

STORMWATER

MASTER PLAN



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Subject: Capital Improvement Program Rating and Ranking Protocol

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Tigard's surface water system combines built infrastructure and open natural drainages. The system relies heavily on stream corridors for conveyance of both natural flows and increased flows resulting from urbanization. More than 30 years have passed since the City's Stormwater Master Plan was last updated. In recent years, capital improvements to upgrade and fix problems in Tigard's surface water system have been selected unsystematically.

This memorandum describes the process of identifying potential capital improvement projects (CIPs) and prioritizing them for inclusion in a 20-year Capital Improvement Program as a part of the Stormwater Master Plan. The first step in developing the capital improvement program was developing capital projects designed to correct and prevent issues in the City's surface water system.

Identify Issues and Solutions

Locate and Classify Issues

Through the fieldwork, collecting data about known issues from City staff, collecting information from the public at Open Houses and online, and by performing a desktop geomorphic analysis, Otak located numerous problems spots in the surface water system that could be corrected with infrastructure improvements - capital improvement projects (CIPs). The desktop geomorphic analysis is described in another memorandum.

A total of 168 issues were identified and categorized as water quality, flooding, erosion, or maintenance issues.

Issue Type	Count
Water Quality	15
Flooding / Water Quantity	54
Erosion	62
Maintenance	37
Total	168

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Develop Rating Criteria

Like many cities, Tigard would not have the resources to address 143 solutions at one time.

To prioritize the list, the City needed criteria to evaluate and rate the benefits of each solution. To develop rating criteria, Otak and the City engaged in a process of exploring staff and community values and priorities relating to surface water management. The process resulted in a set of criteria for rating proposed projects using a numeric score.

Values and Priorities

A staff group representing Public Works, Community Development, and Risk Management convened several times in fall 2016 to discuss criteria for determining which problem types or locations the City might solve through capital investment or maintenance programs and which problem types or locations might be the responsibility of a private property owner. The process and its results are described in the Tigard Stormwater Master Plan Whitepaper No. 1: Managing Problem Situations.

The City also convened a Stormwater Planning Committee (SPC) of stakeholders from adjacent cities, Clean Water Services, Oregon Department of Transportation, residents, and local engineers to discuss surface water values and priorities.

Draft Rating Criteria

Otak developed a draft set of rating criteria. The total possible points for a potential CIP was 100, with higher points representing more benefit. A Project could score 0, 1, 3, or 5 points for each of 11 criteria. Criteria were individually weighted based on perceived importance. Criteria were combined into four categories: erosion/landslide, flooding, water quality, and strategic or ancillary benefits.

The draft emphasized erosion and landslide problems by allowing up to 40 points for projects addressing those issues, and it divided remaining available points evenly among flooding, water quality, and strategic or ancillary benefits.

Staff and SPC reviewed the draft rating criteria in fall and winter 2016.

Intermediate Rating Criteria

Staff and SPC review of the draft rating criteria resulted in several substantive changes. Points available for projects addressing erosion and landslides were reduced from 40 to 25. Points available for projects addressing flooding were increased from 20 to 25, and points available for projects with strategic or ancillary benefits were increased from 20 to 30. The total number of criteria was increased from 11 to 13 when two were added to the strategic or ancillary benefit category. Individual criterion weights were adjusted.

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Final Rating Criteria

Because the City had gone so many years without overarching guidance for the stormwater program, Public Works staff had individually assembled numerous mental lists of the most pressing surface water concerns in the City. Upon review of projects ranked using the intermediate rating criteria, staff determined that some individual priorities were not reflected in the project rankings. In deference to staff's considerable knowledge of the imminent, severe, and high-profile problems, a final set of staff priority rating criteria were included.

The new staff priority criterion allotted up to 25 points for the staff priority score. The points available in the four other categories were reduced proportionately to maintain a total available score of 100.

Rate and Rank Potential Projects

The process of winnowing and prioritizing solutions and projects was iterative. Through discussion with the City and further combining initial solutions, Otak developed an initial list of 111 potential CIPs.

