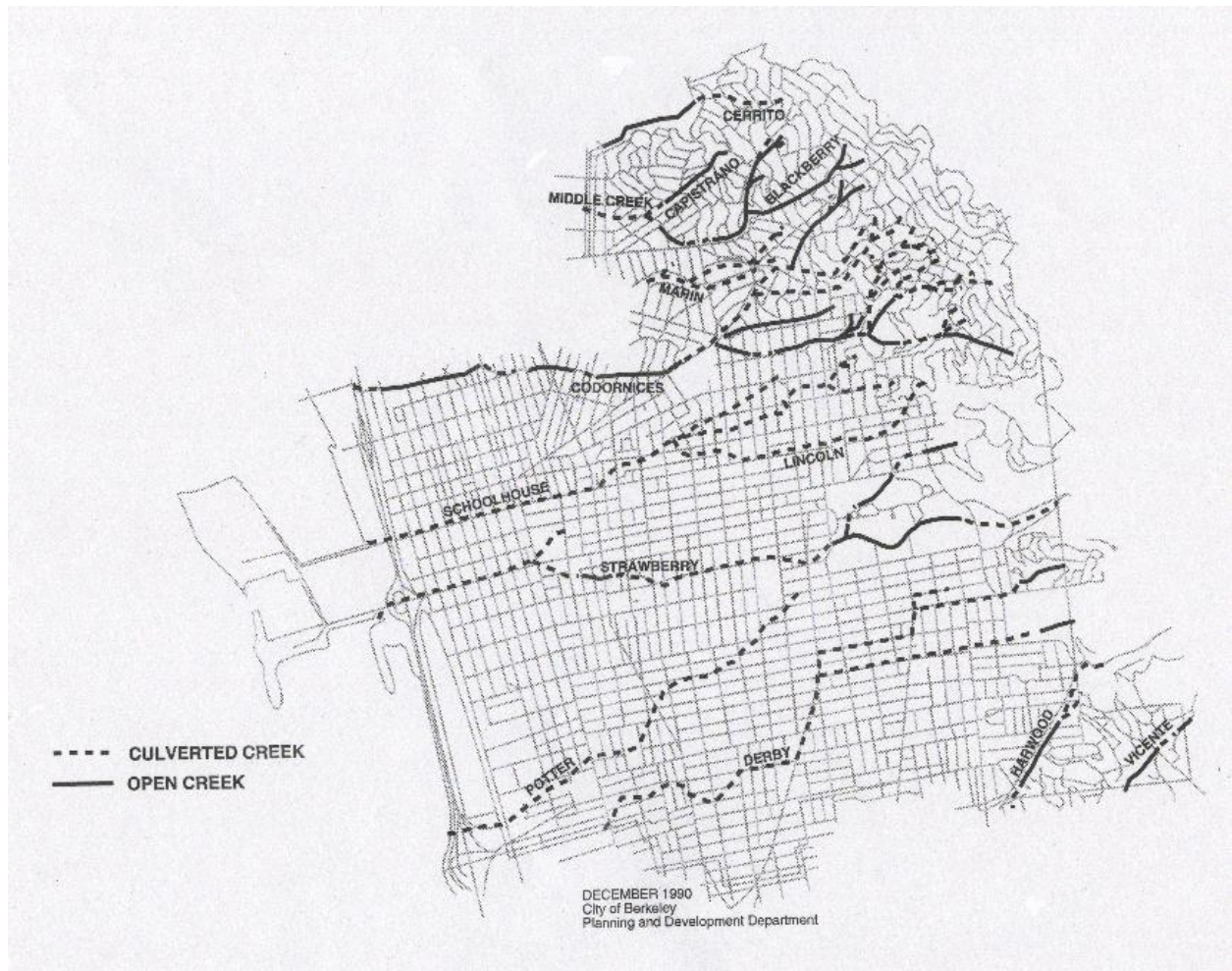
Ten years from now, the same stretch of coast will be transformed. In place of a pipe, a thriving marsh will stretch over the shore. Tall grasses and reeds will sway in the wind, and shorebirds will drop from the sky to feed on insects and crustaceans hidden at their bases. The restored wetlands will provide a natural passage for the waters of Schoolhouse Creek to enter the Bay, though it will be miles from the original channel. Bringing to light the history of this hidden creek provides a valuable way both to celebrate this new chapter in its story, and to remind us just how recently we have found an appreciation of our creeks and the larger ecosystem in which they are embedded.



