City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	May 09, 2002
From:	Jeff Day, P.Eng General Manager, Engineering & Public Works	**File:**	-
Re:	**Engineering & Public Works Division - Levels of Service 2002**		

Staff Recommendation

That the report (dated May 9, 2002 from the General Manager, Engineering and Public Works), regarding Engineering & Public Works Levels of service for water, sanitary sewer and drainage programs be received for information.

Jeff Day, P.Eng.
General Manager, Engineering & Public Works

Att. 1

692960

May 9, 2002

Staff Report

Origin

At the February 25, 2002 Council Meeting, it was resolved:

"That each General Manager review with their appropriate Committee of Council, departmental programs and service levels prior to the start of the 2003 budget review process;"

This report is in response to that resolution for the water, sanitary sewer and drainage programs.

Analysis

Costs for utility and drainage operational budgets are primarily driven by the level of service standard to which the service is delivered. The current level of service for water, sanitary sewer and drainage programs is attached as Appendix A.

This level of service strikes a fine balance between providing effective service, maximizing infrastructure lifespan, minimizing public complaints and providing long term planning in a timely manner. It should be noted that the current funding for these programs could be increased or decreased but would result in a corresponding impact on customer service and the lifespan of the infrastructure.

Financial Impact

The proposed levels of service for water and sanitary sewer are currently accommodated in the 2002 utility rates. The drainage levels of service are accommodated in the operating budget.

Conclusion

The proposed levels of service provide a reasonable level of service for the provision of water, sanitary sewer and drainage operating and maintenance programs.

Jeff Day, P.Eng.
General Manager, Engineering & Public Works

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Program	Budget	Level Of Service	Man-Years	IMPACT				
				Tech/Safet	Community	Socioecon.	Political	Environme
Water Services								
Purchases - GVRD Water and Minor	$ 8,707,100			X		X		
General Operating	$ 547,200	Monthly & On-demand						
Infrastructure Capital Program	$ 2,800,000					X		
Watermain Replacement Reserve	$ 650,000					X		
Computer Equipment Reserve	$ 50,000					X		
Long Term Debt Principal	$ 841,400					X		
Long Term Debt Interest	$ 340,000					X		
Rate Stabilization	$ 609,600					X	X	
P.R.V. Station Maintenance	$ 107,200	Weekly & on Demand. Inspect 3 times/week	1.25	X				X
Water Main Maintenance	$ 1,309,900	Daily & on-demand	14.08	X				X
Pipe Maintenance	$ 644,900	Emergency response within 1 hour; 48 hrs. for others	8.17	X				X
Cathodic Protection	$ 11,900	Inspect 1 per month - Demand Repairs	0.10	X				X
Program Flushing	$ 138,100	Flush system once per year. Includes operating all valves and pressure testing all fire hydrants	1.98	X				X
Demand Flushing	$ 47,300	Emergency response within 1 hour; 48 hrs. for non-emergency	0.58	X				X
Mapping & Inventory	$ 186,500	Daily data input of inventory	2.33	X				X
Downtime	$ 15,600		0.19	X				X
Leak Detection	$ 65,000	Leak Survey - by section plan (Level of Service not determined)	0.73	X				X

Program	Budget	Level Of Service	Man-Years	IMPACT				
				Tech/Safet	Community	Socioecon.	Political	Environme
Valve Maintenance	$ 355,100	Rebuild 50 valves/year, repair on demand, service & clean once bi-yearly	3.08	X				X
Valve Chamber Maintenance	$ 24,100	Service & clean once every 3 years	0.20	X				X
Valve Maintenance Demand	$ 151,400	Repair on as needed basis 40 times per year; emergency within 1 hour; 48 hrs for non-emergency	1.27	X				X
Valve Maintenance Preventative	$ 63,000	Exercise and paint on a 4 year cycle	0.69	X				X
Valve Renewal	$ 116,600	Rebuild approx. 50 valves per year	0.92	X				X
Connection Maintenance	$ 920,100	Demand repairs of approx. 274 breaks per year; 1500 customer service calls	8.44	X	X			
Locating	$ 31,700	Locating Service Boxes by section	0.25	X	X			
Demand Maintenance	$ 747,400	Emergency response within 1 hour; 48 hrs. for others	8.19	X	X			
Fire Hydrant Maintenance	$ 838,400	On-demand & yearly maintenance & repairs. PM & demand repairs once/year, relocation of 2/year, approx 40 MVA hydrants hit & run/year	7.92	X		X		X
Fire Hydrant Nut & Bolt Renewal	$ 106,800	Preventative - approx 40 per year	0.84	X		X		X
Fire Hydrant Relocation	$ 11,100	Relocate 2 per year	0.08	X		X		X
Flow Testing	$ 15,900	On demand for watermain modelling	0.19	X		X		X
Program Fire Hydrant Maintenance	$ 186,300	Preventative	2.23	X		X		X
Demand Fire Hydrant Repairs	$ 322,200	Demand Repairs; emergency within 1 hour; 1 week for non-emergency	4.02	X		X		X
MVA Fire Hydrant Repairs	$ 56,500	emergency within 1 hour; 1 week for non-emergency	0.45	X		X		X
Fire Hydrant Backflow	$ 11,100	Service, repair, certify on demand	0.11	X		X		X