Using the intermediate rating criteria, Otak's engineering team evaluated and scored the benefits of each potential CIP to develop a benefit score.

There were three runs of benefit scoring.

First Run

The top potential CIP, named Derry Dell Creek West Stream and Culvert Improvements, scored 68 out of a possible 100 points. A related potential CIP directly downstream across a road scored 63 points and ranked third. The lowest score of the top 12 ranked potential CIPs was 50.5 points.

Of the top 12 ranking projects, four were in the Bull Mountain area, three each were in the Ash Creek and Fanno Creek basins, and two were in the Red Rock Creek stream basin.

46 potential CIPs scored fewer than 30 points.

Second Run

Using approximately the top half of the rated initial solutions, Otak packaged more solutions together into viable potential CIPs, refining the list to 35 potential CIPs. Combining the solutions would change the scoring, so the list of 35 potential CIPs were rated again to determine the second version of their rating scores.

The top potential CIP of the second run, named SW Dartmouth Regional Water Quality and Detention Facility, scored 82 points. This project combined the second and 12th ranked projects

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from the first run. The lowest scoring potential CIP, named Copper Creek West Streambank Stabilization and Outfall Retrofit, earned 41 points.

Third Run

In the third run of scoring, Otak used the final scoring criteria, incorporating staff priority scores, to re-rate and rank the potential CIPs. By this time, Otak had determined that a couple of potential CIPs would be eligible for funding under a revised Storm Drainage Major Maintenance Program – when construction costs were estimated to be less than \$100,000 – and were removed from the list. Table 2 on page 7 shows the final scoring criteria.

The top 18 ranked projects were selected for inclusion in the Implementation Plan CIP. Of these, the top CIP was the Gallin Court Stream & Culvert Improvements, which scored 82 points, and the lowest ranking was the Red Rock Creek Daylighting & Riparian Restoration project, with 43 points.

Final Benefit Scores

Table 1 shows the benefit scores of the top 31 potential CIPs.

Table 1: Final CIP Scores

CIP ID	Name	Benefit Score	Rank
CIP304	Gallin Court Stream & Culvert Improvements	82	1
CIP305	Derry Dell West Stream Protection	76	2
CIP306	Derry Dell East Stream & Culvert Improvements	76	2
CIP702	SW 116th Avenue Property Acquisition & Floodplain Storage	73	4
CIP501	SW Dartmouth Regional Wetland Detention Pond	72	5
CIP302	Kruger Creek Ann Court Bank Stabilization & Wetland Enhancement	68	6
CIP308	Kruger Creek Knickpoint Stabilization & Stream Restoration	63	7
CIP410	Fanno Creek Stream Stabilization at Arthur Court	62	8
CIP101	Bagan Park Stream Restoration & Water Quality Enhancement	62	9
CIP310	Gaarde St Greenway Detention & Sewer Line Protection	62	10
CIP303	Hunter's Glen Pond Rehabilitation	60	11
CIP506	Red Rock Creek Channel Stabilization & Sanitary Sewer Protection	55	12
CIP403	North Dakota Street Stream Restoration & Detention	51	13
CIP106	Oak Street Property Acquisition & Floodplain Restoration	51	14
CIP505	Knez Wetland & Riparian Enhancement	48	15
CIP503	Red Rock Floodplain Reconnection	46	16
CIP504	Red Rock Grade Control & Culvert Improvement	46	16
CIP502	Red Rock Creek Daylighting & Riparian Restoration	43	18
CIP404	Fanno Creek at SW Ashford St Revegetation & Constructed Wetland	51	