The Virginia Street storm drain system outlet channels Schoolhouse Creek waters into the Bay.

Before Berkeley

The land now covered by the city of Berkeley was at one time striped with as many as 11 creeks (1). These streams were created when fracturing along the Hayward Fault thrust a huge mass of Plio-Pleistocene sedimentary complex upward to create the westward sloping Berkeley hills, beginning as recently as a million years ago (2). Erosion softened these hills, and rivers built alluvial fans on their lower slopes. The modern creeks continued the process of erosion and deposition, and their flood plains became the Berkeley flatlands.



Map of Berkeley creeks (3).

Schoolhouse is a small stream running between two large and well-known waterways. Codornices Creek runs to the north, the least-culverted creek in Berkeley, and boasts sightings of the threatened Steelhead trout (4). To the south runs Strawberry Creek, whose idyllic beauty inspired Samuel Hopkins Willey and Henry Durant to site their College of California, the predecessor of U.C. Berkeley, in these hills (5). Small and often missing from early maps and accounts of the region, Schoolhouse Creek began as a series of springs in the Berkeley hills, some located just below the site of the Berryman Reservoir on Euclid Avenue, others at the end of present-day Spring Street (6). These tiny, ephemeral streams merged into three branches or tributaries, all traveling between the bounds of today's Rose and Virginia Streets (3). The streams meandered down the hills and joined together around the intersection of McGee and Cedar Streets, then proceeded along Cedar and Virginia Streets towards the Bay (7).

Historical accounts of the region describe a thriving willow thicket along Virginia Street below San Pablo Avenue, supported by the waters of the creek (8). Closer to shore lay broad expanses of freshwater and saltwater marshlands (9). The range of these wetlands varied with the season, and soft, wet earth frequently reached into the willow groves during winter months. Within the marsh, Schoolhouse Creek waters joined a broad slough, which also received waters from Codornices and Marin Creeks to the north. The slough flowed parallel to the shore for

about a mile, before emptying into the bay at the north facing base of a jutting landform later known as Fleming Point.



This 1856 U.S. Coast Service map of the Berkeley-Albany shoreline shows Schoolhouse Creek, second creek from the bottom, and the long slough it entered before reaching the Bay (10). Strawberry Creek lies below Schoolhouse Creek, and Codornices Creek runs above it.

Schoolhouse Creek was a temperamental product of California's Mediterranean climate, a seasonal creek with torrential flows during winter rainstorms, and no water at all during dry summer months (11). Such an inconstant stream would be unable to support substantial breeding grounds for larger fish, but could provide rich streamside habitat for animals like the now-endangered California red-legged frog, which can survive a dry season. Though the water no longer reached the surface in the summer, its presence just below ground supported a rich creekside, or riparian, plant community (12). Its route was crowded with a variety of oaks, as well as bay laurels, California buckeyes, and many other large trees, a contrast from the savanna vegetation covering the surrounding hills. A dense understory of shrubs, vines, and groundcover plants spread over creek banks and spilled into the surrounding valley. Waterlogged soils of the coastal marshes supported a different set of species, including many sturdy grasses and rushes.

The creek and its plants provided water, food, and shelter for a multitude of native animals and migrating birds. Many creatures spent their entire lives within the shelter of the shady riparian belt, while others visited for a few mouthfuls of water or food. The creek was also an invaluable resource for the resident Huichin "tribelet," a member of the large Ohlone cultural and linguistic family (12). The natives led lives intimately connected with their surroundings. The Huichin group found a variety of uses for streamside plants, as foodstuffs,

medicines, and basket-weaving and building materials. Their homes and canoes were built largely of tule grass collected each year from coastal marshes. Animals attracted to and supported by the creeks also furnished the people with a wide variety of food and materials. The Huichin did not practice conventional agriculture, instead using fire and pruning techniques to foster growth of useful species. When the Spanish arrived in the East Bay, beginning in 1770, they were awestruck by the “natural bounty” of the land, little realizing the considerable role the Huichin played in supporting it. The Spanish Mission system removed native peoples from their landscape, and began a new era of interactions with and alterations of Schoolhouse Creek.

