Solution 1

```
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using System;
public class Program {
  // O(n) time | O(n) space
  public static int WaterArea(int[] heights) {
    int[] maxes = new int[heights.Length];
    int leftMax = 0;
    for (int i = 0; i < heights.Length; i++) {
      int height = heights[i];
      maxes[i] = leftMax;
      leftMax = Math.Max(leftMax, height);
    }
    int rightMax = 0;
    for (int i = heights.Length - 1; i >= 0; i--) {
      int height = heights[i];
      int minHeight = Math.Min(rightMax, maxes[i]);
      if (height < minHeight) {
        maxes[i] = minHeight - height;
      } else {
        maxes[i] = 0;
      }
      rightMax = Math.Max(rightMax, height);
    }
    int total = 0;
    for (int i = 0; i < heights.Length; i++) {
      total += maxes[i];
    }
    return total;
  }
}

```