

# PRELIMINARY DAYLIGHTING CRITERIA

		1. TECHNICAL									2. ECOLOGICAL				3. ECONOMIC			4. DECISION MAKERS			
PROJECT		LAND USE				HYDROLOGY AND HYDRAULICS				TOPOGRAPHY AND SLOPE	WATER QUALITY AND HABITAT IMPROVEMENT STUDY	SOIL ANALYSIS	PRESENCE OF PERENNIAL FLOW	CONNECTION WITH EXISTING STREAM NETWORK	Cost Analysis	Depth of overburden	Increase in property value	PUBLIC INTERESTS AND COMMUNITY INVOLVEMENT	Constraints/ Challenges	FUNDING SOURCES	
Sr. No.	Location	Projects Goals	Type of site	Buffer width and width of drainage easement	Distance of unobstructed pipe/ Utilities	Proximity to a greenway	Watershed	Flow rates	Channel width and geometry	Invert of outfall					(Initial & Long Term Cost)						
1	Jolly Giant Creek Arcata, CA (91, '95, '97)	Create outdoor classroom on high school property; restore and older, dewatered stream channel; create a new public park	Institutional: School	Available (School property which was used as a dump) and (Defunct Lumber Mill)	None specified	None specified	Watershed Area: 1.7 sq. mi. Length daylighted: 160 linear feet rural and urban watershed	5 cfs avg. annual flow 128 cfs annual peak 250 cfs 100-yr peak	channel geometry flood frequency tables	None specified	Earthen trapezoidal channel (30' wide by 15' deep by 80 feet long); some areas more steeper	Creeks ecology, use researched vegetation	None specified	Perennial flow	Yes	Total Costs: \$120,000 plus lots of donated	15 feet	None reported	1990: Daylighting project proposed by biology teacher; 1995, 1997: Public interests	geometry in a floodplain now constricted by surrounding development; removal of concrete slabs and other debris; Effort to change city's park design	Urban Stream Restoration The city of Arcata; The National Tree Trust
2	Strawberry Creek Berkeley, CA -1984	Transform abandoned railway into public park; Daylight underground culvert; Minimize erosion, scour and manage sediment transport, stream and discharge and vegetation	Transportation: Railway	Existing right-of-way for train tracks, city owned land	None specified	None specified	Watershed Area: 2.0 square mile Length daylighted: 200 linear feet urban and university campus	2-6 cfs average flow 800-1000 cfs 100-yr peak flow	analyzed channel width, depth, and meander upstream;			Fish observed healthy vegetation	Soil analysis	Perennial flow	Yes	-\$50,000	None specified	None reported	1984: Proposed by landscape architect Douglas Wolfe; Public support	City officials fear over maintenance cost, public safety etc	City of Berkeley
3	Codomices Creek Berkeley, CA -1994	Creek restoration instead parking lot construction; Restore creek for salmon and human use	Vacant land (privately owned)	Vacant lot proposed to become a parking lot, along the historic creek path	Gas pipeline crossing the creek	Yes (existing school park)	Watershed Area: 1.5 square mile Length daylighted: 400 linear feet urban watershed	2-6 cfs average flow 800-1000 cfs 100-yr peak flow	Original meandering path of creek. Designed for 100-year event	None specified	None specified	Committed to improve fish passage, flood hazard mitigation	None specified	Perennial flow	Yes	\$33,000 plus lots of donated material and labor	None specified	None reported	City of Berkeley and Albany, the developer, the University of California, three nonprofits (the Urban Creeks Council, the Waterways Restoration Institute, and EcoCity Builders) initiated the project	Erosion problem occurred due to lack of funding to stabilize the creek banks; need to lower a gas pipeline crossing the creek; The daylighting site attracted homeless individuals due to dense willow growth and relatively low public use	CA Department of Water Urban Stream Restoration; City of Berkeley, CA; City of Albany
4	Blackberry Creek Berkeley, CA -1995	Remove culvert that flooded schoolyard; reduce flood damage	Institutional: Schoolyard	Downstream: dense single family home neighborhood	None specified	Yes	Watershed Area: 0.3 square mile Length daylighted: 250 linear feet urban watershed	15 cfs 1.5-yr peak flow 220 cfs 100-yr peak	Examined original creek meanders	2 feet distance between culvert and stream	Steep slope 10-13 feet drops below the surrounding level of land	None specified	None specified	Perennial flow	Yes	\$144,000	None specified	None reported	Proposed by PTA member; Wolfe Mason Landscape Architecture firm provided planning, facilitation and design services	Loss of playground on the site; Adjustment of the path of the restored creek in order to preserve a sacred tree; Neighbours expect fast results	CA Department of Water Urban Stream Restoration Thousand Oaks Elementary School District; City of Berkeley, CA
