Stormwater Master Plan

Prepared for:

TOWN OF MELBOURNE VILLAGE
INCORPORATED 1957
BREVARD COUNTY FLORIDA
The Town That Really Cares

and

ST. JOHNS RIVER SJR WATER MANAGEMENT DISTRICT

Prepared by:

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010978-0600

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1.0 INTRODUCTION

1.1 BACKGROUND

The Town of Melbourne Village (the Town) is a small municipality in Brevard County, Florida. The Town was established in 1946 by the American Homesteading Foundation and created as a municipal corporation in May of 1956. Melbourne Village is located approximately 4 miles west of the city of Melbourne and is shown in Figure 1-1. The Town is approximately 360 acres and consists mainly of medium-density residential lots. A small percentage of the Town is zoned medium-density residential and commercial. The drainage system consists mostly of open ditches that discharge into the Crane Creek (M-1) Canal, an extension of Crane Creek that discharges ultimately into the Indian River Lagoon. The existing stormwater system has no water quality facilities, and there are several chronic drainage problems that have been documented by the Town staff.

1.2 PURPOSE

The purpose of this master planning effort is to collect relevant data for characterizing the water quality and quantity problems that exist, to develop alternatives to alleviate the problems, and identify funding sources to implement the components of the master plan that is developed. The result of the master plan will be recommendations and an associated implementation schedule. These recommendations will assist the Town in providing improved levels of stormwater management service to the community.

1.3 REGULATORY FRAMEWORK

The following agencies comprise the broad regulatory framework for the implementation of the Town of Melbourne Village Stormwater Master Plan.

1.3.1 ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

The St. Johns River Water Management District (SJRWMD) regulates stormwater management under Chapters 40C-4 and 40C-40, *Management and Storage of Surface Waters (MSSW)*; 40C-6, *Works of the District*; 40C-41, *Surface Water Management*

FIGURE 1-1.
SITE LOCATION MAP

Sources: DeLorme, 2000; ECT, 2002.

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Basin Criteria; 40C-42, *Regulation of Stormwater Discharge;* and 40C-43, *Silviculture*. The District also has been given administrative responsibility for overseeing and approving Surface Water Improvement and Management (SWIM) projects.

1.3.2 FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

In October 2000, the U.S. Environmental Protection Agency (EPA) authorized the Florida Department of Environmental Protection (FDEP) to implement the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program in the State of Florida (in all areas except Indian country lands). FDEP's authority to assume delegation of the NPDES program is set forth in Section 403.0885, Florida Statutes, and is undertaken pursuant to a Memorandum of Agreement with EPA. The NPDES stormwater program regulates point source discharges of stormwater into surface waters of the U.S./State. Regulated sources must obtain an NPDES stormwater permit and implement a stormwater management plan that includes pollution prevention techniques to reduce contamination of stormwater runoff.

EPA developed the federal NPDES stormwater permitting program in two phases. Phase I, promulgated in 1990, addresses the sources of stormwater runoff with the greatest potential to degrade water quality. These sources include:

- *Medium* and *large* municipal separate storm sewer systems (MS4s) located in incorporated places and counties with populations of 100,000 or more.
- Eleven categories of industrial activity, one of which is large construction activity that disturbs 5 or more acres of land.

Phase II, promulgated in 1999, addresses additional sources of concern, including certain *small* MS4s and small construction activity disturbing between 1 and 5 acres, that must be permitted by March 10, 2003. Phase II also revised the Phase I industrial no exposure conditional exclusion to broaden its applicability. **The Town of Melbourne Village has been listed by FDEP as a regulated small MS4.**

As the NPDES stormwater permitting authority, FDEP is responsible for issuing rules and permits covering regulated entities, managing and reviewing permit applications, and

performing compliance and enforcement activities. FDEP has adopted the Federal Phase I regulations and Phase II industrial no exposure exclusion provisions, but has yet to adopt Phase II regulations for small MS4s and small construction.

FDEP expects to have Phase II regulations (and permits) in place by December 2002 that will closely track the federal regulations. FDEP's implementing rules and generic permits for the NPDES stormwater program include amendments to existing chapters and a new chapter for MS4s.

1.3.3 U.S. ARMY CORPS OF ENGINEERS

The U.S. Army Corps of Engineers' (USACE's) involvement in stormwater control emanates from USACE's regulation of dredge and fill (in waters of the United States) and any impacts to navigation in waters of the United States.

1.3.4 FLORIDA DEPARTMENT OF TRANSPORTATION

The Florida Department of Transportation (FDOT) has stormwater permitting authority for stormwater discharges which impact state or federal highways. Any implemented projects which would impact state and federal highways would require coordination with FDOT.

2.0 DATA COLLECTION AND PROCESSING

2.1 RAINFALL

The appropriate rainfall volumes to be used in computer simulations were obtained from Technical Publication No. SJ 88-3, *Rainfall Analysis for Northeast Florida, Part VI* (SJRWMD, 1988). The rainfall volumes were determined for the mean annual, 10-, 25-, and 100-year, 24-hour storm events. The rainfall distribution used was the SCS Type II Florida Modified Rainfall Distribution. The isopluvial maps from SJRWMD (SJ 88-3) for the mean annual, 10-, 25-, and 100-year, 24-hour events are shown in Figures 2-1 through 2-4.

2.2 SOILS

The soil survey of Brevard County (National Resources Conservation Service [NRCS], 1974) shows that the predominant soil found in the Town is the Eau Gallie series. The Eau Gallie series is described as having a high water table with the wet-season high being less then 10 inches below the land surface. Other soil series found within the Town include Pineda, Bradenton, Felda, Immokalee, Myakka, Copeland, and Malabar, constituting approximately 10 percent of the soils found in the town. Like the Eau Gallie series, these soil series have high water tables with seasonal high water less than 10 inches below the land surface. All the soil series within the town are classified as nearly level and poorly drained.

