

# Section 10

## Capital Improvements Plan (CIP)

Identified problem areas and known problem areas, now referred to as projects are summarized in this section. Each project has been given a score based on the eight criteria discussed in Section 9. The list of projects will be used by the City to formulate a Capital Improvements Plan (CIP) that will be the basis for selecting drainage projects in the City for the present and future. The projects that score the highest will be considered a top priority. Table 10-1 and 10-2 list all the projects and their associated total score.

### 10.1 Summary of Projects

A total of 89 projects were identified based on the evaluation and analysis of the twelve drainage basins throughout the City of Concord. The total scores for the projects ranged from the lowest of 10 to the highest of 34. The summary below lists the number of projects that fall within a certain range of total score:

<u>Total Score</u>	<u>Number of Projects</u>
14 and under	20
15-19	34
20-24	20
25 and above	15

The projects have also been separated by their respective drainage areas. Two drainage areas stand out with the greatest number of projects: the Terrible Trapezoid and Penacook. These two drainage areas make up 35 of the 89 projects (39%). Three outlying drainage areas (West Concord, Turkey Pond, Hoit) with limited development make up only 5 of the 89 projects (6%). The remaining seven drainage areas have approximately the same number of projects, with Turkey River being the only exception. The summary below lists the number of projects by drainage area:

<u>Drainage Area</u>	<u>Number of Projects</u>
Washington	8
Terrible Trapezoid	20
Heights	6
Turkey River	3
Penacook	15
Fisherville	7
Oak Hill	9
Hospital	7
Horseshoe Pond	9
Turkey Pond	1
West Concord	3
Hoit	1

## 10.2 Project Costs

Cost is an important factor in project selection, as the City planned expenditures must be in-line with the budget allotted for this work. The goal of this Storm Water Master Plan is to provide the City a general idea of the financial expenditures needed for the upkeep and upgrade of their storm water infrastructure for the future. A CIP (Capital Improvements Plan) for the next 5 years and future years will be formed based on this project list.

Planning level construction and engineering cost estimates are included for each project. These costs should be re-evaluated for each project that gets added to the CIP before preliminary design begins. The assumptions made for new construction work for each project are listed in Table 10-1 under the “Description” column. The cost for the engineering services of each project was determined to be 10 percent the construction cost and provides a planning level estimate. Once projects are selected and a better feel for the tasks are identified, the engineering cost can be revised.

The project list is sorted by total score based on the eight criteria discussed above. For scores within a few numbers of each other, the costs must also be considered. The projects with the greatest impact for the lowest cost should be considered first.

Note that the presented costs are planning stage only. The construction costs are based upon other similar work done in the region recently. An approximate cost per linear foot was determined for each size/material of new pipe. The cost per linear foot includes pipe, manholes, catch basin connections, gravel sub-base, temporary pavement, full width pavement, police details, miscellaneous items and work, mobilization and a planning level multiplying factor. The given project costs are suitable only for comparison between projects in this analysis and do not include escalation.

## 10.3 Recommendations

It is recommended that all projects which scored 20 total points or higher be included in the Capital Improvements Plan (CIP). There are 35 projects that fall within this total point range, of which 28 should be included in the CIP. The remaining 7 projects have either been addressed by the City, are awaiting NHDOT approval or are currently under design. Table 10-1 presents more detailed information. The summary below lists the 28 recommended projects by drainage area:

<u>Drainage Area</u>	<u># of Projects</u>
Hospital	4
Heights	4
Oak Hill	6
Penacook	5
Turkey River	2

Washington	1
Fisherville	3
Horseshoe Pond	2
West Concord	1

There are three major projects greater than \$1M in total cost included in the list of 28 recommended projects. Two of the projects are located in the Heights Sub-basin and the other is located in Fisherville Sub-basin. The following is a description of each major project:

- Heights Sub-basin – this project is in the Birdland neighborhood. The drainage pipes in this neighborhood have undersized pipes along Ormond Street, Christian Avenue, Oriole Road, East Side Drive and Partridge Road. It is recommended that all existing drain pipe be replaced with larger more appropriately sized drain pipes.
- Heights Sub-basin – this project had the highest total cost. The drainage pipes along Loudon Road and East Side Drive that flow westerly to the Merrimack River are undersized. It is recommended that all existing drain pipe be replaced with larger more appropriately sized drain pipes.
- Fisherville Sub-basin - this project includes a long stretch of drain work (approximately 3,900 linear feet). The drainage pipes along Manor Road and Sewalls Falls Road that flow north to the Merrimack River are undersized. It is recommended that all existing drain pipes be replaced with larger more appropriately sized drain pipes.

The remaining 25 recommended projects are all less than \$1M in total cost. It is recommended that the City evaluate these projects and spread them evenly over the course of a 5-year CIP. This will effectively address the address all of the highest priority drainage projects for the City throughout its 12 sub-basins.

## 10.4 Summary and Conclusions

This report serves as a guide to the City of Concord for future storm water planning. It is recommended that many of the issues detailed in this report be included in the upcoming 5-year CIP. Those issues are:

1. Perform the 28 storm water improvement projects listed in Section 10.3 above.
2. Investigation of potential illicit sewer connections identified in Section 7.
3. Feasibility study for a Storm Water Utility to provide funding for projects.
4. Continue performing storm water best management practices.

It is recommended that all remaining storm water projects listed in Table 10-1 be considered for inclusion in future CIPs. Performing this work would allow the City to maintain and upgrade their storm water infrastructure.

