8. Summary of Costs

As part of the Level III analysis prelminary cost estimates were established for the 19 potential actions, if applicable. Table 4 provides a summary of costs for those potential actions where a preliminary cost estimate was determined.

Table 4: Summary of Costs

Issue/Potential Action	Preliminary Cost Estimate
Issue A: Lake Flooding	
Flood-proofing Residential Structures (3 Homes, $300,000 total needed at $100,000 for each home)	~$300,000
Purchase Flood-Prone Residential Properties ($1,700,000 needed at ~$570,000 each for 3 homes)	$1,700,000
Lake Outlet Modification to Manage Lake Level (Feasibilty Study Only, Excludes Final Design, Permitting and Construction Costs)	$1,000,000
Issue B: Lake Water Quality and Habitat	
Lake Water Quality Monitoring	$100,000 annually
Lake Water Quality/Habitat Enhancement Plan	$250,000-$500,000
LID BMP Retrofits ($22 million needed, one rain garden on each of the 22,000 parcels in the water to address pollutant loading)	~$100,000 annually
Issue C: Downstream Flooding	
Flood-proofing Residential Structures (40 Homes, $4,000,000 needed at $100,000 for each home)	~$4,000,000
Purchase 20 Flood-Prone Residential Property ($10,000,000 needed at ~$500,000 each for 20 homes)	$10,000,000
Lyon Creek Towne Centre Bypass Pipe Line ($3,400,000 does not include any channel conveyance capacity upgrades or extensive permitting costs)	$3,400,000
Lyon Creek Towne Centre Culvert System Upgrade ($4,600,000 does not include any channel conveyance capacity upgrades or extensive permiting costs)	$4,600,000
McAleer Creek Culvert M585 Capacity Upgrade ($205,000 does not include any channel conveyance capacity upgrades or extensive permiting costs)	$205,000

Issue D: Downstream Water Quality and Habitat	
Downstream Water Quality Monitoring	$100,000 annually
Downstream Water Quality/Habitat Enhancemnet Plan	$250,000-$500,000
LID BMP Retrofits	~$100,000 annually

Note: The project costs shown are prelminary planning level cost estimates and will require in depth analysis to develop a more accurate cost estimate.

9. Priorities for Implementation

Looking at the Watershed Area as a whole, the most significant problem is the downstream flooding in the lower reaches of McAleer Creek, followed next by flooding issues around Lake Ballinger and then by water quality and habitat issues in the lake and stream channel.

Of the potential actions reviewed and evaluated in the three level engineering analyses, a suggested sequence of events to address the problems in the Watershed Area are:

1. Require all new development and redevelopment to use LID techniques.
2. Set up an annual program to retrofit existing drainage systems with LID techniques.
3. Using the high flow by-pass approach to remove high flows from Lower McAleer Creek
4. Flood proof the three homes along the south end of Lake Ballinger.
5. Enhance the culvert capacity of culvert L-58 on Lyon Creek to pass flow from the 100-year storm event.
6. Conduct a study to evaluate design feasibility and cost of modifying the weir and seasonally managing the lake levels of Lake Ballinger.
7. Establish an existing annual water quality and habitat monitoring program for McAleer Creek.
8. Expand the existing annual water quality and habitat monitoring program for Lake Ballinger.
9. Identify required funding; establish a permanent funding mechanism for potential actions.

10. Key Findings of Technical Memorandum No. 2

10.1. History of Flooding

There is a long term history of flooding and water quality issues within the Watershed Area; two major floods occurred in the last ten years; the 2007 flood caused $50K-$200K in damages within the upper watershed including 5 parcels, and 3 homes at Lake Ballinger and Hall Creek; and about $4 million in damages in the lower reaches of McAleer Creek including 40 parcels and 20 homes.