SJRWMD has compiled the original county NRCS soils survey and has made it available for use by the public through their geographic information system (GIS) database. These data have been incorporated into ECT's project GIS database and combined with layers delineating the town boundary and drainage basins. Figure 2-5 presents the soils found within the Town, as described by the soil survey of Brevard County.

The soil survey for Brevard County classification of hydrologic group for each soil was identified and used in computing runoff estimates from each land use category as part of the water quantity and quality evaluations. A hydrologic soil group refers to soils grouped according to their similar, runoff-producing characteristics. Soils are typically assigned to

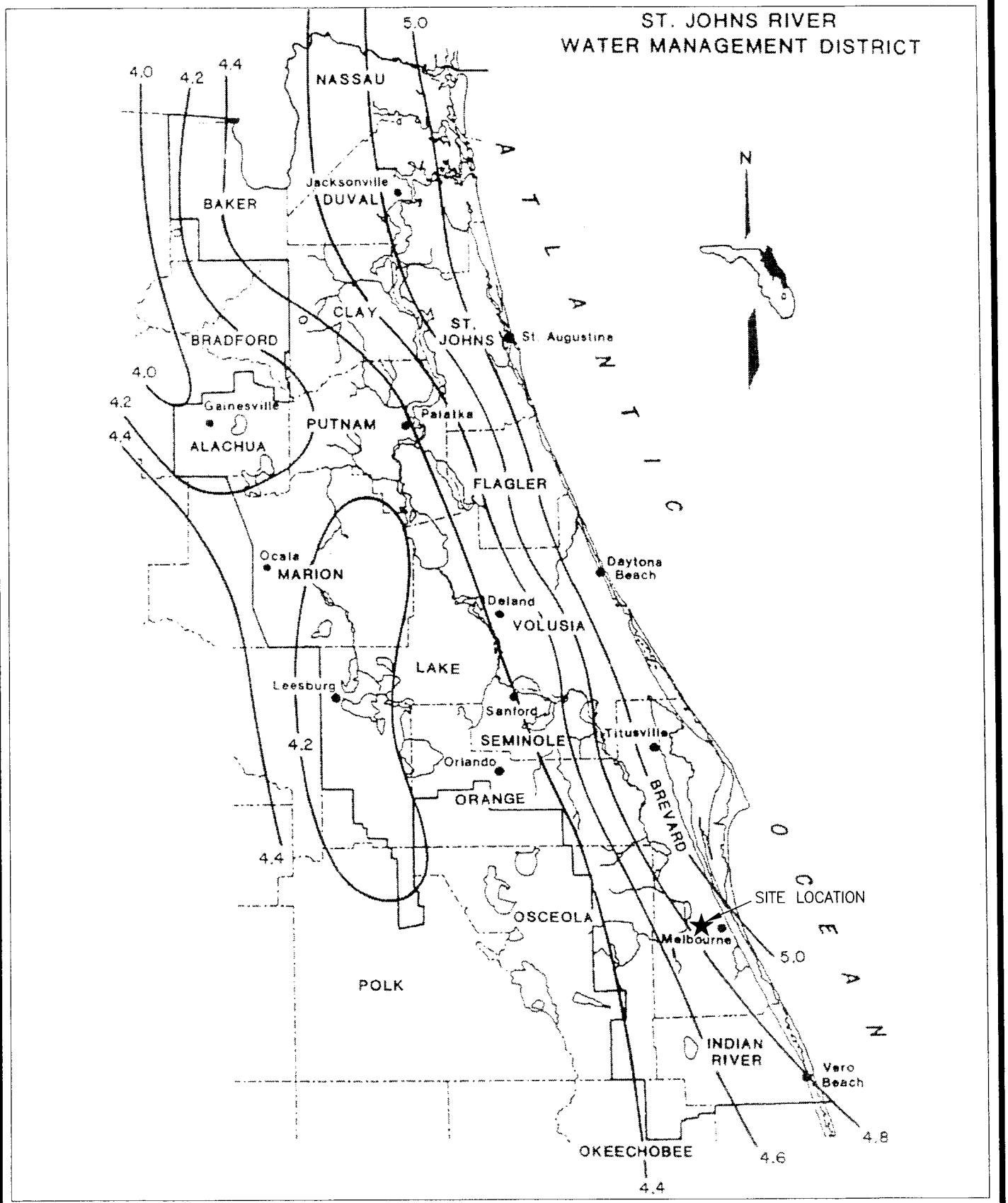

FIGURE 2-1.

MEAN ANNUAL 24-HOUR MAXIMUM RAINFALL FOR NORTHEAST FLORIDA (INCHES)

Sources: SJRWMD, 1988; ECT, 2002.