Sect	Drainage Basin	Sub Basin	Location	On Map	Project #	Nature of Problem	Recommended Solution	Property & Traffic	Pipe Size	% Undersized	Recur.	Pipe Age	Stream Impacts	Constructability	Road Projects	Total Score	Construction Cost	Engineering Cost	Total Cost	Description	Rank
							Range	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-40	Estimate	Estimate	Estimate		
6.9	Horseshoe Pond	HP2	East end of Walker St, corner of Walker and North State	HP2	77	18" and 24" Diameter; Pipes with 90° turns & capacity issues.	The NHDOT is designing a new piping scheme here.	4	3	4	5	5	3	5	5	34	NHDOT project	\$0	\$0	NHDOT design of these pipes have begun but is currently on hold	1
6.9	Horseshoe Pond	HP1	East end of Walker Street, corner of Walker & North State	HP1	76	18" and 20" Diameter; Pipes with 90° turns & capacity issues.	The NHDOT is designing a new piping scheme here.	4	2	4	5	5	3	5	5	33	NHDOT project	\$0	\$0	NHDOT design of these pipes have begun but is currently on hold	2
6.5	Penacook	Rolle Canal	River Road at The Island Road	P1	38	Continued Isolated Flooding; No existing piping	Improved drainage, storage, or re-grading.	1	5	5	3	5	1	5	5	30	Completed	\$0	\$0	Construction completed by General Services Division	3
6.5	Penacook	Contoocook	River Rd southwest Island Rd	P2	39	Continued Isolated Flooding; No existing piping	Improved drainage, storage, or re-grading.	1	5	5	3	5	1	5	5	30	Completed	\$0	\$0	Construction completed by General Services Division	4
6.4	Turkey River	Bow Brk	Bow Brook passing under both South St and Bow St. and Sunset Ave flow into Bow Brook	TR1	35	48" (South Street) and 12" (Sunset Ave) pipes are undersized for flow from the South Street area.	Existing 24" overflow discharges to brook south of this outlet. May have already resolved this issue.	4	3	4	2	5	4	3	4	29	\$118,325	\$11,833	\$130,158	Installation includes new 24" RC pipe for 300 LF and 18" PVC for 125 LF	5
6.8	Hospital	H	Bow Brook culverts under School St and Warren St	HOS3	71	Culverts were washed out during the May 2006 storm. The School St culvert was undersized	City currently under design to repair/replace culvert	5	5	4	3	5	3	0	4	29	\$171,000	\$19,000	\$190,000	City temporarily repaired wash out. City to prepare design for new permanent culvert. FEMA and FHWA (Federal Highway Administration) paid for project.	6
6.6	Fisherville	Upper	Lake St	F5	57	Road is poor conditions, limited catch basins and drain pipes	Line existing pipe, install new pipes & catch basins and repave road	3	3	3	3	5	2	3	5	27	\$380,550	\$38,055	\$418,605	Installation of new 18" PVC pipe for 1,350 LF and line 12" pipe for 650 LF	7
6.11	West Concord	Penna cook Lake	Road side ditches along Carter Hill Road	WC2	87	Steep with high velocity runoff, large riprap pushed to bottom of hill.	Consider veins or other means to break velocity, or detention near top of hill.	0	5	5	5	5	2	5	0	27	\$90,000	\$10,000	\$100,000	City design of this problem is complete. Construction to begin in 2007.	8
6.3	Heights	Loudon	Small dia. pipes a Nodes "U", "W" and "AA"	H15	33	24" thru 12" dia. pipes undersized for 10-year storm	Consider replacing pipes with large dia. pipes	5	4	5	0	5	2	0	5	26	\$467,900	\$46,790	\$514,690	Installation includes new 36" RC pipe for 560 LF, 30" RC pipe for 930 LF	9
6.3	Heights	Birdland	Small dia. pipes along Ormond St, Christian Ave, Oriole Rd, East Side Dr and Partridge Rd	H6	34	12" and 15" dia. pipes undersized for 10-year storm	Consider more detailed study of drainage area and replace pipes with larger dia. pipes	3	5	5	3	3	2	0	5	26	\$1,998,340	\$199,834	\$2,198,174	Installation includes new 54" RC pipe for 1,305 LF, 48" RC pipe for 940 LF, 42" RC pipe for 1,145 LF, 30" RC pipe for 605 LF, 24" RC pipe for 500 LF and 18" PVC pipe for 925 LF	10
6.7	Oak Hill	OH2	West Sugarball Road to outfall on Merrimack River	O4	63	Severe washout and erosion	Repair/Reconstruct drainage outfall	2	2	4	5	5	5	0	3	26	\$133,600	\$13,360	\$146,960	Installation of new 36" RC pipe for 400 LF and repair existing outfall structure.	11
6.8	Hospital	H	South of Redington Road, west of Fruit Street, 30" pipe	HOS4	72	Flat area has poor drainage	Consider installing larger pipes.	0	4	3	3	5	2	5	4	26	\$549,000	\$54,900	\$603,900	Installation of new 42" RC pipe for 1,500 LF	12
6.5	Penacook	Contoocook	Charles Street and Contoocook River	P6	43	12" pipe is undersized	Detention, storage, or increase in pipe size.	3	1	5	1	5	2	3	5	25	\$57,800	\$5,780	\$63,580	Installation of new 24" RC pipe for 200 LF	13
6.8	Hospital	H	Bow Brook culvert under Pleasant St as the pipe enters State Hospital grounds	HOS2	70	Culvert was washed out during the May 2006 storm.	City currently under design to repair/replace culvert	5	5	0	3	5	3	0	4	25	\$126,000	\$14,000	\$140,000	City temporarily repaired wash out. City to prepare design for new permanent culvert. FEMA and FHWA (Federal Highway Administration) paid for project.	14
6.11	West Concord	Miller's Brook	Intersection of Pleasant Street and Miller's Brook	WC1	86	Undersized culvert causing backups	Consider culvert replacement or storage/retention.	3	3	1	3	5	0	5	5	25	\$20,040	\$2,004	\$22,044	Installation of new 36" RC pipe for 60 LF	15
6.5	Penacook	Merri-mack	Merrimack St and Bye St pipes	P4	41	12" pipes are undersized and illicit sewer connection	Detention, storage, or increase in pipe size along with separating sewer connection	3	1	5	2	5	2	3	3	24	\$558,200	\$55,820	\$614,020	Installation of new 30" RC pipe for 1,000 LF and 42" RC pipe for 700 LF	16
6.5	Penacook	Contoocook	Tanner Street and Village Street	P5	42	15" and 12" pipes are undersized	Detention, storage, or increase in pipe size.	3	2	5	1	5	2	3	3	24	\$306,550	\$30,655	\$337,205	Installation of new 24" RC pipe for 700 LF and 48" RC pipe for 250 LF	17
6.8	Hospital	H	Noyes Street near Harvard Street	HOS5	73	18" pipe undersized	Reduce flow through retention or storage; or replace with a larger pipe	3	2	5	0	5	5	0	4	24	\$57,800	\$5,780	\$63,580	Installation of new 24" RC pipe for 200 LF	18
6.9	Horseshoe Pond	HP2	Rumford St, between Penacook St and Jennings St	HP5	80	Undersized 8" Diam pipe from large area to Walker St	Consider pipe replacement	2	1	5	1	5	0	5	5	24	\$134,750	\$13,475	\$148,225	Installation of new 15" PVC pipe for 550 LF	19
6.5	Penacook	Rolle Canal	Low Area at Borough, Washington and Fowler triangle	P3	40	Low area in neighborhood experiences severe flooding in heavy rain and spring conditions	Install new drainage pipes and outfalls or drywells for an immediate solution	0	3	5	3	2	2	3	5	23	\$385,500	\$38,550	\$424,050	Installation of new 12" and 15" PVC drainage for 1000 LF and 24" RC pipe for 500 LF	20
6.7	Oak Hill	OH2	East Side Dr from Heritage Heights Road to South Curtisville Rd	O1	60	12" pipes are undersized	Replace 12" pipe with larger dia. pipe.	3	3	4	1	3	1	3	5	23	\$352,070	\$35,207	\$387,277	Installation of new 24" RC pipe for 330 LF and 30" RC pipe for 850 LF	21
6.7	Oak Hill	OH11	Outfall at Eastman and Portsmouth	O5	64	24" pipe undersized for 10-year storm	Reducing incoming flow with detention, or increase size of pipe.	0	3	4	0	5	5	3	3	23	\$200,400	\$20,040	\$220,440	Installation of new 36" RC pipe for 600 LF	22
6.7	Oak Hill	OH2	South Curtisville Rd from East Side Dr to north of Portsmouth St	O8	67	24" and 8" pipes feeding detention pond at Node LL are undersized	Redirect some flow in the basin to alternate detention. Or replace with larger pipes.	3	4	4	0	5	1	3	3	23	\$75,500	\$7,550	\$83,050	Installation of new 30" RC pipe for 250 LF	23
6.9	Horseshoe Pond	HP2	Walker St from North State St to Liberty St	HP3	78	8", 15" and 20" Diameter. Excess flow & severe capacity problems.	Replace with a larger pipe	2	2	5	1	5	0	3	5	23	\$553,645	\$55,365	\$609,010	Installation of new 24" RC pipe for 225 LF, 30" RC pipe for 700 LF and 36" RC pipe for 830 LF	24
6.3	Heights	Mall	Southwest of intersection of Loudon Rd & Branch Turnpike	H12	30	30" pipe discharges to a detention basin with an 18" outlet across Branch Turnpike. 18" backs up.	Replace with 36" pipe along Branch Turnpike to existing 42" on Loudon Rd. Private Property owner to perform work	5	4	5	4	0	1	3	0	22	Private Project	\$0	\$0	Installation of new 36" RC pipe for 800 LF on Branch Turnpike and Loudon Rd.	25