Program	Budget	Level Of Service	Man-Years	IMPACT				
				Tech/Safet	Community	Socioecon.	Political	Environme
Meter Maintenance	$ 601,300	Demand and Program Repairs. Meters read once/quarter, repair & replace as needed (approx. 1560/year).	4.12	X		X	X	
Meter Preventative Maintenance	$ 55,400	Meter reading once per quarter	0.61	X		X	X	
Meter Demand Maintenance	$ 388,600	Repair & replace on an as needed basis. emergency within 1 hour; non-emergency within 1 week	3.04	X		X	X	
Meter Supplied	$ 117,400	Customer Driven - supply waters- revenue generated by rental fees	0.30	X		X	X	
Backflow Prevention	$ 1,100	Maintain 6 backflow devices in the system	0.01	X		X	X	
Meter Testing	$ 11,800	Test large meters annually	0.13	X		X	X	
Residential Metering	$ 27,000	Supply meters for Residential Housing	0.03	X		X	X	
Other Maintenance Programs	$ 325,000	Demand and Program Repairs. 28 water samples/week, install approx.14 new valves/year, & 49 new connections/year	2.47	X				
Vehicle Repairs	$ 12,400		0.00	X				
Water Sampling	$ 67,000	Preventative-28 samples per week	0.70	X				
Connection Renewal	$ 111,600	Proactive approach to service renewal by area 49 per year	0.93	X				
Scour Valve Maintenance	$ 27,700	Maintaining scourer valves to ensure no contamination of the system.	0.22	X				
New Valve Installations	$ 44,200	Install approximately 14 valves per year at key points	0.35	X				
Shoring Maintenance	$ 12,400	On demand	0.10	X				
Barricade Maintenance	$ 8,500	Rental contract	0.00	X				
Pave Low Cuts	$ 35,800	On an as-needed basis per history	0.13	X				
Manufacturing Store Parts	$ 5,400	On demand	0.05	X				

Program	Budget	Level Of Service	Man-Years	Tech/Safet	Community	Socioecon.	Political	Environme
				IMPACT				
Sanitary Sewers								
Operating Expenditures	$ 386,400		0.0					
GVRD	$ 7,396,500		0.0					
Fiscal (Debt repayment)	$ 7,419,800		0.0					
Reserves	$ 550,000		0.0					
Sanitary Forcemain and Pump Station Inspection & Repair	$ 632,105	Daily, planned & on-demand. Video inspection of sewers - 2 catchment areas/year. Maintain 24 existing valves once/year. 1100 demand repairs/year of 141 Sanitary pump stations	7.0	X		X		X
Sanitary Sewer Forcemain Valves	$ 51,900	Install 2 valves per year & maintain 24 existing valves	0.5	X		X		X
Shoring Maintenance	$ 30,000	Maintain and Replace Shoring / WCB	0.0	X		X		X
Video Inspection	$ 72,800	Planned inspections/2 Catchment areas per year	1.2	X		X		X
Vehicle and Equipment Maintenance	$ 10,000		0.0	X		X		X
Sanitary Sewer Pump Stations	$ 335,005	Approx. 1100 Reactive Repairs Per Year	5.4	X		X		X
Station Repair/Maintenance	$ 833,595	Daily, planned & on-demand. Raise & inspect pumps once/year, clean & repair bi-weekly, on-demand repairs daily	10.0	X	X	X		X
Major Pump Inspection and Repair	$ 86,100	Raise Pumps and Inspect all stations once per year	1.2	X	X	X		X
Station Cleaning and Maintenance	$ 366,695	Clean and repair as required every station once every two weeks	6.8	X	X	X		X
Technical Inspection, Remedial Repairs	$ 205,000	Daily Inspections / Planned repairs as determined by inspections	2.0	X	X	X		X