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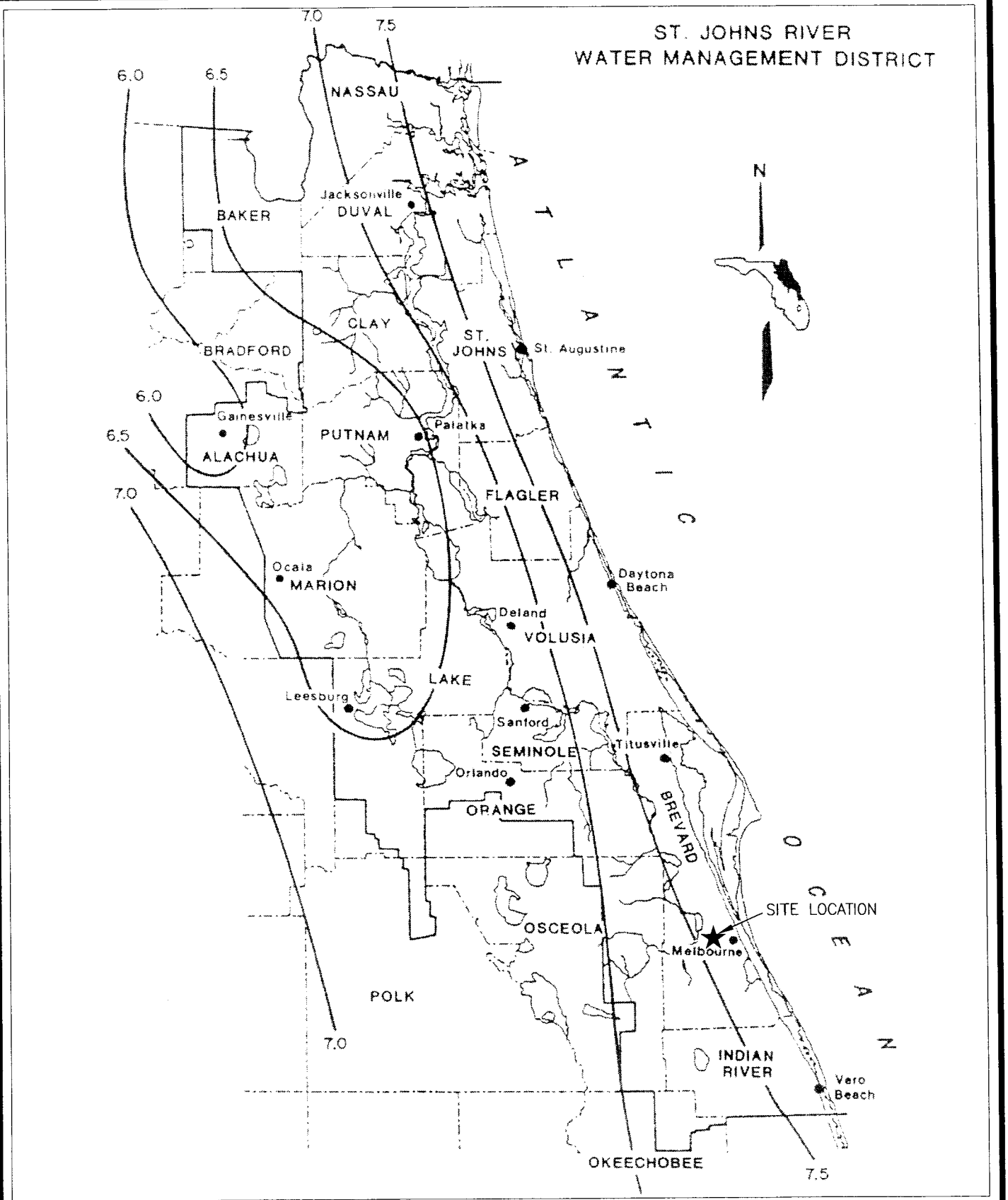

FIGURE 2-2.

10-YEAR, 24-HOUR MAXIMUM RAINFALL FOR NORTHEAST FLORIDA (INCHES)

Sources: SJRWMD, 1988; ECT, 2002.

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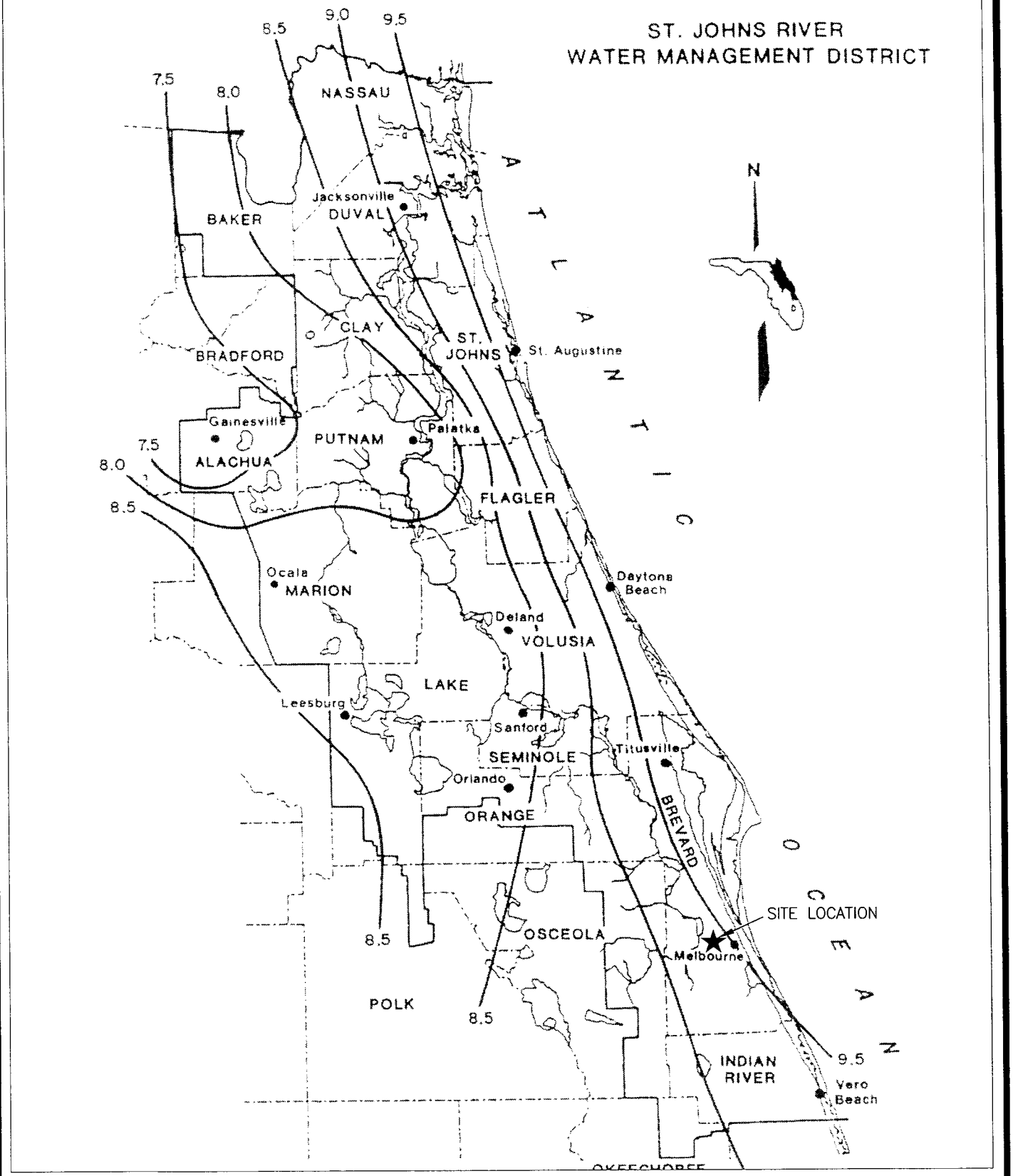