Sect	Drainage Basin	Sub Basin	Location	On Map	Project #	Nature of Problem	Recommended Solution	Property & Traffic	Pipe Size	% Undersized	Recur.	Pipe Age	Stream Impacts	Constructability	Road Projects	Total Score	Construction Cost Estimate	Engineering Cost Estimate	Total Cost Estimate	Description	Rank
6.6	Fisherville	Upper	Along Manor Road, Sewalls Falls Rd to the Merrimack River.	F3	55	24" pipe undersized for flow expected.	Investigate relief to the north side of Abbott Rd or Manor Rd or upslope pipe.	3	3	5	1	2	0	3	5	22	\$1,630,470	\$163,047	\$1,793,517	Installation of new 48" RC pipe for 3,910 LF	26
6.6	Fisherville	Rattlesnake Brook	Quaker St, Knight St, and North State St	F4	56	Culverts undersized and not ideal hydraulically	Investigate size of culverts and large culvert elevation changes under North State St	3	5	3	3	5	0	0	3	22	\$33,360	\$3,336	\$36,696	Installation of new 48" RC culvert for 80 LF	27
6.8	Hospital	H	Bow Brook from Ridge Rd and Terrace Rd	HOS1	69	Outlet pipes are undersized	Replace existing pipes with larger dia. pipes	0	4	5	0	5	3	0	5	22	\$140,560	\$14,056	\$154,616	Installation of new 30" RC pipe for 200\ LF ad 36" RC pipe for 240 LF	28
4	Washington	Wash	North Main Street at Pearl Street	W4	4	Possible Cross Connection	TV 350' along Pearl Street to pinpoint location; redirect illicit connection(s) to sewer	5	3	0	3	5	0	0	5	21	\$5,700	\$570	\$6,270	TV inspect 350 LF and disconnect two illicit sewer connections	29
6.4	Turkey River	Turkey River	Separate drainage from South St, Angela Way and Moreland Ave into Turkey River	TR2	36	15" and 18" pipe is undersized for flow from the three area.	Consider replacing pipes with large dia. pipes	3	2	3	0	3	5	5	0	21	\$442,200	\$44,220	\$486,420	Installation includes new 30" RC pipe for 1,225 LF and 24" RC pipe for 250 LF	30
6.5	Penacook	Hoyt Brook	Elm St and Contocook River	P13	50	12" is undersized and removal of temporary drywells	Install new larger dia. pipe and remove drywells	0	4	5	0	3	2	3	4	21	\$469,200	\$46,920	\$516,120	Installation of new 30" RC pipe for 350 LF, 18" PVC pipe for 500 LF and 12" PVC pipe for 1,000 LF	31
6.7	Oak Hill	OH2	Portsmouth St culvert at Mill Brook crossing	O3	62	Undersized culvert (48" existing). Substantial flooding during May 2006 storm	Replace culvert with larger dia. pipe or box culvert. New size assumed to be 60"	3	1	5	2	2	0	5	3	21	\$20,240	\$2,024	\$22,264	Installation of new 60" RC pipe for 40 LF	32
6.7	Oak Hill	OH1	East Side Drive from Putney to Eastman	O6	65	8" and 18" pipes undersized for 10-year storm	Redirect some flow in the basin to new detention or brook (with treatment). Or replace undersized pipes.	3	2	4	0	3	1	3	5	21	\$511,310	\$51,131	\$562,441	Installation of new 30" RC pipe for 650 LF and 24" RC pipe for 1,090 LF	33
6.3	Heights	Loudon	Pipe along Loudon Rd. and East Side Dr.	H4	32	30" and 24" dia. pipe on Loudon Rd and 12" dia. pipe on East Side Dr. undersized for 10-year storm	Consider additional detention or relief in system or replace pipe.	2	4	5	1	2	3	3	0	20	\$7,515,425	\$751,543	\$8,266,968	Installation includes new 84" RC pipe for 2,400 LF, 72" RC pipe for 1,500 LF, 48" RC pipe for 2,620 LF, 36" RC pipe for 680 LF and 24" RC pipe for 885 LF	34
6.8	Hospital	H	Minot St outlet to Thayer Pond/Bow Brook	HOS7	75	12" pipe is undersized	Replace with a larger pipe.	0	1	5	0	5	2	3	4	20	\$173,400	\$17,340	\$190,740	Installation of new 24" RC pipe for 600 LF	35
4	Washington	Wash	Celtic St and Lyndon St	W7	7	Collapsed pipe	Replace 400' of 8" diam clay pipe (and one tee-connection)	5	1	0	3	5	0	0	5	19	\$94,800	\$9,480	\$104,280	Installation of new 8" PVC pipe for 400 LF	36
6.5	Penacook	Rolle Canal	Washington Street, north of the Rolle Canal	P7	44	12" pipe is undersized	Detention, storage, or increase in pipe size.	2	1	5	1	3	2	5	0	19	\$200,400	\$20,040	\$220,440	Installation of new 36" RC pipe for 600 LF	37
6.5	Penacook	Hoyt Brook	Penacook St. culvert at Hoyt Brook	P9	46	24" culvert is undersized	Install new larger dia. culvert	0	3	5	0	3	0	3	5	19	\$17,710	\$1,771	\$19,481	Installation of new 60" RC culvert for 35 LF	38
6.5	Penacook	Hoyt Brook	East St and Contocook River	P14	51	12" pipe is undersized	Install new larger dia. pipe	3	1	4	0	3	2	3	3	19	\$50,600	\$5,060	\$55,660	Installation of new 18" PVC pipe for 200 LF	39
6.9	Horseshoe Pond	HP3	1993/2012 at RR Track, west of the southbound 193 offramp	HP6	81	20" Diameter; Undersized.	NHDOT is designing a new pipe to direct excess flow north on North Main St to Horseshoe Pond	5	3	4	0	5	2	0	0	19	NHDOT project	\$0	\$0	NHDOT design of these pipes have begun but is currently on hold	40
6.10	Turkey Pond	TP	Five culverts apparently undersized for current conditions.	TP1	85	Culverts potentially undersized, potential for flooding of roads.	Detailed inspection of all culverts, compare culvert size with recommended.	0	3	1	0	5	5	5	0	19	Inspect	\$0	\$0	Inspect the five culverts for blockage and sediment build up. Replace with larger culvert if necessary.	41
6.3	Heights	Loudon	Fort Eddy Rd, street crossing near Shaws	H3	31	18" diam pipe overwhelmed by snow melt	Maintain pipe to prevent blockage; Consider snow removal after heavy snow storms.	4	2	3	3	5	1	0	0	18	Regular Maintenance	\$0	\$0	Regular maintenance of area should relieve seasonal issues.	42
6.5	Penacook	Hoyt Brook	Local drainage from Millstream Ln, Primrose Ln and Fowler St to Millstream Brook	P12	49	12", 15" and 24" pipes are undersized	Install new larger dia. pipe	0	3	4	0	3	2	3	3	18	\$189,250	\$18,925	\$208,175	Installation of new 36" RC pipe for 150 LF and 18" PVC pipe for 550 LF	43
6.8	Hospital	H	Pleasant St from Pleasant View to Kensington Rd	HOS6	74	8" pipe undersized	Replace with a larger pipe.	3	1	5	0	5	0	0	4	18	\$120,800	\$12,080	\$132,880	Installation of new 30" RC pipe for 400 LF	44
5	Trapezoid	Trap	Downing Street; MH08 - MH09	T16	14	Major and minor cracks, roots	Lining or chemical grouting	5	1	0	3	5	0	0	3	17	\$4,000	\$400	\$4,400	Line 8" pipe for 100 LF	45
5	Trapezoid	Trap	Downing Street; MH08 - Unknown	T14	22	Major cracks	Lining or chemical grouting	5	1	0	3	5	0	0	3	17	\$9,600	\$960	\$10,560	Line 12" pipe for 160 LF	46
5	Trapezoid	Trap	Downing Street; MH02 - MH01	T15	23	Collapsed pipe, major cracks, pipe sag, active sewer connection	Replace Pipe	5	1	0	3	5	0	0	3	17	\$53,325	\$5,333	\$58,658	Installation of new 12" PVC pipe for 225 LF	47
5	Trapezoid	Trap	South and Concord; Main to buried MH1	T20	28	Collapsed pipe, major and minor cracks	Replace Pipe	5	4	0	3	5	0	0	0	17	\$60,435	\$6,044	\$66,479	Installation of new 12" PVC pipe for 255 LF	48
6.4	Turkey River	Turkey River	Pleasant St., east of Miller's Brook crossing	TR3	37	Overland flow through undersized culvert	Replace existing culvert with larger sized culvert	0	3	3	3	5	0	3	0	17	\$14,450	\$1,445	\$15,895	Installation of new 24" RC culvert under Pleasant St	49
6.7	Oak Hill	OH1	Shaker Rd from Pekoe Dr to Mountain Rd.	O2	6	Roots and other obstructions in the pipe.	Clean and line pipe or replace with larger dia. pipe.	2	2	4	3	3	0	3	0	17	\$130,050	\$13,005	\$143,055	Installation of new 24" RC pipe for 450 LF	50
6.9	Horseshoe Pond	HP2	Bradley St from Albin St to Perkins St	HP9	84	12" and 20" dia. pipe is undersized	Consider pipe replacement	5	4	3	0	5	0	0	0	17	\$224,250	\$22,425	\$246,675	Installation of new 18" PVC pipe for 200 LF and 30" RC pipe for 375 LF	51
4	Washington	Wash	Cross Country pipe west of Valley Street	W2	2	Possible Illicit Connection	TV 250' from Chestnut to Valley to pinpoint illicit; redirect to sewer	3	2	0	3	5	0	3	0	16	\$5,500	\$550	\$6,050	TV inspect 250 LF and disconnect two illicit sewer connections.	52
5	Trapezoid	Trap	South Street Easement; 2475-115 - 2475.1-115	T1	9	Pipe Sag (approximately 20" vertical drop)	Replace pipe	5	3	0	3	5	0	0	0	16	\$120,240	\$12,024	\$132,264	Installation of new 36" RC pipe for 360 LF	53
5	Trapezoid	Trap	South Street Easement (Lincoln St); 1840-114 - 1846-114	T18	16	Minor cracks	Lining or chemical grouting	5	3	0	3	5	0	0	0	16	\$18,000	\$1,800	\$19,800	Line 24" pipe for 150 LF	54