In 1820, during the Spanish occupation of California, Sergeant Luis Peralta was rewarded for over 40 years of military service with a 48,000 acre land grant which comprised Oakland, Alameda, Piedmont, Emeryville, Albany, and part of San Leandro, as well as all of Berkeley (5). Don Luis refused to leave San Jose, entrusting operation of the grant, “Rancho San Antonio,” to his four sons. Schoolhouse Creek must have provided water and forage for the cattle of his son Jose Domingo Peralta, who ran the northern portion of the ranch, including the current regions of Berkeley, Albany, and most of Emeryville, for his father and later for himself. After the American conquest of California in 1948, the Peralta family became embroiled in a series of legal battles, both to determine the rightful heirs to the land, and to evict a host of squatters occupying it. The twenty five year litigation process found Domingo Peralta to be the rightful owner of his lands, but funding the lawsuits had forced him to sell his property to some of the very squatters he had hoped to expel.

One of the earliest records of Schoolhouse Creek by its given name is in a series of lawsuits regarding one of these sales, in which Domingo Peralta sold much of the land now comprising Berkeley to real estate speculators McAllister, Hammond, Irving and Hermann in 1853 (13). The region Peralta sold did not include his homestead reservation of ~300 acres, a portion delineated in the deed by an “arroyito” or little creek roughly 200 varas (1 vara ~ 33 inches) south of his grounds. According to Alameda County court documents prior to 1881, “school-house creek” seemed the most likely identity of this creek, but was in fact located about 500 varas from the grounds. This battle over property continued until 1889, when the Supreme Court decided on a division of the land based on the estimated measurement, rather than the fluctuating route of a seasonal creek.

By this time, American settlers had begun to develop the land along the length of Schoolhouse Creek for a variety of purposes. Napoleon Bonaparte Byrne, who in 1859 emigrated from Missouri accompanied by the region’s first African American residents (4), bought and unsuccessfully farmed property which included northern portions of Schoolhouse Creek, while former sailor Orrin Simmons had better luck with lands to the south (5). Between hills and Bay, Irish Catholic immigrant Michael Curtis grew hay over much of the fertile agricultural region through which Schoolhouse Creek ran (14). The most northerly tributary of Schoolhouse Creek is sometimes called Jaynes Creek, after