FIGURE 2-3.

25-YEAR, 24-HOUR MAXIMUM RAINFALL FOR NORTHEAST FLORIDA (INCHES)

Sources: SJRWMD, 1988; ECT, 2002.

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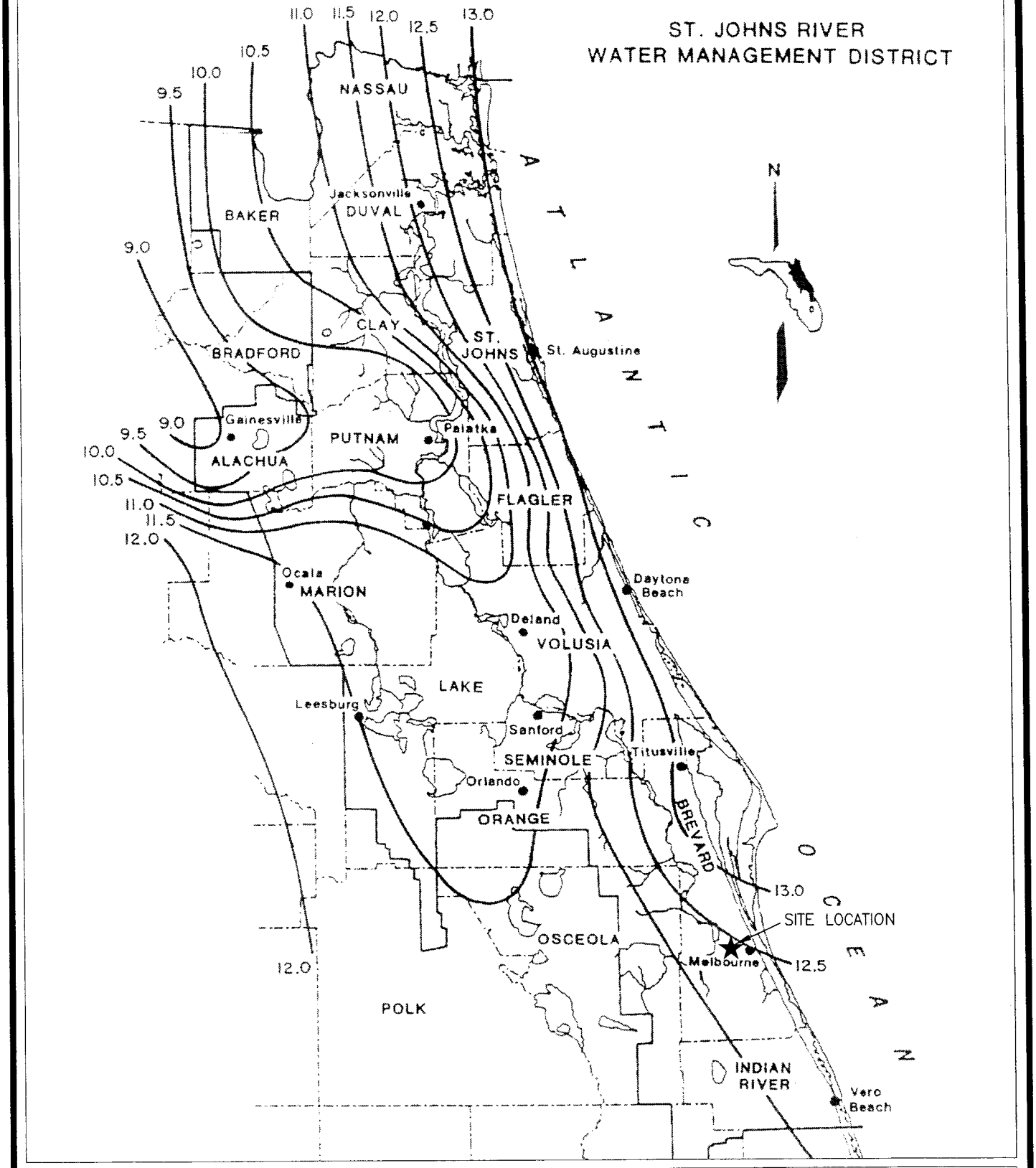

FIGURE 2-4.

100-YEAR, 24-HOUR MAXIMUM RAINFALL FOR NORTHEAST FLORIDA (INCHES)

Sources: SJRWMD, 1988; ECT, 2002.