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								Property & Traffic	Pipe Size	% Undersized	Recur.										
5	Trapezoid	Trap	South Street, 2071.1-114 - 1844-114, from Concord to Thompson	T19	17	Major & minor cracks	Lining or chemical grouting	5	3	0	3	5	0	0	0	16	\$51,300	\$5,130	\$56,430	Line 36" pipe for 285 LF	55
5	Trapezoid	Trap	South Street, 2071-114 - 2071.1-114	T13	21	Minor crack, hole around pipe	Lining or chemical grouting	5	3	0	3	5	0	0	0	16	\$19,800	\$1,980	\$21,780	Line 36" pipe for 110 LF	56
5	Trapezoid	Trap	South Street Easement, 2776.1-115 - 888	T16	24	Minor crack, infiltration	Lining or chemical grouting	5	3	0	3	5	0	0	0	16	\$23,400	\$2,340	\$25,740	Line 36" pipe for 130 LF	57
5	Trapezoid	Trap	South Street Easement, 2493.1-115 - 2691-115	T17	25	Minor crack, heavy roots	Lining or chemical grouting	5	3	0	3	5	0	0	0	16	\$113,400	\$11,340	\$124,740	Line 36" pipe for 630 LF	58
5	Trapezoid	Trap	South Street, 2074-114 - 2071-114, near Concord St	T18	26	Minor crack	Lining or chemical grouting	5	3	0	3	5	0	0	0	16	\$23,580	\$2,358	\$25,938	Line 36" pipe for 130 LF	59
5	Trapezoid	Trap	Cross Country (Spruce Street) Drain, 2181.1-114 - 2212-114	T19	27	Active sewer connections	Lining or chemical grouting	5	3	0	3	5	0	0	0	16	\$31,500	\$3,150	\$34,650	Line 36" pipe for 175 LF	60
6.5	Penacook	Rolie Canal	Electric Ave. contributing to the Rolie Canal	P8	45	12" pipe is undersized	Detention, storage, or increase in pipe size.	2	1	4	1	3	2	3	0	16	\$37,950	\$3,795	\$41,745	Installation of new 18" PVC pipe for 150 LF	61
6.9	Horseshoe Pond	HP2	Church St between Bouton & State	HP7	82	18" Diameter; Excess flow & capacity problems	Planned overflow should alleviate these issues if constructed	2	2	4	0	5	0	3	0	16	\$151,000	\$15,100	\$166,100	Installation of new 30" RC pipe for 500 LF	62
6.12	Hoit	Hoit	Freedom Acres, between Hoit Rd and Mountain Rd	HT1	89	Back up of detention basin. Poor design. Does not permit access for cleaning & maintenance.	Maintain detention pond	1	2	1	3	2	2	5	0	16	\$10,000	\$0	\$0	Regular maintenance of detention pond.	63
4	Washington	Wash	Concord Street and South State Street	W1	1	Possible Cross Connection	TV 300' along South State and Concord to pinpoint location; redirect illicit connection(s) to sewer.	5	2	0	3	5	0	0	0	15	\$5,600	\$560	\$6,160	TV inspect 300 LF and disconnect two illicit sewer connections.	64
4	Washington	Wash	Liberty Street, north of Vernon St	W5	5	1. Possible cross connection	TV 400' of pipe to located illicit connection; redirect	3	1	0	3	5	0	3	0	15	\$5,800	\$580	\$6,380	TV inspect 400 LF and disconnect two illicit sewer connections	65
4	Washington	Wash	Liberty Street, north of Vernon St	W6	6	2. Joint Failure	Check hydraulics to ensure they will not be affected; if appropriate, plug 8" pipe at manhole.	3	1	0	3	5	0	3	0	15	\$800	\$80	\$880	TV inspect 400 LF	66
4	Washington	Wash	Manholes throughout the subbasin	N/A	8	Excess sedimentation noted in manholes	Schedule City Vector-Truck to clean regularly	5	2	0	0	5	0	0	3	15	Regular Maintenance	\$0	\$0	Regular maintenance of the system to remove sediment and debris.	67
6.5	Penacook	Hoyt Brook	Electric Ave complex and Contocook River	P15	52	12" pipe is undersized	Install new larger dia. pipe	0	3	5	0	2	2	3	0	15	\$115,600	\$11,560	\$127,160	Installation of new 24" RC pipe for 400 LF	68
6.6	Fisherville	Upper	Along Snow Street and Randallt Street.	F2	54	24" pipe undersized for flow expected.	Investigate relief to the north side of Abbott Rd or Manor Rd, or upsze pipe.	1	3	4	1	3	0	3	0	15	\$677,580	\$67,758	\$745,338	Installation of new 36" RC pipe for 480 LF, 42" RC pipe for 160 LF and 48" RC pipe for 1,100 LF	69
5	Trapezoid	Trap	Fayette Street; MH03 - MH01	T2	10	Collapsed pipe, major cracks, misaligned pipes, etc.	Replace pipe	5	1	0	3	5	0	0	0	14	\$7,110	\$711	\$7,821	Installation of new 12" PVC pipe for 30 LF	70
5	Trapezoid	Trap	Thornbike Street; MH04 - MH05	T3	11	Crushed pipe, major cracks, some roots	Replace pipe	5	1	0	3	5	0	0	0	14	\$14,220	\$1,422	\$15,642	Installation of new 12" PVC pipe for 60 LF	71
5	Trapezoid	Trap	Thompson Street; MH03 - MH02	T4	12	Collapsed pipe, major and minor cracks	Replace pipe	5	1	0	3	5	0	0	0	14	\$30,810	\$3,081	\$33,891	Installation of new 12" PVC pipe for 130 LF	72
5	Trapezoid	Trap	Monroe Street; MH01 - MH02	T5	13	Crushed pipe, hole around service	Replace pipe	5	1	0	3	5	0	0	0	14	\$40,290	\$4,029	\$44,319	Installation of new 12" PVC pipe for 170 LF	73
5	Trapezoid	Trap	Thompson Street; MH03 - MH04	T7	15	Crushed pipe, major and minor cracks	Replace pipe	5	1	0	3	5	0	0	0	14	\$47,400	\$4,740	\$52,140	Installation of new 12" PVC pipe for 200 LF	74
5	Trapezoid	Trap	Thompson Street; MH01 - MH02	T10	18	Crushed pipe, major cracks	Replace pipe	5	1	0	3	5	0	0	0	14	\$54,510	\$5,451	\$59,961	Installation of new 12" PVC pipe for 230 LF	75
5	Trapezoid	Trap	Monroe Street; MH02 - MH03	T11	19	Crushed pipe, major cracks	Replace Pipe	5	1	0	3	5	0	0	0	14	\$31,995	\$3,200	\$35,195	Installation of new 12" PVC pipe for 135 LF	76
5	Trapezoid	Trap	Chesley Street; MH01 - MH04 Fayette	T12	20	Major cracks	Lining or chemical grouting	5	1	0	3	5	0	0	0	14	\$1,000	\$100	\$1,100	Line 8" pipe for 25 LF	77
6.5	Penacook	Hoyt Brook	Libac St., north of Hoyt Brook	P11	48	12" pipe is undersized	Install new larger dia. pipe	0	4	5	0	3	2	0	0	14	\$151,000	\$15,100	\$166,100	Installation of new 30" RC pipe for 500 LF	78
6.6	Fisherville	Beaver Meadow	Douglas Ave to Fisherville Rd	F1	53	24" pipe is undersized for the flow expected.	Investigate retaining flow from Douglas Ave, or redirect to Alice or Mayflower.	1	3	4	1	2	0	3	0	14	\$417,500	\$41,750	\$459,250	Installation of new 36" RC pipe for 1,250 LF	79
6.9	Horseshoe Pond	HP2	Liberty St and Franklin St	HP4	79	8" Diam; Excess flow / capacity problems, especially near Wyman St	Consider pipe replacement	2	1	5	1	2	0	3	0	14	\$709,700	\$70,970	\$780,670	Installation of new 18" PVC pipe for 1,640 LF and 24" RC pipe for 1,020 LF	80
6.6	Fisherville	Upper	Fisherville Rd and Beaver Meadow Brook	F7	59	2.5x2.5' box culvert surcharges	Install new culvert	0	5	0	5	3	0	0	0	13	\$24,250	\$2,425	\$26,675	Installation of new 54" RC culvert for 50 LF	81
6.7	Oak Hill	OH11	Winthrop Street and Shawmut st	O7	66	8" and 12" pipes undersized for 10-year storm	Redirect some flow in the basin to new detention. Or replace undersized pipe.	0	1	5	0	3	1	3	0	13	\$298,100	\$29,810	\$327,910	Installation of new 15" PVC pipe for 450 LF and 24" RC pipe for 650 LF	82
6.7	Oak Hill	OH12	Pelham Lane	O9	68	Undersized pipe (18" existing)	Redirect flow to detention. Or replace 18" pipe with 30" pipe.	0	2	5	0	0	1	5	0	13	\$105,700	\$10,570	\$116,270	Installation of new 30" RC pipe for 350 LF	83
6.9	Horseshoe Pond	HP2	Wyman Street and Rurnford St to Highland St	HP8	83	6" and 10" dia. pipe is undersized	Consider pipe replacement	0	0	5	0	5	0	3	0	13	\$85,750	\$8,575	\$94,325	Installation of new 15" PVC pipe for 350 LF	84
4	Washington	Wash	Valley Street, between Forest Street & Liberty Street, into White Park	W3	3	Small amount of grey-colored flow with a slight septic smell noticed.	Repair of pipe on Valley Street may solve this problem. If not, continue investigation & repairs	3	1	0	0	5	0	3	0	12	\$6,400	\$640	\$7,040	TV inspect 700 LF and disconnect two illicit sewer connections	85
6.5	Penacook	Hoyt Brook	Hoyt Brook crossings at Manor Rd and Village St	P10	47	36" culverts are undersized	Install new larger dia. culvert	0	5	4	0	3	0	0	0	12	\$35,420	\$3,542	\$38,962	Installation of two new 60" RC culverts for 70 LF	86