Program	Budget	Level Of Service	Man-Years	Tech/Safet	Community	Socioecon.	Political	Environme
				IMPACT				
Sanitary Sewer Manholes	$ 219,400	Daily, planned, & on-demand (within 1 hour) Repair & raise/lower on demand within 1 hour, planned & daily cleaning etc	2.2	X		X		X
Inspect Manholes	$ 60,283	Daily Inspections and repairs as required (Routes)	0.7	X		X		X
Repair Manholes	$ 96,539	Demand Response: within 1 hour	1.0	X		X		X
Raise/Lower Manholes	$ 29,638	Demand Response: within 1 hour	0.3	X		X		X
Clean Manholes	$ 32,940	Planned / Cleaning / Routes	0.2	X		X		X
Sanitary Sewer Inspection Chambers	$ 369,200	Demand & cyclic (10 year cycle) Repair chambers on demand (approx. 550/year). Raise chambers on demand (approx. 160/year). Clean & unblock chambers(approx. 21/year). Inspection of all chambers on a 10 year cycle	3.5	X			X	X
Inspect Chamber	$ 65,106	Inspect all Chambers on an approx. 10 year cycle	0.8	X			X	X
Repair Chamber	$ 86,359	Demand Response: within 1 hour	0.8	X			X	X
Misc. Repairs	$ 80,751	Demand Response: within 1 hour	1.4	X			X	X
Raise Chamber	$ 39,305	Demand Response: within 1 hour	0.3	X			X	X
Callout - Internal/Chamber	$ 14,215	Demand Response: within 1 hour	0.2	X			X	X
Clean Chamber	$ 1,965	Demand Response: within 1 hour	0.0	X			X	X
Blockage Chamber	$ 4,199	Demand Response: within 1 hour	0.0	X			X	X

Program	Budget	Level Of Service	Man-Years	Tech/Safet	Community	Socioecon.	Political	Environme
				IMPACT				
Sanitary Sewer Mainlines	$ 413,000	Planned, cyclic, & demand (within 1 hour) Flush all on 18-month cycle. Repair approx.15 mainline breaks/year. Rodding mainline 4300m /year.	3.3	X		X		X
Repair Mainline	$ 65,697	Demand Response: within 24 hours	0.7	X		X		X
Flush Mainline	$ 120,930	Flush all accessible lines on an 18 month cycle	1.8	X		X		X
Blockage Mainline	$ 4,900	Demand Response: within 1 hour	0.0	X		X		X
Miscellaneous Repairs	$ 95,864	Demand Response: within 1 hour	0.2	X		X		X
Callout - Mainline	$ 12,248	Demand Response: within 1 hour	0.1	X		X		X
Rodding Mainline	$ 26,861	Demand Response: within 1 hour	0.3	X		X		X