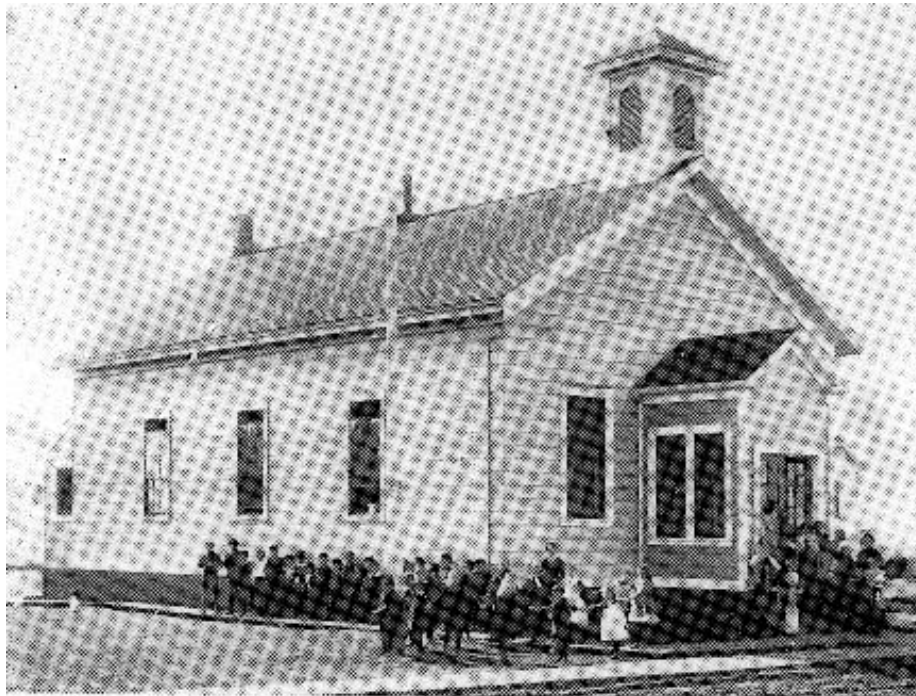


1649 Sixth Street was the creekside farmhouse of tailor Carl Paschold (15).

another large landholder, Elizabeth Jaynes (7). Closer to shore, a merchant seaman named Captain William Bowen opened an inn on San Pablo Road in 1854, located on the southern bank of Schoolhouse Creek, near the present intersection of San Pablo Avenue and Virginia Street (5). Bowen served food and drink at his establishment for travelers along the wagon and stage route. He soon added a general store, Berkeley's first retail business, to serve the farm families further inland. The small town of Ocean View, now known as West Berkeley, grew around the Bowen business, and around Schoolhouse and other creeks. A walk through West Berkeley reveals a few of the original streamside buildings (15).

Schools of Schoolhouse Creek

The fast-growing community of Ocean View and its surroundings needed an elementary school. In 1856, Sam Penwell began teaching in a simple one-room schoolhouse (15), built on land donated by Domingo Peralta (16) and located across the street from the Bowen complex, near the present intersection of San Pablo Avenue and Virginia Street (then called Folsom Street) (15). Schoolhouse Creek ran just to the north of the school, and the willow trees that thrived along its banks were a favorite lunch spot for students (8). Although the creek was named for this schoolhouse, the first in Berkeley, a popular vote by the students later changed the name of the school itself to Franklin Elementary School. The Franklin schoolhouse has expanded many times over the years to meet the educational needs of the city, although now the large facility lies dormant.



The Ocean View schoolhouse after expansion in 1865. Courtesy the Berkeley Historical Society.

In 1860, Samuel Hopkins Willey and Henry Durant led a ceremony at a rock outcrop in the Berkeley hills to celebrate their purchase of the Orrin Simmons farm, intended as a new campus for their College of California (5). Financial difficulties led College trustees to donate

the land to the state for its new land grant university, and U.C. Berkeley was born. Despite the cultural differences between the working class population of near-shore Ocean View and the educated elite congregating in the hills around the new campus, their prosperous intertwined economies led to incorporation of the two regions into the city of Berkeley in 1878. An urgent issue for new city officials was the creation of more schools to serve the ever increasing number of children in the area, and eventually the banks of Schoolhouse Creek supported other Berkeley schools. The Rose Street School, located on the street of the same name near its intersection with Milvia Street, opened its doors in the mid-1880s, with teachers Mrs. N. M. Norman and Miss J. H. Lumbard (17). The school soon moved from its rented rooms to a schoolhouse built on a neighboring plot of land, and closed around 1910. Later, Whittier Elementary School (now the Berkeley Arts Magnet School) and the original Garfield Middle School were built on sites near the creek's channel, although by this time the creek had probably disappeared from the city's landscape.

The mis-named Cedar Creek Montessori School, near the corner of Sacramento and Cedar Streets, is one of few places left in the city to host a portion of Schoolhouse Creek at the land's surface (6). A line of trees running through the middle of this block have grown lush and large, fed by the surface waters. A few other small stretches of Schoolhouse Creek that remain are precious reminders of the rich riparian ecosystem which once thrived along its banks.



Towering trees fed by Schoolhouse Creek waters.

From Sewers to Stencils

Advocates for preservation of the East Bay landscape and its many creeks flowed in with the rest of the settlers. In the 1860s, famed landscape designer Frederick Law Olmsted unsuccessfully lobbied the trustees of the College of California to protect the creeks as part of an overall plan for a college community in harmony with the hills (5). This attitude of respect and appreciation for the complexity and beauty of the natural world can be seen in the work of resident architects like Bernard Maybeck, and became a founding principal of the local variation of the Arts and Crafts architectural movement known as the First Bay Tradition. The Hillside Club, founded by Bernard and Annie Maybeck and many other notable figures in Berkeley society at the turn of the century, promoted similar patterns of development in accord with the local topography. In 1906, eminent Berkeley city engineer Charles Mulford Robinson advocated preserving land alongside the city's creeks as the basis of a novel system of urban parkways (18).