Sect	Drainage Basin	Sub Basin	Location	On Map	Project #	Nature of Problem	Recommended Solution	Property & Traffic	Pipe Size	% Undersized	Recur.	Pipe Age	Stream Impacts	Constructability	Road Projects	Total Score	Construction Cost	Engineering Cost	Total Cost	Description	Rank
							Range	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-40	Estimate	Estimate	Estimate		
6.6	Fishersville	Upper	Gallen Dr. and Alder Creek Dr	F6	58	Surface elevations slope towards Gallen Dr but water outlets under Alder Creek Rd causing water backup	Inspect 48" culvert for clogging or sediment build up. Remediate as needed	0	5	0	3	3	0	0	0	11	Culvert Inspection	\$0	\$0	Inspect large culvert and look for sediment build up or other blockages	87
6.11	West Concord	Miller's Brook	Private Drive off Fisk Road at Millers Brook - NOT CITY PRIORITY, SINCE PRIVATE ROAD	WC3	88	Brook periodically floods private drive.	Consider culvert replacement or storage/retention.	0	2	1	2	2	4	0	0	11	\$0	\$0	\$0	N/A - Private driveway	88
6.3	Heights	Mall	Woodcrest Heights Rd at Loudon Rd to D'Amante Dr.	H1	29	Flow from Loudon Rd occasionally backs up into 12" pipe of detention basin on Woodcrest Heights Rd.	Consider flap valve on pipe, or alternative relief into another detention basin or upsizing of drain pipe along Loudon Rd.	3	1	0	3	2	1	0	0	10	\$820,800	\$82,080	\$902,880	Installation of new 36" RC pipe for 1,800 LF and new 42" RC pipe for 600 LF on Loudon Rd.	89

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic		% Undersized		Recur.	Pipe Age	Stream Impacts	Construct ability	Road Projects	Total Score	Construction Cost		Engineering Cost	Total Cost	Description	Rank
							Range	0-5	0-5	0-5							0-5	0-5				
4	Washington	Wash	North Main Street at Pearl Street	W4	Possible Cross Connection	TV 350' along Pearl Street to pinpoint location; redirect illicit connection(s) to sewer	5	3	0	3	5	0	0	5	21	\$5,700	\$570	\$6,270	TV inspect 350 LF and disconnect two illicit sewer connections	29		
4	Washington	Wash	Celtic St and Lyndon St	W7	Collapsed pipe	Replace 400' of 8" diam clay pipe (and one tee-connection)	5	1	0	3	5	0	0	5	19	\$94,800	\$9,480	\$104,280	Installation of new 8" PVC pipe for 400 LF	36		
4	Washington	Wash	Cross Country pipe west of Valley Street	W2	Possible Illicit Connection	TV 250' from Chestnut to Valley to pinpoint illicit; redirect to sewer	3	2	0	3	5	0	3	0	16	\$5,500	\$550	\$6,050	TV inspect 250 LF and disconnect two illicit sewer connections.	52		
4	Washington	Wash	Concord Street and South State Street	W1	Possible Cross Connection	TV 300' along South State and Concord to pinpoint location; redirect illicit connection(s) to sewer.	5	2	0	3	5	0	0	15	\$5,600	\$560	\$6,160	TV inspect 300 LF and disconnect two illicit sewer connections.	64			
4	Washington	Wash	Liberty Street, north of Vernon St	W5	1. Possible cross connection	TV 400' of pipe to located illicit connection; redirect	3	1	0	3	5	0	3	0	15	\$5,800	\$580	\$6,380	TV inspect 400 LF and disconnect two illicit sewer connections	65		
4	Washington	Wash	Liberty Street, north of Vernon St	W6	2. Joint Failure	Check hydraulics to ensure they will not be affected; if appropriate, plug 8" pipe at manhole.	3	1	0	3	5	0	3	0	15	\$800	\$80	\$880	TV inspect 400 LF	66		
4	Washington	Wash	Manholes throughout the subbasin	N/A	Excess sedimentation noted in manholes	Schedule City Vector-Truck to clean regularly	5	2	0	0	5	0	0	3	15	Regular Maintenance	\$0	\$0	Regular maintenance of the system to remove sediment and debris.	67		
4	Washington	Wash	Valley Street, between Forest Street & Liberty Street, into White Park	W3	Small amount of grey-colored flow with a slight septic smell noticed.	Repair of pipe on Valley Street may solve this problem. If not, continue investigation & repairs	3	1	0	0	5	0	3	0	12	\$6,400	\$640	\$7,040	TV inspect 700 LF and disconnect two illicit sewer connections	85		

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic		% Undersized		Recur.	Pipe Age	Stream Impacts	Construct ability	Road Projects	Total Score	Construction Cost		Engineering Cost	Total Cost	Description	Rank
							Range	0-5	0-5	0-5							0-5	0-5				
5	Trapezoid	Trap	Downing Street; MH08 - MH09	T6	Major and minor cracks, roots	Lining or chemical grouting	5	1	0	3	5	0	0	3	17	\$4,000	\$400	\$4,400	Line 8" pipe for 100 LF	45		
5	Trapezoid	Trap	Downing Street; MH08 - Unknown	T14	Major cracks	Lining or chemical grouting	5	1	0	3	5	0	0	3	17	\$9,600	\$960	\$10,560	Line 12" pipe for 160 LF	46		
5	Trapezoid	Trap	Downing Street; MH02 - MH01	T15	Collapsed pipe, major cracks, pipe sag, active sewer connection	Replace Pipe	5	1	0	3	5	0	0	3	17	\$53,325	\$5,333	\$58,658	Installation of new 12" PVC pipe for 225 LF	47		
5	Trapezoid	Trap	South and Concord; Main to buried MH1	T20	Collapsed pipe, major and minor cracks	Replace Pipe	5	4	0	3	5	0	0	17	\$60,435	\$6,044	\$66,479	Installation of new 12" PVC pipe for 255 LF	48			
5	Trapezoid	Trap	South Street Easement; 2475-J15 - 2475.1-J15	T1	Pipe Sag (approximately 20' vertical drop)	Replace pipe	5	3	0	3	5	0	0	16	\$120,240	\$12,024	\$132,264	Installation of new 36" RC pipe for 360 LF	53			
5	Trapezoid	Trap	South Street Easement (Lincoln St); 1840-J14 - 1846-J14	T8	Minor cracks	Lining or chemical grouting	5	3	0	3	5	0	0	16	\$18,000	\$1,800	\$19,800	Line 24" pipe for 150 LF	54			
5	Trapezoid	Trap	South Street; 2071.1-J14 - 1844-J14, from Concord to Thompson	T9	Major & minor cracks	Lining or chemical grouting	5	3	0	3	5	0	0	16	\$51,300	\$5,130	\$56,430	Line 36" pipe for 285 LF	55			
5	Trapezoid	Trap	South Street; 2071-J14 - 2071.1-J14	T13	Minor crack, hole around pipe	Lining or chemical grouting	5	3	0	3	5	0	0	16	\$19,800	\$1,980	\$21,780	Line 36" pipe for 110 LF	56			
5	Trapezoid	Trap	South Street Easement; 2776.1-J15 - 888	T16	Minor crack, infiltration	Lining or chemical grouting	5	3	0	3	5	0	0	16	\$23,400	\$2,340	\$25,740	Line 36" pipe for 130 LF	57			
5	Trapezoid	Trap	South Street Easement; 2493.1-J15 - 2691-J15	T17	Minor crack, heavy roots	Lining or chemical grouting	5	3	0	3	5	0	0	16	\$113,400	\$11,340	\$124,740	Line 36" pipe for 630 LF	58			
5	Trapezoid	Trap	South Street; 2074-J14 - 2071-J14, near Concord St	T18	Minor crack	Lining or chemical grouting	5	3	0	3	5	0	0	16	\$23,580	\$2,358	\$25,938	Line 36" pipe for 130 LF	59			
5	Trapezoid	Trap	Cross Country (Spruce Street) Drain; 2181.1-J14 - 2212-J14	T19	Active sewer connections	Lining or chemical grouting	5	3	0	3	5	0	0	16	\$31,500	\$3,150	\$34,650	Line 36" pipe for 175 LF	60			
5	Trapezoid	Trap	Fayette Street; MH03 - MH01	T2	Collapsed pipe, major cracks, misaligned pipes, etc.	Replace pipe	5	1	0	3	5	0	0	14	\$7,110	\$711	\$7,821	Installation of new 12" PVC pipe for 30 LF	70			
5	Trapezoid	Trap	Thomdike Street; MH04 - MH05	T3	Crushed pipe, major cracks, some roots	Replace pipe	5	1	0	3	5	0	0	14	\$14,220	\$1,422	\$15,642	Installation of new 12" PVC pipe for 60 LF	71			
5	Trapezoid	Trap	Thompson Street; MH03 - MH02	T4	Collapsed pipe, major and minor cracks	Replace pipe	5	1	0	3	5	0	0	14	\$30,810	\$3,081	\$33,891	Installation of new 12" PVC pipe for 130 LF	72			
5	Trapezoid	Trap	Monroe Street; MH01 - MH02	T5	Crushed pipe, hole around service	Replace pipe	5	1	0	3	5	0	0	14	\$40,290	\$4,029	\$44,319	Installation of new 12" PVC pipe for 170 LF	73			
5	Trapezoid	Trap	Thompson Street; MH03 - MH04	T7	Crushed pipe, major and minor cracks	Replace pipe	5	1	0	3	5	0	0	14	\$47,400	\$4,740	\$52,140	Installation of new 12" PVC pipe for 200 LF	74			
5	Trapezoid	Trap	Thompson Street; MH01 - MH02	T10	Crushed pipe, major cracks	Replace pipe	5	1	0	3	5	0	0	14	\$54,510	\$5,451	\$59,961	Installation of new 12" PVC pipe for 230 LF	75			
5	Trapezoid	Trap	Monroe Street; MH02 - MH03	T11	Crushed pipe, major cracks	Replace Pipe	5	1	0	3	5	0	0	14	\$31,995	\$3,200	\$35,195	Installation of new 12" PVC pipe for 135 LF	76			
5	Trapezoid	Trap	Chesley Street; MH01 - MH04 Fayette	T12	Major cracks	Lining or chemical grouting	5	1	0	3	5	0	0	14	\$1,000	\$100	\$1,100	Line 8" pipe for 25 LF	77			

