CHAPTER III

EXISTING DRAINAGE SYSTEM

Creeks, Pipes and Open Channels

Map III-1 (Appendix C) shows the existing drainage system discretized into model subcatchments, pipe segments and existing drainage channel reaches. The area north of the railroad mainline tracks and from Willamette Industries east is not modeled because 1) runoff patterns are not well accumulated or identifiable, 2) the area is reasonably well drained with the close enveloping proximity of the Santiam River, 3) a significant portion of this area is active or abandoned quarry pits and 4) there is only one major drainage entering this area from south of the railroad.

Ashbrook subdivision currently being developed at Mountain View Road and Long Street changes several drainages. Map III-1 was constructed based on what Ashbrook is projected to look like in the spring of 1980.

Runoffs resulting from 10, 25, and 100 year synthetic design storms were computed for every pipe segment and channel reach. Output is in the form of 157 hydrographs which are forwarded separately as Appendix C to this report.

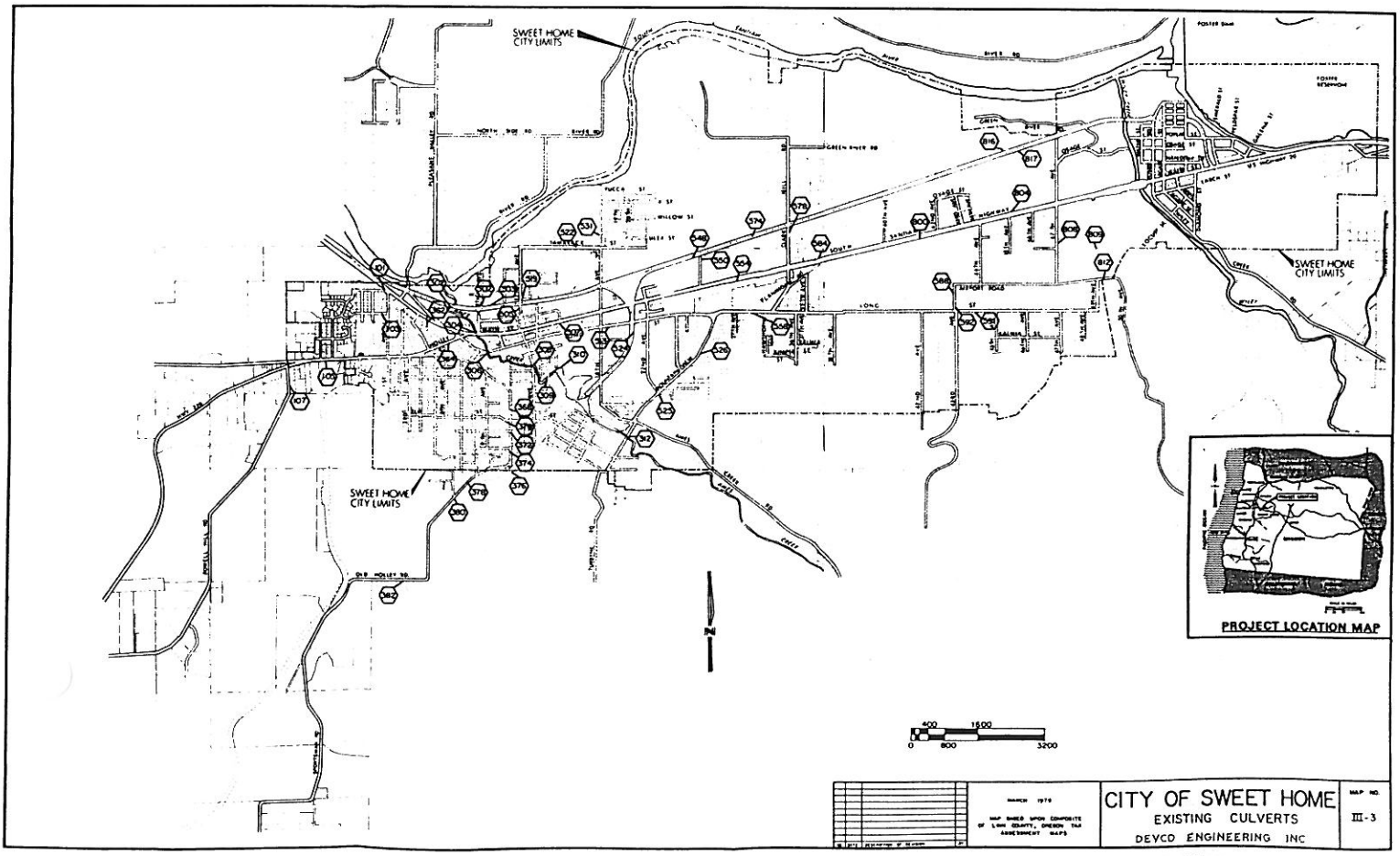
SWEET HOME CITY LIMITS
SWEET HOME CITY LIMITS
SWEET HOME CITY LIMITS
PROJECT LOCATION MAP
N
0 400 800 1600 3200
MARCH 1979
MAP BASED UPON COMPOSITE OF 1.200 SCALE, OREGON TAX ASSESSMENT MAPS
CITY OF SWEET HOME
EXISTING CULVERTS
DEVCO ENGINEERING INC
MAP NO.
III-3