But these plans did not take into account the basic function of creeks in early Berkeley. Creeks were simply sewers (19). And as the population grew, so did the stench. By the 1870s, complaints about the odor from the creeks, caused by creekside outhouses and septic tanks, as well as predictions of outbreaks of typhus and cholera, became regular features of the Berkeley

Daily Gazette. It was difficult to convince the average Berkeley citizen that a smelly open sewer that flooded several times each winter was a resource to be cherished and preserved.

One of the earliest alterations to the Schoolhouse Creek watershed was an impoundment built on Codornices Creek. In 1870, developer Henry Berryman purchased the Byrne farm, and in 1877 proceeded to build a reservoir above Euclid Avenue as part of Berkeley's water works (5). This reservoir is located in the Schoolhouse Creek watershed, just above some of the small hillside springs that provide its source waters, and may have reduced creek flow by capturing runoff that otherwise would have entered the stream. Berryman Reservoir still exists today, despite a major fire at the facility in 1939 (20), and is now a part of the East Bay Municipal Utility District facilities.

It is also likely that Henry Berryman is responsible for some of the first projects to channel Schoolhouse Creek waters into underground pipes called culverts. In order to subdivide and sell his farmland for urban development, Berryman needed to make available a mass transit system for potential residents. The Southern Pacific Railroad had begun service to Downtown Berkeley in 1876, and by 1878 had extended its tracks along Shattuck Avenue to Vine Street and the Berryman Station at Shattuck Avenue and Rose Street (5). Schoolhouse Creek was probably culverted in the vicinity of Shattuck Avenue during this construction (21), to provide a flat surface for the tracks, and to make more land available for building along this emerging transit corridor.



Berkeley Historical Society #117-188-0555

The Southern Pacific Railroad near Shattuck Avenue and Vine Street, circa 1885. The line of brush in the shallow valley to the right is probably Schoolhouse Creek. Courtesy the Berkeley Historical Society.

Culverting of Schoolhouse Creek proceeded bit by bit, driven by the desire to open up more land for urban development. Major Berkeley developers like the Berkeley Land and Town Improvement Association (22), now run by former teacher Sam Penwell (23), likely installed redwood box or ceramic pipe culverts and filled the creek bed prior to subdivision in order to

create more level land for building, and to reduce flooding hazards (24). Besides destroying riparian habitat, culverts greatly simplified the path of the creek, reducing infiltration of water into the soil and encouraging storm runoff to rush downstream at ever-increasing speeds, resulting in more extreme flooding events. As a lower-impact solution which provided developers with more land to sell, some streets were laid out to follow creek channels. The southernmost tributary of Schoolhouse Creek is known as Lincoln Creek, because parts of it ran down the middle of Lincoln Street. A Sanborn Insurance map from 1897 indicates the creek in this area was traversed by a few small bridges (14). A smaller tributary is occasionally called Vine Creek because its channel ran near Vine Street (7). The dumping of municipal waste near the shore was touted as a way to expand the limits of the city (21).

The city had also begun to install rudimentary storm drain systems to channel winter runoff (24). Although early land development maps continue to show the course of Schoolhouse Creek below Grove Street (now Martin Luther King, Jr. Way) (14), few specific construction records remain, and it is difficult to know just how much remained at the land's surface, and how much had been rechanneled and buried. A Sanborn Insurance map from 1903 displays bridges over the creek on Grant and McGee Streets, and on some of the numbered streets below San Pablo Avenue (14).



Ceramic culvert pipe discovered in a backyard on Milvia Street, along the Schoolhouse Creek channel.

A 1904 map of the sewer system shows storm drains along Shattuck Avenue and Oxford Street, between Rose and Cedar Streets, which divert the upper reaches of Schoolhouse Creek into a storm drain system running along University Avenue (25). A Sanborn Insurance map from 1911 implies that most of the Creek above Sixth Street has been culverted and channeled into storm drains (14), though a 1913 map of the water distributing system traces the course of the stream from Sacramento Street to San Pablo Avenue, and then from San Pablo to Third Street, the path of the Southern Pacific Railroad's transcontinental line (26).