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic		% Undersized		Recur.	Pipe Age	Stream Impacts	Construct ability	Road Projects	Total Score	Construction Cost		Engineering Cost	Total Cost	Description	Rank
							Range	0-5	0-5	0-5							0-5	0-5				
6.3	Heights	Loudon	Small dia. pipes a Nodes "U", "W" and "AA"	H15	24" thru 12" dia. pipes undersized for 10-year storm	Consider replacing pipes with large dia. pipes	5	4	5	0	5	2	0	5	26	\$467,900	\$46,790	\$514,690	Installation includes new 36" RC pipe for 560 LF, 30" RC pipe for 930 LF	9		
6.3	Heights	Birdland	Small dia. pipes along Ormond St, Christian Ave, Oriole Rd, East Side Dr and Partridge Rd	H16	12" and 15" dia. pipes undersized for 10-year storm	Consider more detailed study of drainage area and replace pipes with larger dia. pipes	3	5	5	3	3	2	0	5	26	\$1,998,340	\$199,834	\$2,198,174	Installation includes new 54" RC pipe for 1,305 LF, 48" RC pipe for 940 LF, 42" RC pipe for 1,145 LF, 30" RC pipe for 605 LF, 24" RC pipe for 500 LF and 18" PVC pipe for 925 LF	10		

6.3	Heights	Mall	Southwest of intersection of Loudon Rd & Branch Turnpike	H12	30" pipe discharges to a detention basin with an 18" outlet across Branch Turnpike. 18" backs up.	Replace with 36" pipe along Branch Turnpike to existing 42" on Loudon Rd. Private Property owner to perform work.	5	4	5	4	0	1	3	0	22	Private Project	\$0	\$0	Installation of new 36" RC pipe for 800 LF on Branch Turnpike and Loudon Rd.	25
6.3	Heights	Loudon	Pipe along Loudon Rd. and East Side Dr.	H14	30" and 24" dia. pipe on Loudon Rd and 12" dia. pipe on East Side Dr. undersized for 10-year storm	Consider additional detention or relief in system or replace pipe.	2	4	5	1	2	3	3	0	20	\$7,515,425	\$751,543	\$8,266,968	Installation includes new 84" RC pipe for 2,400 LF, 72" RC pipe for 1,500 LF, 48" RC pipe for 2,620 LF, 36" RC pipe for 680 LF and 24" RC pipe for 885 LF	34
6.3	Heights	Loudon	Fort Eddy Rd, street crossing near Shaws	H13	18" diam pipe overwhelmed by snow melt	Maintain pipe to prevent blockage; Consider snow removal after heavy snow storms.	4	2	3	3	5	1	0	0	18	Regular Maintenance	\$0	\$0	Regular maintenance of area should relieve seasonal issues.	42
6.3	Heights	Mall	Woodcrest Heights Rd at Loudon Rd to D'Amante Dr.	H11	Flow from Loudon Rd occasionally backs up into 12" pipe of detention basin on Woodcrest Heights Rd.	Consider flap valve on pipe, or alternative relief into another detention basin or upsizing of drain pipe along Loudon Rd.	3	1	0	3	2	1	0	0	10	\$820,800	\$82,080	\$902,880	Installation of new 36" RC pipe for 1,800 LF and new 42" RC pipe for 600 LF on Loudon Rd.	89

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic		Pipe Size		% Undersized		Recur.		Pipe Age		Stream Impacts		Construct ability		Road Projects		Total Score		Construction Cost		Engineering Cost		Total Cost		Description	Rank
							Range	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5		
6.4	Turkey River	Bow Brk	Bow Brook passing under both South St and Bow St. and Sunset Ave flow into Bow Brook	TR1	48" (South Street) and 12" (Sunset Ave) pipes are undersized for flow from the South Street area.	Existing 24" overflow discharges to brook south of this outlet. May have already resolved this issue.	4	3	4	2	5	4	3	4	29	\$118,325	\$11,833	\$130,158	Installation includes new 24" RC pipe for 300 LF and 18" PVC for 125 LF	5												
6.4	Turkey River	Turkey River	Separate drainage from South St, Angella Way and Mooreland Ave into Turkey River	TR2	15" and 18" pipe is undersized for flow from the three area.	Consider replacing pipes with large dia. pipes	3	2	3	0	3	5	5	0	21	\$442,200	\$44,220	\$486,420	Installation includes new 30" RC pipe for 1,225 LF and 24" RC pipe for 250 LF	30												
6.4	Turkey River	Turkey River	Pleasant St, east of Miller's Brook crossing	TR3	Overland flow through undersized culvert	Replace existing culvert with larger sized culvert	0	3	3	3	5	0	3	0	17	\$14,450	\$1,445	\$15,895	Installation of new 24" RC culvert under Pleasant St	49												