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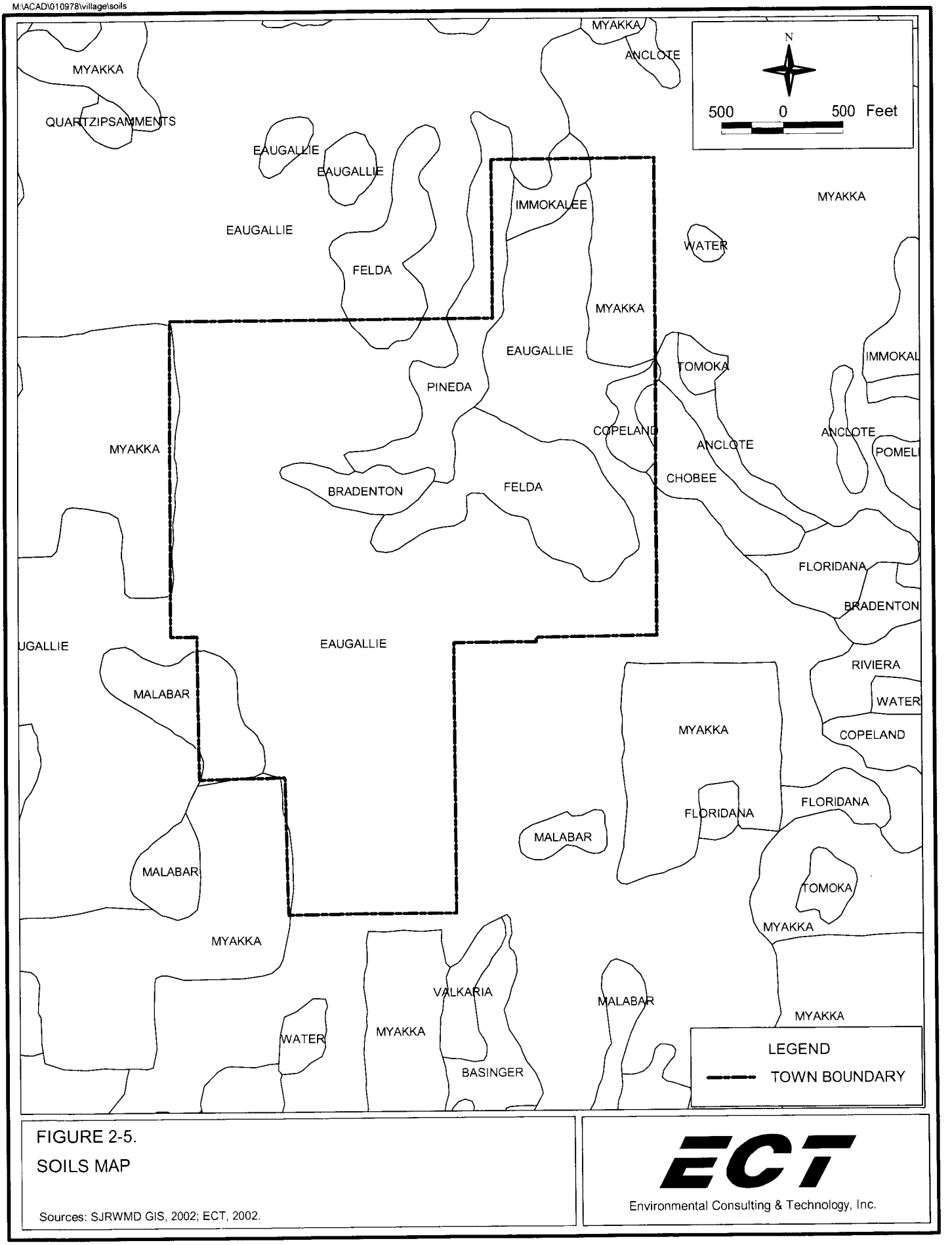

FIGURE 2-5.
SOILS MAP

Sources: SJRWMD GIS, 2002; ECT, 2002.

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four groups. NRCS describes Group A soils as having high infiltration rates with deep water tables (greater than 6 feet [ft]) and low runoff potential. The soils are mainly deep, well drained, and sandy or gravely. On the other extreme, Group D soils have very slow infiltration rates and a high runoff potential. They have either a claypan layer at or near the surface, permanent high water table, or shallow impervious bedrock layers. A soil may be assigned to two groups, depending on whether the soil is relatively undisturbed or if significant drainage improvements have been implemented. For the soils found in Melbourne Village, all soils belong to Group B/D. Table 2-1 presents a summary of the soils found within the Town and their pertinent hydrologic characteristics.

2.3 TOPOGRAPHY

The topography within Melbourne Village is relatively flat with elevations varying from 25 to 30 feet National Geodetic Vertical Datum (NGVD). A U.S. Geological Survey (USGS) topographical map showing the Town boundary is provided in Figure 2-6.

2.4 LAND USE/LAND COVER

Melbourne Village has been zoned for the following land uses: residential, commercial, and open space/parks. The Town is zoned primarily for residential housing with approximately 275 acres designated for single-family housing (MDR) and approximately 17 acres designated for multiple family housing (HDR). Residential land use makes up 81 percent of the total area of the Town. Seventeen acres have been designated for commercial development, which makes up approximately 5 percent of the total town area. Parks and open space comprise 45 acres, or 13 percent of the total Town area. Town rights-of-way make up the remaining area of the Town, approximately 6 acres and 2 percent of the total area. Figure 2-7 presents the location and boundaries of the land uses that make up Melbourne Village. Figure 2-8 is a 2000 aerial photograph with the Town boundary overlaid.

2.5 STORMWATER SYSTEM INVENTORY

Roadside swales and open ditches are the primary components of the Town's stormwater management system. Swales convey stormwater runoff from the residential lots to either

Table 2-1. Summary of Soils Found within the Town of Melbourne Village

Soil Name	Area (Acres)	Percent Coverage with the Town (%)	Hydrologic Soil Group (HSG)
Eau Gallie	268	72%	B/D
Felda	35	9%	B/D
Myakka	24	6%	A/D
Pineda	18	5%	B/D
Malabar	9	2%	A/D
Bradenton	8	2%	B/D
Immokalee	5	1%	B/D
Copeland*	5	1%	B/D
Chobee*	1	0%	D

*Soil series occur within Erna Nixon Park only.