TABLE III-4
CAPACITY OF EXISTING CULVERTS

MODEL CULVERT NO	LOCATION[1]	MATERIAL	ENTRANCE CONDITION	SIZE	I.E. IN	I.E. OUT	LENGTH FEET	ALLOWABLE HEAD[2] AT INLET FEET	APPROX[4] EXISTING CAPACITY CFS	MODEL CHANNEL I.D. NO.	MINIMUM RECOMMENDED DESIGN FREQUENCY (YEARS)	EXISTING STORM FLOW CFS	IS EXISTING CULVERT O.K.?	FULL DEVELOPMENT DESIGN FLOW CFS	IS EXISTING CULVERT O.K.?
101	US 20 @ 1st Ave.	Concrete Box	Wingwall	9'x3.2'	-7.8'		120	6	275	102	25	290	Yes	308	Yes
103	Nandina St. 150' W 1st Ave.	CMP CMP-Arch Asphalt lined & coated	Wingwall Wingwall	30" 6'x3'	-0.15' -0.15'		52 52	4.5 4.5	31 110	104	25	270	No	281	No
105	Hwy 20 near Evergreen Lane	CMP	Projecting	48	+0.1'		64	6.5	100	106	25	222	No	232	No
107	Rowell Hill Rd 400' S Hwy 228	Concrete	Grooved Edge	3-3"Ø	-0.35'		47	4	135	108& 110	25	93	Yes	102	No
[6] 302	RR & Ames Creek	(Wood Pile Bridge)			500.3				Much More Than Req'd	702	100	2450	Yes	2510[8]	Yes
[6] 304	US 20 & Ames Creek	Concrete Box	Wingwall	2 ea 8'x8' sq.box	513.7	513.7	168	9	1400	704	100	2390	No	2410[8]	No
[6] 306	Long St. & Ames Creek	Concrete Bridge	Headwall	11'x20'	517.5		60	9	1400	706	100	2020	Yes	2020[8]	Yes
308	12th Ave. & Ames Creek	CMP-Arch Bolted	Wingwall	9'x 14.3'	529.6	529.2	37	7.5	900	707	100	2010	No	2010[8]	No
[6] 309	14th Ave. & Ames Creek	Concrete & wood Bridge	Wingwall	8.8'x 17.3'	532.3		49	8	1150	708	100	2010	No	2010[8]	No
[6] 312	Mt. View Rd & Ames Ck.	Wood Bridge	Wingwall	6'x26'	550.4		32	6	1130	714	100	1710	No	1710[8]	No

TABLE III-4
CAPACITY OF EXISTING CULVERTS

MODEL[1] CULVERT NO.	LOCATION[1]	MATERIAL	ENTRANCE CONDITION	SIZE	I.E. IN	I.E. OUT	LENGTH FEET	ALLOWABLE HEAD[2] AT INLET FEET	APPROX.[4] EXISTING CAPACITY CFS	MODEL CHANNEL I.D. NO.	MINIMUM RECOMMENDED DESIGN FREQUENCY (YEARS)	EXISTING STORM FLOW CFS	IS EXISTING CULVERT O.K.?	FULL DEVELOPMENT DESIGN FLOW CFS	IS EXISTING CULVERT O.K.?
362	US 20 200' E 4th Ave.	Concrete	Grooved Edge	24	-3.0		260	12	30	316	10	50	No	17 Channel 316 rerouted	Yes
364	Holley Rd between 4th Ave. & US 20	Concrete	Grooved Edge	30	-0.3		68	5	47	316	10	50	Yes	17 Channel 316 rerouted	Yes
368	10th Ave. 300' N of Elm St.	CMP Asphalt Lined	Headwall	40"x 65"	-1.0		37	4	95	340	25	126	No	145	No
370	Elm St. & 10th Ave.	Concrete	Wingwall	42"	-0.7		68	5	80	340	25	126	No	145	No
372	Dogwood St @ 10th Ave	Concrete	Wingwall	42	-1.1		47	5	80	340	25	126	No	145	No
374	Cedar St. @ 10th Ave	Concrete Box	Square Edge	5'x2'	-0.3		50	3.5	70	340	25	126	No	145	No
376	Old RR Bed & 10th Ave	Concrete	Grooved Edge	2-18"	-0.4		29	6	44	342	25	126	No	145	No
378	Old RR Bed &Old Holly Rd	Composite CMP & Concrete	Project-ing	30"	-0.2		43	6	36	336	10	28	Yes	28	Yes
382	Old Holly Rd(Sports-man Rd)	Concrete	Grooved Edge	18"	-1.4		42	5.5	21	½ of 336	10	14	Yes	14	Yes
502	9th Ave. & RR	CMP-Arch	Project-ing	72"x 44"	(S=1.46%)		30	4.7	130	501	25	152	No	185	No
503	RR 150' E of 9th Ave.	CMP	Project-ing	72"	(S=0.49%)		48	7	220	517	25	140	Yes	146	Yes
505	12th Ave. @ RR	Concrete Box Conc	Headwall	4'x6' 48"	(S=1.65%)		91	5	170 100	506	25	135	Yes	149	Yes