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic		Pipe Size		% Undersized		Recur.		Pipe Age		Stream Impacts		Construct ability		Road Projects		Total Score		Construction Cost		Engineering Cost		Total Cost		Description	Rank
							Range	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5		
6.5	Penacook	Rolfe Canal	River Road at The Island Road	P1	Continued Isolated Flooding; No existing piping	Improved drainage, storage, or re-grading.	1	5	5	3	5	1	5	5	30	Completed	\$0	\$0	Construction completed by General Services Division	3												
6.5	Penacook	Contoocook	River Rd southwest Island Rd	P2	Continued Isolated Flooding; No existing piping	Improved drainage, storage, or re-grading.	1	5	5	3	5	1	5	5	30	Completed	\$0	\$0	Construction completed by General Services Division	4												
6.5	Penacook	Contoocook	Charles Street and Contoocook River	P6	12" pipe is undersized	Detention, storage, or increase in pipe size.	3	1	5	1	5	2	3	5	25	\$57,800	\$5,780	\$63,580	Installation of new 24" RC pipe for 200 LF	13												
6.5	Penacook	Merri-mack	Merrimack St and Bye St pipes	P4	12" pipes are undersized and illicit sewer connection	Detention, storage, or increase in pipe size along with separating sewer connection	3	1	5	2	5	2	3	3	24	\$558,200	\$55,820	\$614,020	Installation of new 30" RC pipe for 1,000 LF and 42" RC pipe for 700 LF	16												
6.5	Penacook	Contoocook	Tanner Street and Village Street	P5	15" and 12" pipes are undersized	Detention, storage, or increase in pipe size.	3	2	5	1	5	2	3	3	24	\$306,550	\$30,655	\$337,205	Installation of new 24" RC pipe for 700 LF and 48" RC pipe for 250 LF	17												
6.5	Penacook	Rolfe Canal	Low Area at Borough, Washington and Fowler triangle	P3	Low area in neighborhood experiences severe flooding in heavy rain and spring conditions	Install new drainage pipes and outfalls or drywells for an immediate solution	0	3	5	3	2	2	3	5	23	\$385,500	\$38,550	\$424,050	Installation of new 12" and 15" PVC drainage for 1000 LF and 24" RC pipe for 500 LF	20												
6.5	Penacook	Hoyt Brook	Elm St and Contoocook River	P13	12" is undersized and removal of temporary drywells	Install new larger dia. pipe and removal drywells	0	4	5	0	3	2	3	4	21	\$469,200	\$46,920	\$516,120	Installation of new 30" RC pipe for 350 LF, 18" PVC pipe for 500 LF and 12" PVC pipe for 1,000 LF	31												
6.5	Penacook	Rolfe Canal	Washington Street, north of the Rolfe Canal	P7	12" pipe is undersized	Detention, storage, or increase in pipe size.	2	1	5	1	3	2	5	0	19	\$200,400	\$20,040	\$220,440	Installation of new 36" RC pipe for 600 LF	37												
6.5	Penacook	Hoyt Brook	Penacook St. culvert at Hoyt Brook	P9	24" culvert is undersized	Install new larger dia. culvert	0	3	5	0	3	0	3	5	19	\$17,710	\$1,771	\$19,481	Installation of new 60" RC culvert for 35 LF	38												
6.5	Penacook	Hoyt Brook	East St and Contoocook River	P14	12" pipe is undersized	Install new larger dia. pipe	3	1	4	0	3	2	3	3	19	\$50,600	\$5,060	\$55,660	Installation of new 18" PVC pipe for 200 LF	39												
6.5	Penacook	Hoyt Brook	Local drainage from Millstream Ln, Primrose Ln and Fowler St to Millstream Brook	P12	12", 15" and 24" pipes are undersized	Install new larger dia. pipe	0	3	4	0	3	2	3	3	18	\$189,250	\$18,925	\$208,175	Installation of new 36" RC pipe for 150 LF and 18" PVC pipe for 550 LF	43												
6.5	Penacook	Rolfe Canal	Electric Ave, contributing to the Rolfe Canal	P8	12" pipe is undersized	Detention, storage, or increase in pipe size.	2	1	4	1	3	2	3	0	16	\$37,950	\$3,795	\$41,745	Installation of new 18" PVC pipe for 150 LF	61												
6.5	Penacook	Hoyt Brook	Electric Ave complex and Contoocook River	P15	12" pipe is undersized	Install new larger dia. pipe	0	3	5	0	2	2	3	0	15	\$115,600	\$11,560	\$127,160	Installation of new 24" RC pipe for 400 LF	68												
6.5	Penacook	Hoyt Brook	Lilac St., north of Hoyt Brook	P11	12" pipe is undersized	Install new larger dia. pipe	0	4	5	0	3	2	0	0	14	\$151,000	\$15,100	\$166,100	Installation of new 30" RC pipe for 500 LF	78												
6.5	Penacook	Hoyt Brook	Hoyt Brook crossings at Manor Rd and Village St	P10	36" culverts are undersized	Install new larger dia. culvert	0	5	4	0	3	0	0	0	12	\$35,420	\$3,542	\$38,962	Installation of two new 60" RC culverts for 70 LF	86												

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic		Pipe Size		% Undersized		Recur.		Pipe Age		Stream Impacts		Construct ability		Road Projects		Total Score		Construction Cost		Engineering Cost		Total Cost		Description	Rank
							Range	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5		

6.6	Fisherville	Upper	Lake St	F5	Road is poor conditions, limited catch basins and drain pipes	Line existing pipe, install new pipes & catch basins and repave road	3	3	3	3	5	2	3	5	27	\$380,550	\$38,055	\$418,605	Installation of new 18" PVC pipe for 1,350 LF and line 12" pipe for 650 LF	7
6.6	Fisherville	Upper	Along Manor Road to the Merrimack River.	F3	24" pipe undersized for flow expected.	Investigate relief to the north side of Abbott Rd or Manor Rd or upsized pipe.	3	3	5	1	2	0	3	5	22	\$1,630,470	\$163,047	\$1,793,517	Installation of new 48" RC pipe for 3,910 LF	26
6.6	Fisherville	Rattlesnake Brook	Quaker St, Knight St, and North State St	F4	Culverts undersized and not ideal hydraulically	Investigate size of culverts and large culvert elevation changes under North State St	3	5	3	3	5	0	0	3	22	\$33,360	\$3,336	\$36,696	Installation of new 48" RC culvert for 80 LF	27
6.6	Fisherville	Upper	Along Snow Street and Randlett Street.	F2	24" pipe undersized for flow expected.	Investigate relief to the north side of Abbott Rd or Manor Rd, or upsized pipe.	1	3	4	1	3	0	3	0	15	\$677,580	\$67,758	\$745,338	Installation of new 36" RC pipe for 480 LF, 42" RC pipe for 160 LF and 48" RC pipe for 1,100 LF	69
6.6	Fisherville	Beaver Meadow	Douglas Ave to Fisherville Rd	F1	24" pipe is undersized for the flow expected.	Investigate retaining flow from Douglas Ave, or redirect to Alice or Mayflower.	1	3	4	1	2	0	3	0	14	\$417,500	\$41,750	\$459,250	Installation of new 36" RC pipe for 1,250 LF	79
6.6	Fisherville	Upper	Fisherville Rd and Beaver Meadow Brook	F7	2.5'x5.5' box culvert surcharges	Install new culvert	0	5	0	5	3	0	0	0	13	\$24,250	\$2,425	\$26,675	Installation of new 54" RC culvert for 50 LF	81
6.6	Fisherville	Upper	Gallen Dr. and Alder Creek Dr	F6	Surface elevations slope towards Gallen Dr but water outlets under Alder Creek Rd causing water backup	Inspect 48" culvert for clogging or sediment build up. Remediate as needed	0	5	0	3	3	0	0	0	11	Culvert Inspection	\$0	\$0	Inspect large culvert and look for sediment build up or other blockages	87

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic	Pipe Size	% Undersized	Recur.	Pipe Age	Stream Impacts	Construct ability	Road Projects	Total Score	Construction Cost	Engineering Cost	Total Cost	Description	Rank
							Range	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-40	Estimate	Estimate	Estimate		
6.7	Oak Hill	OH2	West Sugarball Road to outfall on Merrimack River	O4	Severe washout and erosion	Repair/Reconstruct drainage outfall	2	2	4	5	5	5	0	3	26	\$133,600	\$13,360	\$146,960	Installation of new 36" RC pipe for 400 LF and repair existing outfall structure.	11
6.7	Oak Hill	OH2	East Side Dr from Heritage Heights Road to South Curtisville Rd	O1	12" pipes are undersized	Replace 12" pipe with larger dia. pipe.	3	3	4	1	3	1	3	5	23	\$352,070	\$35,207	\$387,277	Installation of new 24" RC pipe for 330 LF and 30" RC pipe for 850 LF	21
6.7	Oak Hill	OH1	Outfall at Eastman and Portsmouth	O5	24" pipe undersized for 10-year storm	Reducing incoming flow with detention, or increase size of pipe.	0	3	4	0	5	5	3	3	23	\$200,400	\$20,040	\$220,440	Installation of new 36" RC pipe for 600 LF	22
6.7	Oak Hill	OH2	South Curtisville Rd from East Side Dr to north of Portsmouth St	O8	24" and 8" pipes feeding detention pond at Node LL are undersized	Redirect some flow in the basin to alternate detention. Or replace with larger pipes.	3	4	4	0	5	1	3	3	23	\$75,500	\$7,550	\$83,050	Installation of new 30" RC pipe for 250 LF	23
6.7	Oak Hill	OH2	Portsmouth St culvert at Mill Brook crossing	O3	Undersized culvert (48" existing). Substantial flooding during May 2006 storm	Replace culvert with larger dia pipe or box culvert. New size assumed to be 60"	3	1	5	2	2	0	5	3	21	\$20,240	\$2,024	\$22,264	Installation of new 60" RC pipe for 40 LF	32
6.7	Oak Hill	OH1	East Side Drive from Putney to Eastman	O6	8" and 18" pipes undersized for 10-year storm	Redirect some flow in the basin to new detention or brook (with treatment). Or replace undersized pipes.	3	2	4	0	3	1	3	5	21	\$511,310	\$51,131	\$562,441	Installation of new 30" RC pipe for 650 LF and 24" RC pipe for 1,090 LF	33
6.7	Oak Hill	OH1	Shaker Rd from Pekoe Dr to Mountain Rd	O2	Roots and other obstructions in the pipe.	Clean and line pipe or replace with larger dia. pipe.	2	2	4	3	3	0	3	0	17	\$130,050	\$13,005	\$143,055	Installation of new 24" RC pipe for 450 LF	50
6.7	Oak Hill	OH1	Winthrop Street and Shawmut st	O7	8" and 12" pipes undersized for 10-year st	Redirect some flow in the basin to new detention. Or replace undersized pipe.	0	1	5	0	3	1	3	0	13	\$298,100	\$29,810	\$327,910	Installation of new 15" PVC pipe for 450 LF and 24" RC pipe for 650 LF	82
6.7	Oak Hill	OH2	Pelham Lane	O9	Undersized pipe (18" existing)	Redirect flow to detention. Or replace 18" pipe with 30" pipe.	0	2	5	0	0	1	5	0	13	\$105,700	\$10,570	\$116,270	Installation of new 30" RC pipe for 350 LF	83