5	Omak Creek Omak, WA -1998	Reduce the flood hazard and restore creek; reintroduced low-flow and bankfull channels, and reestablished a floodplain	Industrial and Commercial	Available (creek was running under Quality veneer and lumber mill which flooded and damaged the metal culvert)	None specified	None specified	Watershed Area: 140 sq.mi Length daylighted: 1,500 linear feet Range land and commercial forestry	1 cfs seasonal low flow 30 cfs bankfull flow 900 cfs 100-yr peak	Undercapacity	None specified	None specified	The culvert had previously identified as a barrier preventing endangered Columbia River steelhead from accessing 30 miles of prime stream habitat in the square mile watershed upstream; Expedited reference reaches to restoration channel and floodplain geometries	None specified	Perennial flow	Yes	\$788,000 (\$300K for arch culvert)	None specified	None reported	Initiated by Mill's owner and Colville confederated tribes	The area's glacial silt and "sugar sand" conditions required special attention to erosion control, and created a hazard during installation of an arch deck	Mill; State salmon restoration program; Colville tribes
6	Valley Creek Port Angeles, WA -1997	Fill the log pond; recreate the estuary; \$150,000 per year	Industrial: The Port and Lumber mill	None specified	None specified	None specified	Watershed Area: 4.2 sq.mi Length daylighted: 490 linear feet Forested and Urban	15 cfs avg base flow 120 cfs 2-yr peak 545 cfs 100-yr peak	None reported	None specified	None specified	Fill the log pond; recreate estuary; Monitoring done for the increase of species	None specified	Ephemeral flow	Yes	\$1 million (Excavation and filling, estuary restoration and aesthetics)	None specified	None reported	Initiated by the Mill, the Port, the Ports engineering consultancy parametrix; City of Port Angeles and local volunteer groups such as the Soroptimist Club (Women's Service organization) and Rotary Club to design restoration plants; Public were supportive	Took long time to negotiate over mitigation ratios; Waves and storm surges was a significant concern in the design and construction of its edges and banks	Local engineering companies NTI and Polaris and the Lindberg local engineering firm donated professional services; Port of Port Angeles
7	Jenkins Creek Phase I Maple Valley, WA -1994	Remove pipes that prevented fish passage; improve stream habitats for spawning salmonids or improve upstream salmonid passage and spawning and rearing habitat; reduce flooding and control flow for additional development	Golf course fairway and Parking lot	Downstream: purchase of golf course Middle segment: single family homes	None specified	Yes	Watershed Area: 1.6 sq.mi Length daylighted: 800 linear feet Rural and Mid-density suburban	3.3 cfs mean annual 39 cfs avg peak flow 55 cfs 100-yr peak 24 cfs 100-yr peak "low summer flows"	Study hydraulic elements	None specified	None specified	Fish habitat survey; culverts, weirs, and along and adjacent to the of the creek; Route a geotechnical analysis for bridge	Route feasibility study; a geotechnical analysis for a new bridge	Perennial flow	Yes	\$645,000, incl. easement purchase	None specified	None reported	The King County Surface Water Management Division initiated the project; Public were supportive	The public reacted negatively to the parks department's original proposal to move the parking to a ball field; insufficient gradient to establish the velocities needed to flush sediments from gravel	King County Surface Water Management Division
8	Jenkins Creek Phase II Maple Valley, WA -1996	Same as above	Golf course fairway and Parking lot	Parking lot of County parks department reduced to make room for daylighting the creek	None specified	Yes	Watershed Area: 0.6 sq.mi Length daylighted: 700 linear feet Rural and Low-density suburban	1.7 cfs mean annual 6.8 cfs avg peak flow	Hydraulic modelling of geometries; Field surveys	None specified	None specified	Same as above	None specified	Perennial flow	Yes	\$400,000	None specified	None reported	Same as above	Same as above	King County Surface Water Management Division
9	Kilgoblin Wetland Barrington, IL -1995	Improve water quality downstream	Railroad track	Available as the site located in semi-industrial	Underground utilities were present (nothing specified)	None specified	Watershed Area: 1.2 sq.mi Length daylighted: 300 linear feet Rural and Urban	N/A	None specified	None specified	None specified	Improve water quality downstream; Macroinvertebrate measurements (nothing specific mentioned)	None specified	Perennial flow	None specified	\$55,000	None specified	None reported	Citizens were supportive	Size of the wetland has to reduce because of presence of utilities	Illinois Environmental Protection Agency