Although much of the creek had been culverted, poor, piecemeal engineering, the growing population, and the expanding city limits, combined to overwhelm the municipal storm drain system during winter months (24). Flooding worsened due to inadequate or clogged pipes, and some culverts collapsed, creating sinkholes and damaging property. Berkeley citizens passed a \$480,000 sewer bond issue in 1913 to build three large storm drain systems, running along Virginia Street and University and Ashby Avenues. The upper reaches of Schoolhouse Creek above Shattuck Avenue were channeled into the University Avenue storm drain system, while lower reaches joined the Virginia Street pipelines at Kains Avenue. Below this point, sewage entered the system, and the combined sewer system continued downslope and then through beachfront landfill before discharging into the Bay.

Berkeley soon expanded beyond the capacity of this system, necessitating a large-scale effort to improve the storm drains beginning in 1928 (24). Work continued through the early

1930s as part of a Public Works Administration project to provide jobs during the Depression (27). Innovative city of Berkeley engineers developed an efficient system for collecting storm water without impeding traffic, which required minimal installation time. Components of the new storm drain system included angled curbside inlets covered by steel plates, and steel grates set within streets. This design soon became a model for storm drain systems throughout the U.S. Creek and storm water joined sewage below San Pablo Avenue in this new system, although later work redirected sewage to a treatment plant in the 1950s (19). Storm and creek waters remain untreated today, and can be a significant source of pollution in the Bay.

During the same time period, the city of Berkeley created its first Creek Ordinance. Ordinance #1490-n.s., passed in January of 1929, prohibited modification of creeks without approval from city engineers, and established a fine of \$500 and/or 3 months in jail for the crimes of dumping, obstructing, or obliterating creeks (28). Legal protections were too little and too late for much of Schoolhouse Creek, which by this time had been culverted along almost its entire length. Largely forgotten, Schoolhouse Creek brooded in its underground pipelines, and habitually flooded the basements of homes built over the culverts during winter months. Small portions which remained at the surface in the flatlands became so polluted by city wastes in the late 1970s that complaints from neighbors forced the City's Public Works Department to post health warnings on nearby city-owned property (29).

After decades of neglect, a local movement to resurrect creeks began with groups like the East Bay Citizens for Creek Restoration (EBCCR), an outgrowth of the regional Sierra Club Urban Creeks Task Force (30). Starting in 1988, EBCCR and allies began the difficult process of reconstructing historical and current creek routes from old maps and the very few remaining records of the culverting process (31). They then began a public awareness campaign to call attention to these hidden creeks, by stenciling the names of the creeks over the curbside storm drains located along their routes. Each creek was assigned an animal mascot. Schoolhouse Creek was represented by a dragonfly, while its tributary Lincoln Creek was represented by a salamander.



Lincoln Creek stencil near Oxford and Virginia Streets.

In response to the awakening ecological consciousness of its citizens, Berkeley City Council transformed a 1983 moratorium on culverting into a new Creek Ordinance in 1989, which prevents property owners from building over creeks (32). The portions of Schoolhouse Creek which remain at the surface enjoyed these protections, and many property owners have begun their own backyard restoration projects to create riparian habitat and stabilize stream banks. A few property owners have even suggested breaking open culverts running beneath their yards to create naturalized creek channels on their grounds, a powerful restoration process known as daylighting (33). Creeks within culverts are not covered by the current ordinance, but buildings sited above culverts may be afflicted by a host of problems caused by underlying moist and unconsolidated sediments, and sometimes accidentally exacerbated by modifications to the

city storm drain system (33). A stronger and more detailed Creek Ordinance that responds to issues of culverts and daylighting is in the planning stages now.



A spring in the Berkeley hills which feeds Schoolhouse Creek also nourishes the garden pool pictured below, while to the left is an image of a stretch of Schoolhouse running through the Berkeley flatlands that has been restored in this front yard.



Daylighting Schoolhouse Creek

Eastshore State Park is a decades-old dream that will soon become a reality. Designed as “a recreational facility harmonious with its natural setting,” shorelands from Oakland to Emeryville will soon become a stretch of ecological, cultural, and recreational resources for the entire East Bay (34). Given the large population and many interest groups in the region, the planning process for this park was long and controversial. A preliminary general plan and environmental impact report were submitted this fall to the State Park and Recreation Commission, and is scheduled for review at hearings beginning December 6, 2002.