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic	Pipe Size	% Undersized	Recur.	Pipe Age	Stream Impacts	Construct ability	Road Projects	Total Score	Construction Cost	Engineering Cost	Total Cost	Description	Rank
							Range	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-40	Estimate	Estimate	Estimate		
6.8	Hospital	H	Bow Brook culverts under School St and Warren St	HOS3	Culverts were washed out during the May 2006 storm. The School St culvert was undersized	City currently under design to repair/replace culvert	5	5	4	3	5	3	0	4	29	\$171,000	\$19,000	\$190,000	City temporarily repaired wash out. City to prepare design for new permanent culvert. FEMA and FHWA (Federal Highway Administration) paid for project.	6
6.8	Hospital	H	South of Redington Road, west of Fruit Street, 30" pipe	HOS4	Flat area has poor drainage	Consider installing larger pipes.	0	4	3	3	5	2	5	4	26	\$549,000	\$54,900	\$603,900	Installation of new 42" RC pipe for 1,500 LF	12
6.8	Hospital	H	Bow Brook culvert under Pleasant St as the pipe enters State Hospital grounds	HOS2	Culvert was washed out during the May 2006 storm.	City currently under design to repair/replace culvert	5	5	0	3	5	3	0	4	25	\$126,000	\$14,000	\$140,000	City temporarily repaired wash out. City to prepare design for new permanent culvert. FEMA and FHWA (Federal Highway Administration) paid for project.	14
6.8	Hospital	H	Noyes Street near Harvard Street	HOS5	18" pipe undersized	Reduce flow through retention or storage; or replace with a larger pipe	3	2	5	0	5	5	0	4	24	\$57,800	\$5,780	\$63,580	Installation of new 24" RC pipe for 200 LF	18
6.8	Hospital	H	Bow Brook from Ridge Rd and Terrace Rd	HOS1	Outlet pipes are undersized	Replace existing pipes with larger dia. pipes	0	4	5	0	5	3	0	5	22	\$140,560	\$14,056	\$154,616	Installation of new 30" RC pipe for 200\ LF ad 36" RC pipe for 240 LF	28
6.8	Hospital	H	Minot St outlet to Thayer Pond/Bow Brook	HOS7	12" pipe is undersized	Replace with a larger pipe.	0	1	5	0	5	2	3	4	20	\$173,400	\$17,340	\$190,740	Installation of new 24" RC pipe for 600 LF	35
6.8	Hospital	H	Pleasant St from Pleasant View to Kensington Rd	HOS6	8" pipe undersized	Replace with a larger pipe.	3	1	5	0	5	0	0	4	18	\$120,800	\$12,080	\$132,880	Installation of new 30" RC pipe for 400 LF	44

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic			Recur.	Pipe Age	Stream Impacts	Construct ability	Road Projects	Total Score	Construction Cost	Engineering Cost	Total Cost	Description	Rank
							Range	0-5	0-5											
6.9	Horseshoe Pond	HP2	East end of Walker St, corner of Walker and North State St.	HP2	18" and 24" Diameter; Pipes with 90° turns & capacity issues.	The NHDOT is designing a new piping scheme here.	4	3	4	5	5	3	5	5	34	NHDOT project	\$0	\$0	NHDOT design of these pipes have begun but is currently on hold	1
6.9	Horseshoe Pond	HP1	East end of Walker Street, corner of Walker & North State	HP1	18" and 20" Diameter; Pipes with 90° turns & capacity issues.	The NHDOT is designing a new piping scheme here.	4	2	4	5	5	3	5	5	33	NHDOT project	\$0	\$0	NHDOT design of these pipes have begun but is currently on hold	2
6.9	Horseshoe Pond	HP2	Rumford St, between Penacook St and Jennings St	HP5	Undersized 8" Diam pipe from large area to Walker St	Consider pipe replacement	2	1	5	1	5	0	5	5	24	\$134,750	\$13,475	\$148,225	Installation of new 15" PVC pipe for 550 LF	19
6.9	Horseshoe Pond	HP2	Walker St from North State St to Liberty St	HP3	8", 15" and 20" Diameter, Excess flow & severe capacity problems	Replace with a larger pipe	2	2	5	1	5	0	3	5	23	\$553,645	\$55,365	\$609,010	Installation of new 24" RC pipe for 225 LF, 30" RC pipe for 700 LF and 36" RC pipe for 830 LF	24
6.9	Horseshoe Pond	HP3	I395/202 at RR Track, west of the southbound I93 offramp	HP6	20" Diameter; Undersized.	NHDOT is designing a new pipe to direct excess flow north on North Main St to Horseshoe Pond.	5	3	4	0	5	2	0	0	19	NHDOT project	\$0	\$0	NHDOT design of these pipes have begun but is currently on hold	40
6.9	Horseshoe Pond	HP2	Bradley St from Albin St to Perkins St	HP9	12" and 20" dia. pipe is undersized	Consider pipe replacement	5	4	3	0	5	0	0	0	17	\$224,250	\$22,425	\$246,675	Installation of new 18" PVC pipe for 200 LF and 30" RC pipe for 575 LF	51
6.9	Horseshoe Pond	HP3	Church St between Bouton & State	HP7	18" Diameter; Excess flow & capacity problems	Planned overflow should alleviate these issues if constructed	2	2	4	0	5	0	3	0	16	\$151,000	\$15,100	\$166,100	Installation of new 30" RC pipe for 500 LF	62
6.9	Horseshoe Pond	HP2	Liberty St and Franklin St	HP4	8" Diam; Excess flow/capacity problems, especially near Wyman St	Consider pipe replacement	2	1	5	1	2	0	3	0	14	\$709,700	\$70,970	\$780,670	Installation of new 18" PVC pipe for 1,640 LF and 24" RC pipe for 1,020 LF	80
6.9	Horseshoe Pond	HP2	Wyman Street and Rumford St to Highland St	HP8	6" and 10" dia. pipe is undersized	Consider pipe replacement	0	0	5	0	5	0	3	0	13	\$85,750	\$8,575	\$94,325	Installation of new 15" PVC pipe for 350 LF	84

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic			Recur.	Pipe Age	Stream Impacts	Construct ability	Road Projects	Total Score	Construction Cost	Engineering Cost	Total Cost	Description	Rank
							Range	0-5	0-5											
6.10	Turkey Pond	TP	Five culverts apparently undersized for current conditions.	TP1	Culverts potentially undersized, potential for flooding of roads.	Detailed inspection of all culverts, compare culvert size with recommended.	0	3	1	0	5	5	5	0	19	Inspect	\$0	\$0	Inspect the five culverts for blockage and sediment build up. Replace with larger culvert if necessary.	41

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic			Recur.	Pipe Age	Stream Impacts	Construct ability	Road Projects	Total Score	Construction Cost	Engineering Cost	Total Cost	Description	Rank
							Range	0-5	0-5											
6.11	West Concord	Penna cook Lake	Road side ditches along Carter Hill Road	WC2	Slope with high velocity runoff, large riprap pushed to bottom of hill.	Consider veins or other means to break velocity, or detention near top of hill.	0	5	5	5	5	2	5	0	27	\$90,000	\$10,000	\$100,000	City design of this problem is complete. Construction to begin in 2007.	8
6.11	West Concord	Miller's Brook	Intersection of Pleasant Street and Miller's Brook	WC1	Undersized culvert causing backups	Consider culvert replacement or storage/retention.	3	3	1	3	5	0	5	5	25	\$20,040	\$2,004	\$22,044	Installation of new 36" RC pipe for 60 LF	15
6.11	West Concord	Miller's Brook	Private Drive off Fisk Road at Millers Brook - NOT CITY PRIORITY, SINCE PRIVATE ROAD	WC3	Brook periodically floods private drive.	Consider culvert replacement or storage/retention.	0	2	1	2	2	4	0	0	11	\$0	\$0	\$0	N/A - Private driveway	88

Sect	Drainage Basin	Sub Basin	Location	On Map	Nature of Problem	Recommended Solution	Property & Traffic			Recur.	Pipe Age	Stream Impacts	Construct ability	Road Projects	Total Score	Construction Cost	Engineering Cost	Total Cost	Description	Rank
							Range	0-5	0-5											
6.12	Hoit	Hoit	Freedom Acres, between Hoit Rd and Mountain Rd	HT1	Back up of detention basin. Poor design. Does not permit access for cleaning & maintenance.	Maintain detention pond	1	2	1	3	2	2	5	0	16	\$10,000	\$0	\$0	Regular maintenance of detention pond.	63