10	Embarrass Creek Urbana, IL (early 1970s)	Creating a park	Agricultural region	Available	None specified	Yes	Watershed Area: <1 sq. mi Length daylighted: ~4,000 linear feet Suburban	N/A	None specified	None specified	None specified	Re-establish some of the headwaters of Embarrass	None specified	Ephemeral in dry summers	Yes	N/A	Removing drainage tiled fields	None reported	None specified	No major technical challenges	Urbana Park District
11	Arcadia Creek Kalamazoo, MI -1995	Flood relief: Creation of downtown amenity	Downtown of Kalamazoo, MI	Not available to create meandering naturalized channel and vegetated riparian corridor	Unmapped water service lines	None specified	Watershed Area: 7.4 sq. mi Length daylighted: 1,550 linear feet Urban	<5 cfs seasonal low 1,015 cfs 100-yr peak	None specified	None specified	None specified	N/A (Concrete open channel)	Sandy soil; Surface and subsurface environmental assessment for contaminated soil	Perennial flow	None specified	\$7.5 million	None specified	Property tax-revenues increased after daylighting	None specified	Contaminated soil; City decided to maintain ownership of the land to protect developers from potential environmental liabilities; Concern over historical preservation and integration of new buildings	Downtown Development Private organizations
12	Phalen Creek St. Paul, MN -1987	Create stream amenity for park (partial daylighting)	High-density Industrial	Lower portion: St. Paul downtown; Remaining 3/4 mile under streets, highways and a railway	Water and sewer pipes running underneath	Yes (Swede Hollow Park)	Watershed Area: 2.4 sq. mi Length daylighted: 2,100 linear feet	2 cfs controlled flow (base flow unknown)	None specified	None specified	None specified	No prior study; Macroinvertebrates and amphibians were seen after daylighting	None specified	Perennial flow	Yes (Mississippi River)	N/A	None specified	None reported	Initiated by citizens; St.Paul Public Works Department	Partial flow daylighting as topographic, land use, infrastructure are placing constraints	N/A
13	Shoal Creek Trib DeKalb County, GA	Stream restoration; Removal of culvert	Medium-density	None specified	None specified	None specified	Watershed Area: 0.15 sq. mi Length daylighted: 200 linear feet	1.5 cfs seasonal low 225 cfs 100-yr peak	No specific stream channel study; project based on judgement and visual survey	None specified	None specified	None specified	None specified	Perennial flow	None specified	\$14,500 (Daylighting cheaper option than replacing the culvert)	None specified	None reported	GINNA TIERNAN, a parks	Kudzu, an invasive exotic vine spread on site	U.S. Environmental Protection Agency; DeKalb County; Environmental Protection Division of the Georgia; Department of Natural Resources
14	West Ox Pasture Rowley, MA -1999	Stream restoration; Riparian habitat creation	Low-density Private property	Available	Septic system	None specified	Watershed Area: 0.35 sq.mi Length daylighted: 85 linear feet Suburban	small perennial stream on residential property	None specified	None specified	None specified	Habitat creation benefits	None specified	Small perennial flow	Yes (Tributary of the Mill River)	\$1,200	None specified	None reported	Tim purinton, Rowley Conservation administrator; Public supported	Initially homeowners were reluctant for daylighting; Required lot of coordination and effort, especially for permitting; 50-foot setback requirement for a new septic system on site so new stream curves away from its expected course a bit.	U.S. Fish and Wildlife Service partners for Wildlife Program Rowley Conservation Parker River Clean Water Association
15	Darbee Brook Roscoe, NY -1996	Habitat quantity (improve fish passage); Replace deteriorating culverts; improve school playing field	Institutional: School Agriculture and residential	Not sufficient for sinuosity of the creek	None specified	None specified	Watershed Area: 1.5 sq.mi Length daylighted: 330 linear feet	0.5 cfs seasonal low 30-40 cfs annual peak	Few measurements of channel widths	None specified	None specified	Habitat improvement as a goal; Electrofishing samples documented fish entry into the system	None specified	Perennial flow	Yes (Tributary to the Beavertkill, New York)	\$9,000	None specified	None reported	Roscoe central school was supportive	Land acquired from school for sufficient riparian corridor for stream	Trout Unlimited; Outdoor Life Magazine