

### 3.41 Watershed-Wide Projects

The characterization process that resulted in candidate sites for catchment retrofits and stream restoration projects (described in Appendix G) was used to develop projects in the highest priority areas in each subwatershed. A number of problem areas were noted during the Stream Physical Assessment that may not have been included in a stream restoration project. Projects to remediate these areas are included in this section.

*Watershed-Wide Action 3.38.1: Remove dumpsites from stream corridors.*

This project would consist of cleaning up dumpsites identified by the Stream Physical Assessment and disposing of the items. Two of these sites were addressed with the stream restoration projects. One site in Middle Difficult Run (DFDF055.M001) consisted of a discarded residential oil tank and was investigated by a field crew as Candidate Site S107. The oil tank was not found and presumably had been removed. The site in Little Difficult Run (DFLD013.M001) has been included with stream restoration project DF92114. Two large dumpsites containing appliances, concrete pipes, tires, and trucks were included with candidate sites S82 and S132, however no project was proposed at these sites, so the cleanup effort remains to be completed (DFPR005.M001 and DFDF042.M001). There are also three small dumpsites containing a section of CMP pipe, lawn waste and tree trimmings to be cleaned up (DFDF071.M001, DFSD008.M001, and DFDF023.M001). It is anticipated that all 5 sites will be addressed as part of an ongoing Countywide initiative.

**Table 3.76: Dumpsite Projects**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Small Dumpsite	3	EA	\$3,000.00	\$9,000
Large Dumpsite	2	EA	\$8,000.00	\$16,000
			<b>Base Cost</b>	<b>\$25,000</b>
			Mobilization (5%)	\$1,250
			<b>Subtotal 1</b>	<b>\$26,250</b>
			Contingency (25%)	\$6,563
			<b>Subtotal 2</b>	<b>\$32,813</b>
			<b>Estimated Project Cost</b>	<b>\$33,000</b>

*Watershed-Wide Action 3.38.2: Remove obstructions from stream corridors.*

This project consists of removing items obstructing streamflow identified by the Stream Physical Assessment and disposing of them. There were 191 such sites in Difficult Run. Of these, 12 will be addressed with one of the proposed stream restoration projects.

Of the remaining 179 sites, 113 had an impact score of 5 or higher (moderate to severe), which indicated that the blockage was causing at least moderate erosion and should be removed. Ninety-nine of these sites consist of some combination of trees, debris, or sediment. Thirteen sites will involve removal of concrete or other man-made structures, and will require more effort than tree and debris clearing. One site is a beaver dam.

**Table 3.77: Obstruction Removal Projects**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Remove trees and debris	99	EA	\$3,000.00	\$297,000
Remove concrete debris	8	EA	\$8,000.00	\$64,000
Remove man-made obstructions	5	EA	\$8,000.00	\$40,000
Remove beaver dams	1	EA	\$3,000.00	\$3,000
<b>Base Construction Cost</b>				<b>\$404,000</b>
Mobilization (5%)				\$20,200
<b>Subtotal 1</b>				<b>\$424,200</b>
Contingency (25%)				\$106,050
<b>Subtotal 2</b>				<b>\$530,250</b>
<b>Estimated Project Cost</b>				<b>\$530,000</b>

*Watershed-Wide Action 3.38.3: Remove fish passage obstructions*

The Stream Physical Assessment further classified obstructions by whether or not they blocked fish passage. Many of these obstructions will be cleared either through stream restoration projects or removal of higher severity obstructions. Of the remaining 66 low severity obstructions, 43 were identified as fish passage obstructions. This project is intended to remediate these sites.

**Table 3.78: Fish Passage Restoration Projects**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Remove trees and debris	21	EA	\$3,000.00	\$63,000
Remove concrete debris	2	EA	\$8,000.00	\$16,000
Remove man-made obstructions	6	EA	\$8,000.00	\$48,000
Remove beaver dams	14	EA	\$3,000.00	\$42,000
<b>Base Construction Cost</b>				<b>\$169,000</b>
Mobilization (5%)				\$8,450
<b>Subtotal 1</b>				<b>\$177,450</b>
Contingency (25%)				\$44,363
<b>Subtotal 2</b>				<b>\$221,813</b>
<b>Estimated Project Cost</b>				<b>\$222,000</b>

*Watershed-Wide Action 3.38.4: Repair utility crossings.*

This project consists of repairing or replacing exposed or failing utility crossings. Thirty-nine sites were identified by the Stream Physical Assessment. Of these, 10 are within the limits of a proposed stream restoration project and will be addressed as part of the project.

Five of the remaining 29 utility crossings were rated moderate or severe, which means the utility is over half exposed, identifying significant erosion problems, or appears to be about to fail. There were four sanitary sewer crossings and one cable crossing that fell into this category.

**Table 3.79: Utility Crossings**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Water / Sewer	4	EA	\$10,000.00	\$40,000
Cable / Telephone / Electric	1	EA	\$5,000.00	\$5,000
			<b>Base Construction Cost</b>	<b>\$45,000</b>
			Mobilization (5%)	\$2,250
			<b>Subtotal 1</b>	<b>\$47,250</b>
			Contingency (25%)	\$11,813
			<b>Subtotal 2</b>	<b>\$59,063</b>
			<b>Estimated Project Cost</b>	<b>\$59,000</b>

*Watershed-Wide Action 3.38.5: Restore riparian buffers*

This project consists of replanting riparian buffers in areas where they were determined to be deficient. Four hundred seventy-one sites comprising approximately 439,000 linear feet were identified by the Stream Physical Assessment. Of these, 97 are within the limits of the proposed stream restoration projects and will be addressed as part of the projects.

Restoration is recommended for buffer areas that are rated with a moderate or severe deficiency, and for which the restoration potential is moderate to high. Two hundred sixty-five of the 374 sites not within stream restoration projects met the severity rating, and of these, 29 had a high restoration potential, for a total of 17,650 LF.

**Table 3.80: Buffer Restoration**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Restore buffer	17,650	LF	\$25.00	\$441,250
			<b>Base Construction Cost</b>	<b>\$441,250</b>
			Mobilization (5%)	\$22,063
			<b>Subtotal 1</b>	<b>\$463,313</b>
			Contingency (25%)	\$115,828
			<b>Subtotal 2</b>	<b>\$579,141</b>
			<b>Estimated Project Cost</b>	<b>\$579,000</b>

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