Source: ECT, 2002.

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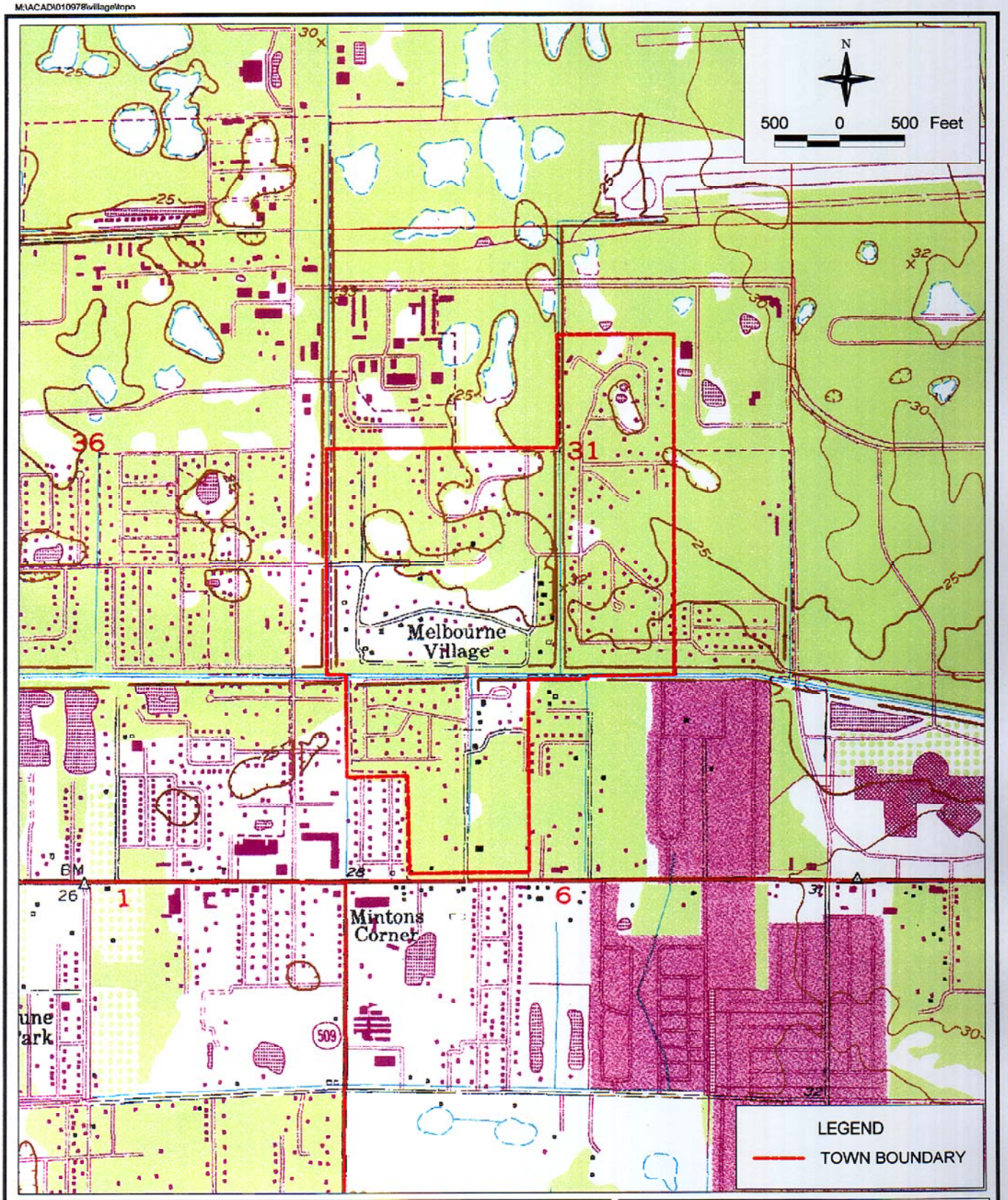

FIGURE 2-6.

TOPOGRAPHIC MAP OF STUDY AREA

Sources: USGS Quad: Melbourne West, 1988; ECT, 2002.