TABLE III-4
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MODEL[1] CULVERT NO	LOCATION[1]	MATERIAL	ENTRANCE CONDITION	SIZE	I.E. IN	I.E. OUT	LENGTH FEET	ALLOWABLE HEAD[2] AT INLET FEET	APPROX.[4] EXISTING CAPACITY CFS	MODEL CHANNEL ID NO	MINIMUM RECOMMENDED DESIGN FREQUENCY (YEARS)	EXISTING STORM FLOW CFS	IS EXISTING CULVERT O.K.?	FULL DEVELOPMENT DESIGN FLOW CFS	IS EXIST CULVERT
507	US 20 & 15th Ave.	Concrete	Catch Basin	30"	-	-	56	5.5	9	506-523	25	14	-	29	-
513	Long St. 150' E of 18th Ave.	CMP-Arch Asphalt Lined	Wingwall	31"x 50"	539.7	539.4	60	2.5	60	509	25	125	No	116	No
519	12th Ave. N of RR	CMP	Project-ing	54"	-0.6		60	7	140	504	10	19	Yes	40	Yes
522	Tamarack St. 700' W Of 18thAve	Concrete	Grooved Edge	18"	-0.5		38	3.5	14	Over-flow of 532	10	35?	No	15	Yes
524	RR @ 200' S of Long St.	CMP		2-24"	(S=0.7%)		68	2	22	510	10	24	Yes	49	No
525	This is a series of four culverts 300' E of Mt. View & 22nd Ave.	CMP	Project-ing	36"	584.8	584.4	26'	3	21	516	10	61	No	29	Yes
	The following three pipes are connected by catch basins and/or manhole 120' E of Mt. View @ 22nd Ave.	CMP	Headwall	30"	580.3	575.9	115	2.5	32	516	10	61	No	29	Yes
	Mt. View @ 22nd Ave.	Concrete Box	n/a	30"	575.3	572.3	105	n/a	32	516	10	61	No	29	Yes
	65' W of Mt. View @ 22nd Ave.	Concrete	n/a	30"	572.3	564.6	165	n/a	32	516	10	61	No	29	Yes
526	Mt. View @ Taft St.	Concrete	Grooved Edge	24"	575.9	571.4	110	4.5	31	514	10	27	Yes	44	No
531	18th Ave. 200' N of Tamarack	Concrete	Grooved Edge	2-24'	-0.2		53	2	30	Over-flow of 532	10	35	Yes	5	Yes

