Restoration opportunities

Clark Creek

Project 1. Clark Creek daylighting in south Bush Park

Clark Creek is diverted into a large culvert at the north end of South Salem High School and continues underground along Davidson Street and through the south end of Bush Park for a total distance of about 1500 feet (Figure 7). Clark Creek emerges from the culvert about 200 feet short of Pringle Creek and flows down a natural channel. At the outlet, a second large culvert exists, although it rarely carries much flow.

Just upstream of the underground section, Clark Creek is confined to a concrete trough as it flows along the east boundary of South Salem High School. Because the flow is spread thinly over concrete that is fully exposed to sunlight, the stream warms into the mid-70's on hot, summer days in this segment. However, it cools off downstream while flowing underground and emerges from the culvert about eight degrees cooler and at a temperature much cooler than lower Pringle Creek (Figure 2). Electrofishing of the most downstream 200 feet of Clark Creek on a warm, spring day revealed an unusually high concentration of cutthroat adults congregating in this reach. These fish probably had migrated out of the Willamette River to spawn in Pringle Creek and were attracted by the cool water.

Opportunities exist to daylight the downstream 700 feet of buried stream and create a channel that is conducive to cutthroat trout and steelhead spawning and rearing. The created channel would fit into a corridor along the southern edge of Bush Park between the existing parking lot and the ball field with minimal disruption of existing infrastructure (Figure 8).

Because the stream is currently buried about eight feet deep, the channel would also need to be excavated into the current surface about the same depth. Assuming a 10-foot wide summer stream channel with 3-foot-wide low terraces each side of the channel and 3H:1V side slopes, the overall stream width would be about 52 feet (Figure 8).

Channel features that could be worked into the design that would favor trout and steelhead spawning and rearing include:

- Low terraces along the summer channel that would support aquatic vegetation and zones of slower moving water when flows were higher.

- Log jams to create and maintain deep pools and cover.

- Imported river substrate (sand, gravel, cobbles) to promote aquatic insect productivity and provide a spawning substrate.

- Shading vegetation throughout its length.

The restored channel, with these features, would be expected to provide high overall quality for cutthroat trout, steelhead, and other native fishes (Table 1). Access to the site by migratory fish, channel structure, water temperature are predicted to be high while stormwater influences on the food supply of fish detracts somewhat from overall habitat quality. The addition of river rock to the reconstructed channel will help boost aquatic insect productivity.