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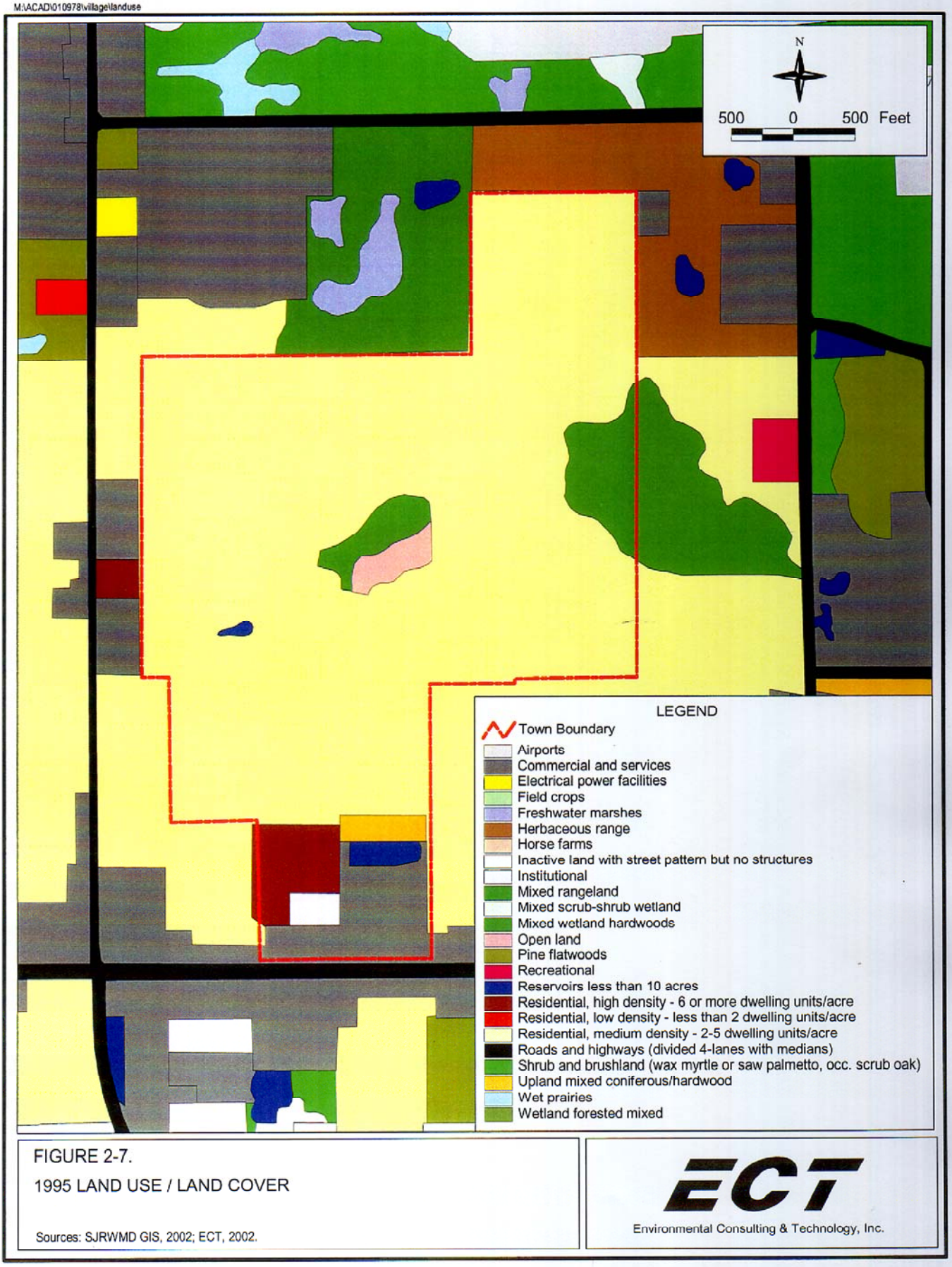

FIGURE 2-7.

1995 LAND USE / LAND COVER

Sources: SJRWMD GIS, 2002; ECT, 2002.

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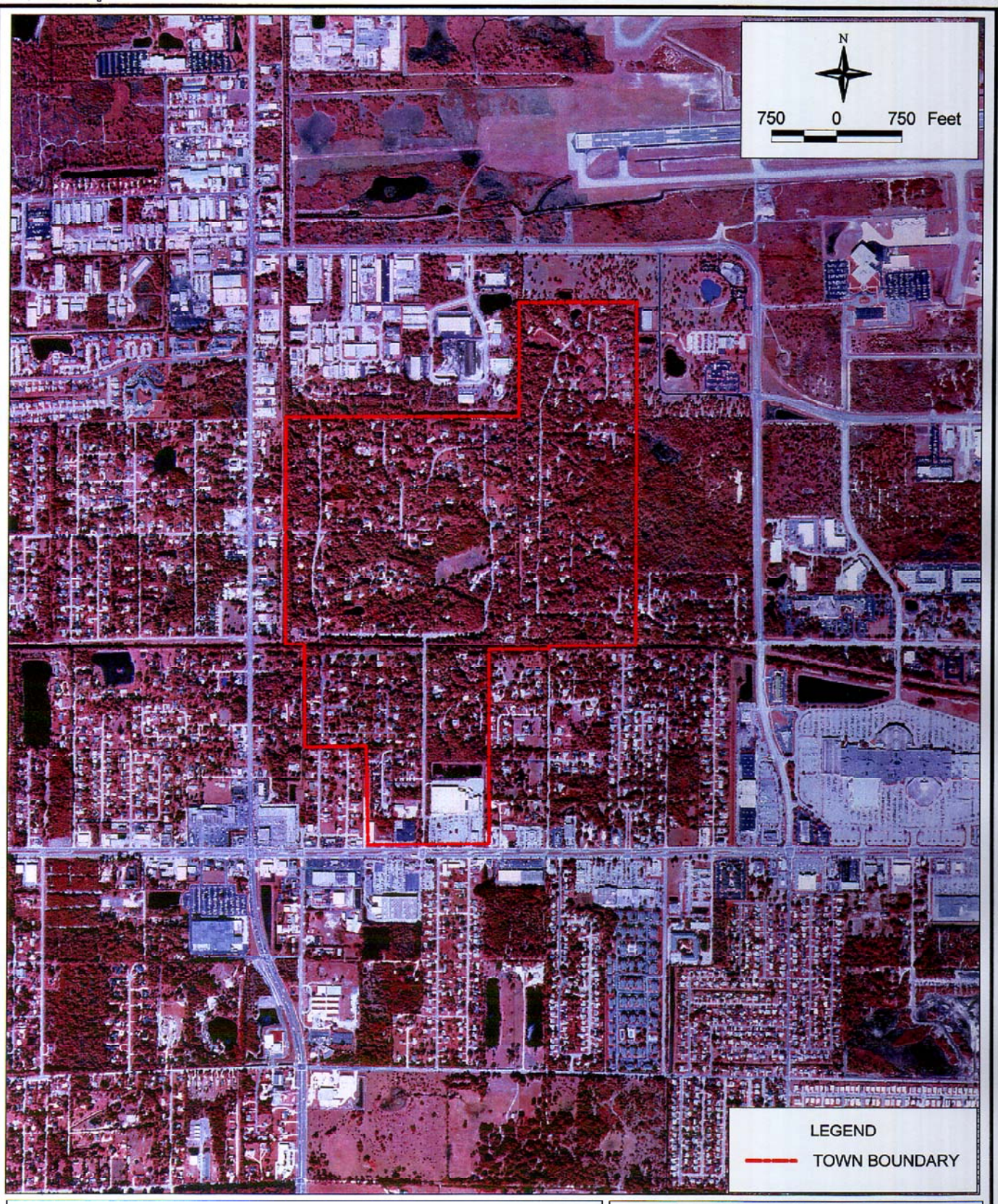

FIGURE 2-8.