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CIP ID	Name	Benefit Score	Rank
CIP201	I-5 & Hwy 217 Intersection Regional WQ/Detention Facility	50	
CIP104	SW Ventura Stabilization and WQ Facility	48	
CIP105	SW Greenburg Rd WQ/Detention Facility	48	
CIP102	Washington Square WQ/Detention	43	
CIP103	Upper Ash Creek Storm System Improvements	42	
CIP311	SW Fern St Pond Retrofit	40	
CIP804	Copper Creek West Streambank Stabilization and Outfall Retrofit	40	
CIP802	Copper Creek East Stream and Bank Stabilization	38	
CIP309	SW Raptor Place Stream Restoration and Culvert Replacement	36	
CIP301	Jack Park Trail Improvements	28	
CIP401	Edgewood Street Storm System Improvements	24	
CIP801	SW Kable Storm Pipe and Culvert Replacement	10	

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Table 2: Final Rating Criteria and Score Ranges

ID	Weight	High Score	Points Available	Category	Criterion	Score		
						1	3	5
A	5.0	5.0	25.0	Erosion, Landslide	Risk rating from desktop geomorphic analysis	Green (low potential plus low severity of consequence)	Yellow (moderate potential plus moderate consequences)	Red (high potential plus high severity of consequence OR known problem location)
Erosion, Landslide Subtotal			25					
B	1.2	5.0	6.0	Flooding	Asset Impacted from Flooding	Landscape / Park Natural Area / Local Trail	Local Street / Regional Trail	Building, Connector/Collector/Arterial Street
C	1.2	5.0	6.0	Flooding	Frequency of Impact from Flooding	Rare, longer than 5 years	Nuisance, every 2 to 5 years	Frequent, annual or more frequent
D	0.6	5.0	3.0	Flooding	Anticipated Success of Project in Reducing Flooding	Flooding frequency improved to every 2-5 years using "gray" solution	Flooding frequency improved to every 2-5 years using "green" solution	Flooding frequency improved to longer than 5 years
Flooding Subtotal			15					
E	1.0	5.0	5.0	Water Quality	Existing Treatment	Greater than 50% contributing basin already treated	Between 50% (inclusive) and 10% (inclusive) of basin already treated	Less than 10% of basin already treated
F	1.0	5.0	5.0	Water Quality	Pollutant Source	Mostly residential runoff	Mostly commercial/industrial runoff	Local conditions cause water quality pollution (e.g. lack of shade causing temp. problem)
G	1.0	5.0	5.0	Water Quality	Size of Area Treated	Less than 5 ac	Between 5 ac (inclusive) and 20 ac (inclusive)	Greater than 20 ac
Water Quality Subtotal			15					
H	0.8	5.0	4.0	Strategic Benefits	Multiple Categories Addressed	One category	Two categories	Three categories
I	0.4	5.0	2.0	Strategic Benefits	Maintainability	Both difficult access and low cost	Either easily accessible or low cost	Easily accessible and low cost
J	0.8	5.0	4.0	Strategic Benefits	Design Life / Problem Prevention	Short Term / Interim Solution	Permanent Solution	Permanent and proactively prevents other problems
K	0.8	5.0	4.0	Strategic Benefits	Partnerships and Adjacent Projects	Internal or external partnerships are possible, but either not likely or no significant impact to project benefit or cost-sharing	Good opportunity for internal (City) partnerships to combine funding sources or when adjacent to other City projects	Good opportunity for cost-sharing with external partners (public or private) or when adjacent to and compatible with a partner's project
L	0.6	5.0	3.0	Habitat & Enviro	Healthy Stream / Habitat	Benefits Fish, But No Listed Threatened or Endangered Fish are Present in Immediate Vicinity of Project	Benefits Listed Threatened or Endangered Fish Present in Immediate Vicinity of Project	Benefits Fish and Other Species of Wildlife
M	0.6	5.0	3.0	Strategic Benefits	Provides social benefit: recreation, walk-ability, education, aesthetics, social justice, supports redevelopment	One listed benefit	Two listed benefits	Three or more listed benefits
Strategic Benefits Subtotal			20					
N	5.0	5.0	25	Staff Priority	Staff knowledge of severe, urgent, and/or high-profile proj's	Low priority	Medium priority	High priority
Staff Priority Subtotal			25					
Total Points Available			100					