The Berkeley Meadow/North Basin Area of Eastshore State Park contains the outlet for the Virginia Street storm drain system which serves as the channel for most of Schoolhouse Creek. As part of a theme of multi-habitat environmental restoration for this region of the State Park, the general plan outlines the goal of working with the city of Berkeley to daylight the creek west of Frontage Road through a reconstructed freshwater marsh (34). The project would involve removal of the current underground pipe infrastructure, creation of a naturalistic open channel, and restoration of native marsh and riparian vegetation along the banks of the new creek channel. A waterfront promenade with a pedestrian bridge over the restored creek would provide visitors access to the restored habitat, and signs highlighting features of the creek and marsh would educate visitors about the ecological resource through which they stroll.

Though small, the stretch of daylighted Schoolhouse Creek will offer three substantial ecological benefits. Marshes are extremely efficient natural water purifiers. Wetland plants, animals, and microbes work together to degrade organic contaminants and to trap excess nutrients and heavy metals. The storm water collected by the Virginia Street pipelines is frequently contaminated by urban pollutants, and currently receives no treatment at all before it

enters the Bay. The new marsh will provide a natural treatment solution that will result in an improvement in local water quality. In addition, the Schoolhouse Creek marsh will host a healthy community of native wetland plants, many of which are threatened species. The marsh will attract many animals to this local refuge, including shore and migratory birds. Given the extensive habitat loss that has occurred throughout the state, restored wetlands have become increasingly important to the survival of these species. Finally, the restoration of Schoolhouse Creek will provide an important educational and aesthetic resource for humans visiting the park, and may give them a few ideas about daylighting and restoring creeks elsewhere.



Artist's conception of the Berkeley Meadow/North Basin Area of Eastshore State Park, including the daylighting of Schoolhouse Creek in the center (34).

Conclusion

Though long forgotten, Schoolhouse Creek flows throughout the history of Berkeley's settlement and transformation into an important East Bay urban center. And while Berkeley citizens frequently pride themselves on their environmental ideals, the story of Schoolhouse Creek reminds us that these attitudes have only gained power recently. For the Huichin people, the creek was a complex system embedded within a larger natural landscape, and provided a multitude of essential resources. Early Spanish and American settlers saw the streams as simple water sources for them and their livestock. Soon, the creek became a place for school children to eat their lunches, while continued settlement along its banks resulted in its use as a sewer and its evaluation as a flooding nuisance. The burgeoning city population and its wealthy developing interests soon demanded engineering projects which almost completely destroyed the natural creek. The vastly simplified drainage system that resulted was not terribly effective at ridding the city of floods.

While a few of Berkeley's earliest free thinkers had advocated creek protection as part of their vision of the developing city, a utilitarian viewpoint held sway in most of the city during this time. However, after many decades, a growing group of residents began to gain a broader understanding of the landscape and the impact of urbanization on local ecology. They sought to remember and rebuild some of what had been lost, first on their own properties, and then as part of a nationwide movement to daylight creeks in parks, schools, and other public developments.

The daylighting of Schoolhouse Creek as part of Eastshore State Park is a symbol of a new respect for creeks and the natural environment that earlier residents had sought to simplify and control during much of the development of the city. The daylighting project will provide benefits of water quality improvement and restoration of native habitat for threatened species, and equally important, will serve as a model for more creek restoration projects along Schoolhouse Creek and other degraded riparian zones worldwide.



Sunset from the top of the Virginia Street storm drain outlet.