TABLE III-4
CAPACITY OF EXISTING CULVERTS

MODEL[1] CULVERT NO	LOCATION[1]	MATERIAL	ENTRANCE CONDITION	SIZE	I.E. IN	I.E. OUT	LENGTH FEET	ALLOWABLE HEAD[2] AT INLET FEET	APPROX.[4] EXISTING CAPACITY CFS	MODEL CHANNEL I.D. NO.	MINIMUM RECOMMENDED DESIGN FREQUENCY (YEARS)	EXISTING STORM FLOW CFS	IS EXISTING CULVERT O.K.?	FULL DEVEL DESIGN FLOW CFS
548	RR 150' W of 24th Av	Channel & culvert are blocked with land fill								552	25	26	-	0 rout
550	24th Ave. @ RR	Concrete	Headwall Culvert is completely submerged in backwater of land fill blocking channel beyond outlet.	2-26"	-0.3		30	5	104	552	25	26	Yes	0 rout
554	1200' W of Clark Mill Rd on US 20	CMP Asphalt Lined	Project-ing	36"	-1.4		114	5	55	556	25	16	Yes	156
558	Long St. 300' W of Clark Mill Rd.	Concrete	Grooved Edge	36"	582.9	581.0	58	7	95	564& 560	25	16	Yes	155
559	Clark Mill Rd @ Long St.	Concrete	Grooved Edge	18"	596.7	595.6	90	2.5	12	n/a	10	8	Yes	30
574	Under RR 800' W of Clark Mill Rd.	CMP	Square Edge	2-36"	-0.2		110	5	110	576& 552	25	214	No	530
578	RR & Clark Mill Rd.	Concrete	Grooved Edge	2-30"	552.0	552.0	50	3	60	576	25	188	No	359
584	800' E of Clark Mill Rd. on US 20	CMP Asphalt lined	Project-ing	78"	-1.1		196	11.5	440	586	25	148	Yes	291
588	43rd Ave. 200' N of Long St.	Concrete	Grooved Edge	1-30" 1-36"	614.8 614.9	614.9 614.9	40 40	4.5 4.5	90	586	25	148	No	291
591	Long St. between 43rd & 45th Ave	Concrete	Square Edge	2-15"	-0.8		41	2	16	590	25	76	No	100

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CAPACITY OF EXISTING CULVERTS

MODEL CULVERT NO.[1]	LOCATION[1]	MATERIAL	ENTRANCE CONDITION	SIZE	I.E. IN	I.E. OUT	LENGTH FEET	ALLOWABLE HEAD[2] AT INLET FEET	APPROX.[4] EXISTING CAPACITY CFS	MODEL CHANNEL I.D. NO.	MINIMUM RECOMMENDED DESIGN FREQUENCY (YEARS)	EXISTING STORM FLOW CFS	IS EXISTING CULVERT OK ?	FULL DEVELOPMENT DESIGN FLOW CFS	IS EXISTING CULVERT OK ?
592	Long St. @ 43rd Ave.	Concrete	Square Edge	18"	-0.7		42	2.4	11	594	25	35	No	139	No
800	500' W of 42nd Ave. on US 20	CMP Asphalt Lined	Project-ing	60"	615.9	615.6	100	5	52	802	10	13	Yes	35	Yes
									50% theoretical capacity due to heavy siltation in culvert						
804	US 20 & 45th St.	CMP Asphalt Lined	Project-ing	60"	615.9	615.9	96	5	100	806	25	94	Yes	116	No
808	47th Ave. @ Airport Lane	Concrete	Grooved Edge	3-24"	628.7	628.7	36	2.5	48	810	25	90	No	110	No
809	1200' S of US 20 on private drive parallel to proposed 49th St.	CMP-Arch	Project-ing	36"x22"	632.6	633.0	18	4	28	810	25	90	No	110	No
		CMP	Project-ing	30"	632.5	632.6	16	4	30						
812	49th Ave. & Airport Rd.	Concrete	Headwall	1-18"	645.8	645.3	40	3	15	810	25	90	No	110	No
		Concrete	Headwall	1-30"	644.9	644.0	40	4	40						
816	RR below clear lumber	Concrete	Grooved	2-36"	-1.46		82	6	130	818	25	102	Yes	129	Yes
817	RR below Clear Lumber	CMP	Project-ing	1-30"	-1.0		88	7	36						

TABLE III-4
CAPACITY OF EXISTING CULVERTS

NOTES:

[1] Location shown on Map III-4

[2] At this head, street does not inundate and adjacent property is not extensively damaged by backwater. Estimated velocity head is added to this to obtain "headwater" as used in Hec 5 & Hec 10.

[3] Source: 'Drainage Investigation of Proposed Junior High School Site', CH2M Hill Engineer, Dec. 1960.

[4] Computed using Hydraulic Engineering Circulars No. 5 and No. 10, Bureau of Public Roads, U.S. Department of Commerce and Hydraulic Handbook by King & Brater.

[5] Source: Corps of Engineers Field Notes Dated January 1979.

[6] Source: Map II-6, Design Frequencies. Note, culverts designed for the Oregon Department of Transportation or for Linn County for highways and roads under their jurisdiction may have to be designed to frequencies more severe than these shown.

[7] Culvert flows within 10 per cent of approximate existing culvert capacity are viewed as equivalent. Realistically, the techniques and equations employed are not exact, some tolerance or deviation does exist. Ten per cent is considered reasonable.

[8] 50 cfs ground water flow added to computed Ames Creek flows.