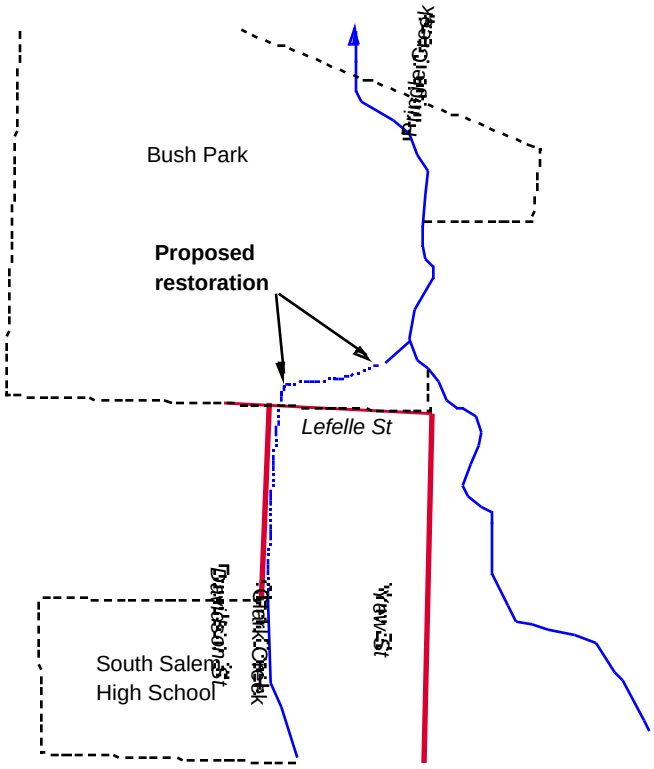
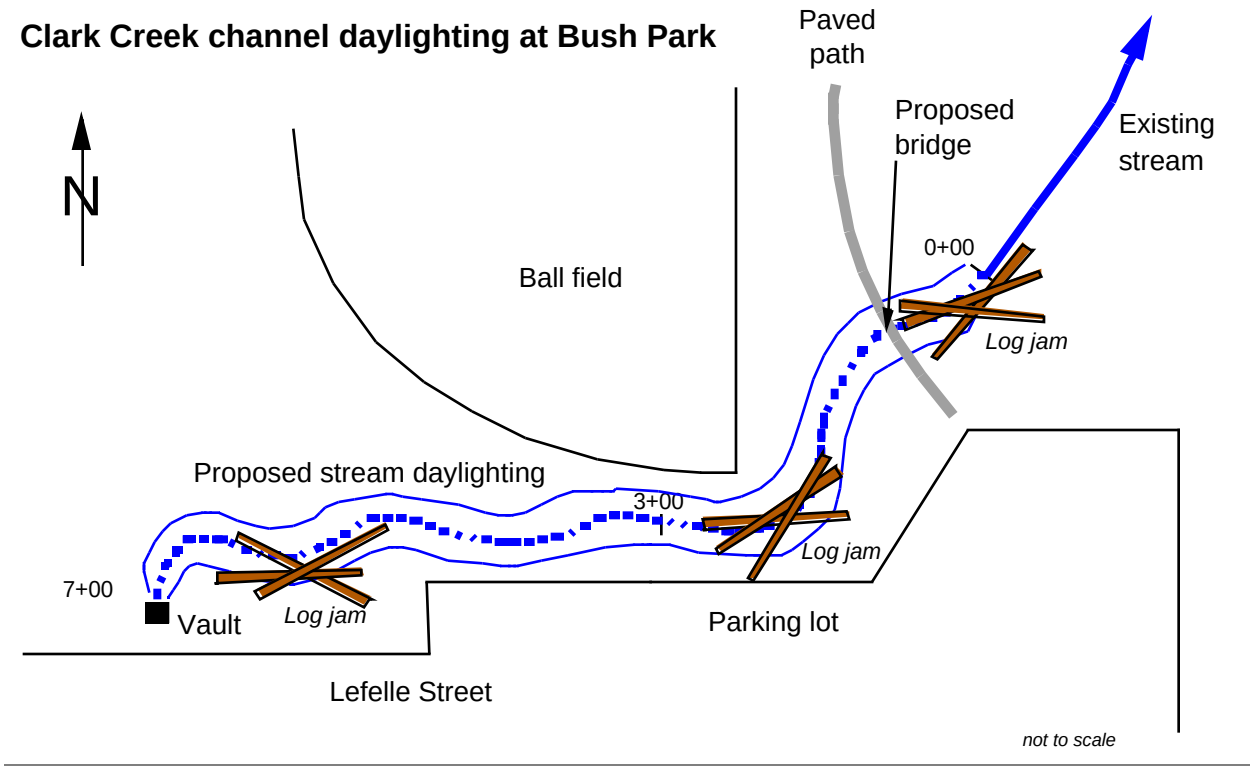


Figure 7. Location of Clark Creek daylighting project in Bush Park.



Typical cross section

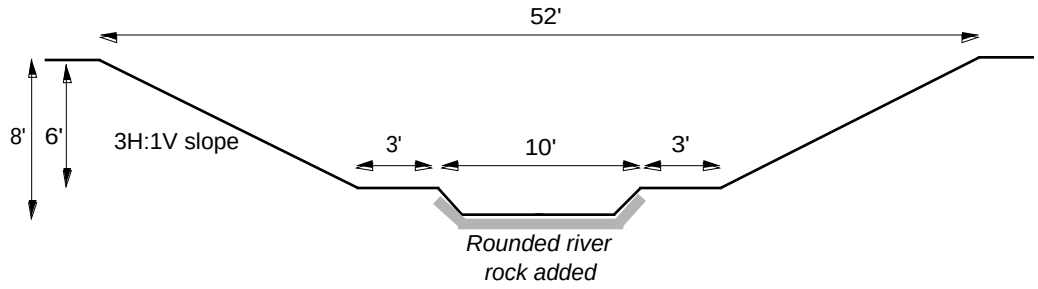


Figure 8. Details of Clark Creek daylighting project in Bush Park.

Table 1. Predicted conditions if Project 1 were completed.

Task	Predicted condition
Access to site by migratory fish	High
Summer water temperature favorability	High
Channel complexity	High
Aquatic insect productivity	Fair
Overall condition	High

The cost of this project is estimated to be high (Table 2) because of the planning costs, extensive excavation, and imported materials.

Table 2. Estimated costs of daylighting 700 feet Clark Creek in Bush Park (Project 1).

Task	Total cost
Planning, design, and permits	$4500
Removal of pipe, soil, and other excavated material	$23,000
Import river rock for channel	$3500
Import and install log jams (3) for fish habitat	$4000
Establish grass and shading vegetation	$2000
Construct foot bridge for paved path	$7000
Total	$44,000