Program	Budget	Level Of Service	Man-Years	IMPACT				
				Tech/Safet	Community	Socioecon.	Political	Environme
Storm Sewers								
Operating Expenditures	$ 383,200		0.0	X	X	X		X
Storm Sewer Screen Maintenance	$ 62,900	approx. 4 times/year	1.0	X		X		X
Storm Sewer Flood Control	$ 57,800	Respond to flooding calls from the public (Immediate response)	0.5	X	X	X	X	X
Storm Sewer Box Culvert	$ 51,600	Clean box culverts on 12 year cycle	0.4	X		X		X
Storm Sewer Manholes	$ 67,100	Planned & demand. Manholes located & inspected & whole system checked on 12 year cycle. Repair & clean approx. 260/year.	1.0	X	X	X		X
Locate & Inspect	$ 20,000	Whole system checked on 12 year cycle	0.4	X	X	X		X
Repair	$ 25,000	24 hour avg. response time	0.4	X	X	X		X
Flushing/Blockage Removal	$ 6,100	2 hour avg. response time	0.1	X	X	X		X
Connections	$ 10,000	2 hour avg. response time	0.1	X	X	X		X
Raise/Lower	$ 6,000	24 hour avg. response time	0.1	X	X	X		X
Storm Sewer Inspection Chambers	$ 177,500	Planned & demand. Call-ins for repair (approx.1730/year), flush/clean (approx. 150/year), perimeter drains (approx. 90/year), connections (approx. 25/year).	2.0	X	X	X		X
Locate & Inspect	$ 25,000	12 year cycle	0.3	X	X	X		X
Repair Chamber	$ 45,000	24 hour avg. response time	0.3	X	X	X		X
Flush/Clean/Blockage Removal	$ 60,000	2 hour avg. response time; flush/clean on 12 year cycle	0.8	X	X	X		X
Raise/Lower	$ 5,000	24 hour avg. response time	0.1	X	X	X		X
Perimeter Drains	$ 21,500	2 hour avg. response time	0.2	X	X	X		X
Installation	$ 5,000	24 hour avg. response time	0.1	X	X	X		X
Connections	$ 26,000	3 day avg. response time	0.2	X	X	X		X

Program	Budget	Level Of Service	Man-Years	IMPACT				
				Tech/Safet	Community	Socioecon.	Political	Environme
Storm Sewer Mainlines	$ 140,500	Demand. 15 blockages flushed/year. Repair/replace on demand (approx. 15 calls/year)	1.5	X	X	X		X
Repair/Replace	$ 44,500	3 day avg. response time	0.4	X	X	X		X
Clean/Blockage Removal	$ 46,000	2 hour avg. response time	0.4	X	X	X		X
Box Culverts	$ 20,000	24 hour avg. response time	0.2	X	X	X		X
Locate & Inspect	$ 5,000	Approx 5 per year - on demand	0.1	X	X	X		X
Connections	$ 25,000	24 hour avg. response time	0.3	X	X	X		X
Clean MRN Roads			0.1	X	X	X		X
Storm Sewer Catch Basins	$ 114,200		1.2	X	X	X		X
Repair	$ 30,000	2 hour avg. response time	0.2	X	X	X		X
Flushing/Blockage Removal	$ 15,000	2 hour avg. response time	0.1	X	X	X		X
Raise/Lower	$ 20,000	2 hour avg. response time	0.2	X	X	X		X
Perimeter Drains	$ 2,000	infrequent	0.05	X	X	X		X
Installation	$ 7,000	3 day avg. response time	0.1	X	X	X		X
Connections	$ 5,000	infrequent	0.1	X	X	X		X
Box Culverts	$ 30,200	24 hour avg. response time	0.35	X	X	X		X
Locate & Inspect	$ 5,000	2 hour avg. response time	0.1	X	X	X		X

Program	Budget	Level Of Service	Man-Years	IMPACT				
				Tech/Safet	Community	Socioecon.	Political	Environme
Storm Sewer Canals & Ditches	$ 497,500	Planned & demand. 60 km cleaned/year. approx. 90 screens cleaned/week	8.2	X	X	X	X	X
Ditch Cleaning	$ 392,150	approx. 24 hour avg. response time	7.0	X	X	X	X	X
Screen Cleaning/Repair/Install	$ 31,500	Weekly Cleaning 90 sites	0.3	X	X	X	X	X
Beaver Dams	$ 6,000	3 day avg. response time	0.1	X	X	X	X	X
Flail Mowing	$ 22,000	annually	0.2	X	X	X	X	X
Pruning	$ 4,400	3 day avg. response time	0.1	X	X	X	X	X
Culverts & Bridges	$ 3,200	3 day avg. response time	0.1	X	X	X	X	X
Bulkheads & Ditch Ends	$ 21,250	3 day avg. response time	0.2	X	X	X	X	X
Inspection	$ 7,000	24 hour avg. response time	0.1	X	X	X	X	X
Shoring/Rip Rap	$ 5,000	3 day avg. response time	0.1	X	X	X	X	X
Flooding & Standby	$ 5,000	2 hour avg. response time	0.1	X	X	X	X	X
Storm Pumps Station Subtotal	$ 706,800	Pump Stations daily inspections & internal repairs as required	6.3	X		X	X	X