References

- (1) Brand, William. Battle for the brooks. The Oakland Tribune. January 12, 1989.
- (2) East Bay Municipal Utility District. Regional Hydrogeologic Investigation: Outer Basins. Prepared for EBMUD by CH2M Hill, February 2001.
- (3) City of Berkeley Planning and Development Department. Map of Berkeley Creeks. 1990.
- (4) Schwartz, Susan. Wandering Berkeley Paths: Live Oak to Tamalpais. The Berkeley Pathwanderers Association, 1998.
Available: http://64.224.94.100/bpwa/walk_liveoak.htm November 9, 2002.
- (5) Wollenberg, Charles. Berkeley: A City in History. Berkeley: Berkeley Public Library, 2002.
- (6) Poskanzer, Jef. Berkeley Creeks.
Available: <http://www.acme.com/jef/creeks/> October 16, 2002.
- (7) City of Berkeley Parks Recreation and Waterfront. Guide to City Parks and Recreation Facilities. 2000.
- (8) Bolsted Cianciarulo, Wilhelmine F. Berkeley as I knew it in the early days. Interview transcript dated ~1920.
- (9) Oakland Museum of California. Guide to San Francisco Bay Area Creeks.
Available: <http://www.museumca.org/creeks/> October 16, 2002.
- (10) U.S. Coast Service. Map of Berkeley-Albany Shoreline. 1856.
Available: <http://www.fivecreeks.org/> November 20, 2002.
- (11) Schwartz, Richard. Personal communication, 2002.
- (12) Margolin, Malcolm. The Ohlone Way: Indian Life in the San Francisco-Monterey Bay Area. Berkeley: Heyday Books, 1978.
- (13) Ferrier, William Warren. Berkeley, California: The Story of the Evolution of a Hamlet into a City of Culture and Commerce. Oakland, West Coast Printing Company, 1933.
- (14) Sanborn Insurance Maps of Berkeley. 1893, 1897, 1903, 1911.
- (15) Jorgensen-Esmaili, Karen. Victorian Berkeley: The community of Ocean View. Berkeley: Berkeley Historical Society, 1981.

- (16) Dawkins, Felicia. Water and the settlement of Berkeley. *In Berkeley Water: Issues and Resources*, Doris Sloan and Scott Stine editors. Senior seminar of the Environmental Sciences Group Major, University of California at Berkeley, June 1983. pgs 23-31.
- (17) City of Berkeley Board of Education. Annual report of the public schools of the town of Berkeley. 1879 to 1934.
- (18) Irons, Mark and Judith Goldsmith. The state of East Bay creeks. Ecology Center Newsletter. August 1984. pgs 2-3.
- (19) Shipounoff, Dimitri. Trout fishing in the Berkeley hills. The Monthly. November 1979.
- (20) Pettitt, George. Berkeley: The Town and Gown of It. Berkeley: Howell-North Books, 1973.
- (21) Schwartz, Susan. Personal communication, 2002.
- (22) Berkeley Land & Town Improvement Association. Map of Berkeley showing the property of the B.L.T.I. Association. Produced by Toedter and Hoffmann, 1874.
- (23) Stein, Ken. An 1878 residential and classified directory of West Berkeley otherwise known as Ocean View. 1978.
- (24) Lee, Charles H. Report on Storm Sewer Survey for the City of Berkeley, California. May 7, 1928.
- (25) Ambrose, Thos. E. An Analysis of Berkeley Sewage. Thesis for the College of Civil Engineering, University of California at Berkeley, December 1905.
- (26) Bolin, Harry W. A Report upon the Water Distributing System of Berkeley, California. Thesis for the College of Civil Engineering, University of California at Berkeley, May 1913.
- (27) Thomas, C. H. Unique street intersection drainage system employed by City of Berkeley. Western City, February, 1931.
- (28) Hsu, Patricia. Legal and political aspects of Berkeley creeks. *In Berkeley Water: Issues and Resources*, Doris Sloan and Scott Stine editors. Senior seminar of the Environmental Sciences Group Major, University of California at Berkeley, June 1983. pgs 245-250.
- (29) Day, James. Council orders posting of polluted city creeks. The Independent and Gazette, July 13, 1979. pg 3.
- (30) Schwartz, Susan. A meandering history of Bay Area creek restoration. The Yodeler, July 2000.

(31) Brand, William. Berkeley's hidden creeks resurface in living map. The Oakland Tribune. February 9, 1989.

(32) Daily Californian Staff. Berkeley passes new creek protection law. Daily Californian. December 6, 1989.

(33) Pearson, Jennifer. Personal communication, 2002.

(34) California Department of Parks and Recreation, East Bay Regional Park District, and California State Coastal Conservancy. Eastshore Park Project Preliminary General Plan. 2002.