2000 AERIAL PHOTOGRAPH

Source: ECT, 2002.

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the L-5, L-7, L-8, or M-1 (Crane Creek) Canals. Runoff eventually makes its way to the Crane Creek canal that ultimately discharges to the Indian River Lagoon.

A driveway culvert inventory has been compiled that includes the following information: pipe diameter, pipe material, approximate length, headwall type, percent silted, lot number, and street address. Appendix A presents the compiled driveway culvert data.

A drainage study conducted by Hal Jury in March 1988 determined the flow directions of the roadside swales and open ditches. The Town drainage map has been digitized and is presented in Figure 2-9. Flow directions were confirmed by survey data and field reconnaissance.

2.6 SURVEY INFORMATION

Survey data were collected at major intersection and structures within areas of known flooding problems. The survey data obtained consists of road crown elevations, culvert invert elevations, culvert dimensions, and culvert condition.

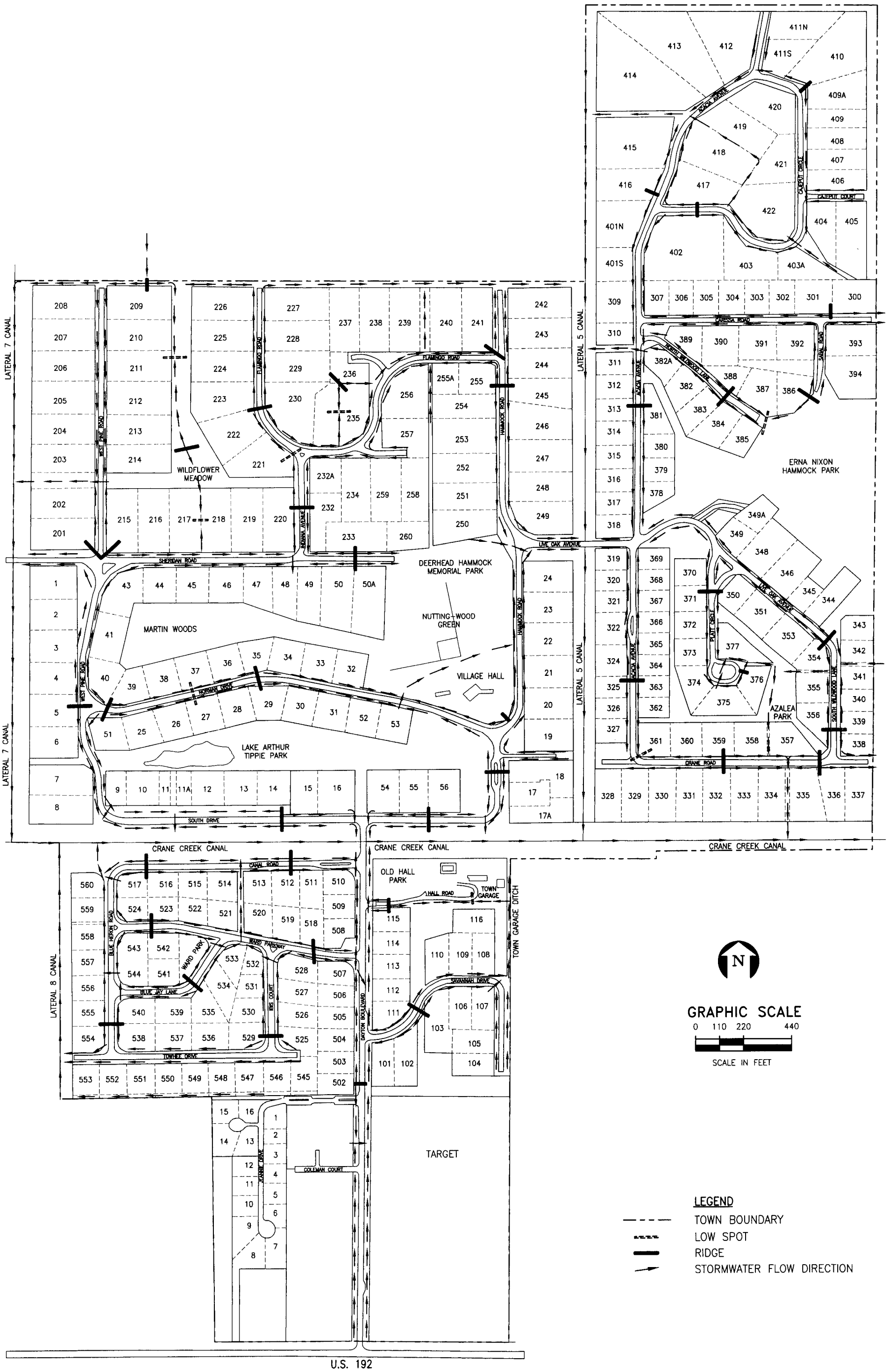

FIGURE 2-9.

DRAINAGE PATTERNS WITHIN THE TOWN OF MELBOURNE VILLAGE

Sources: Melbourne Village, 1988; ECT, 2002.

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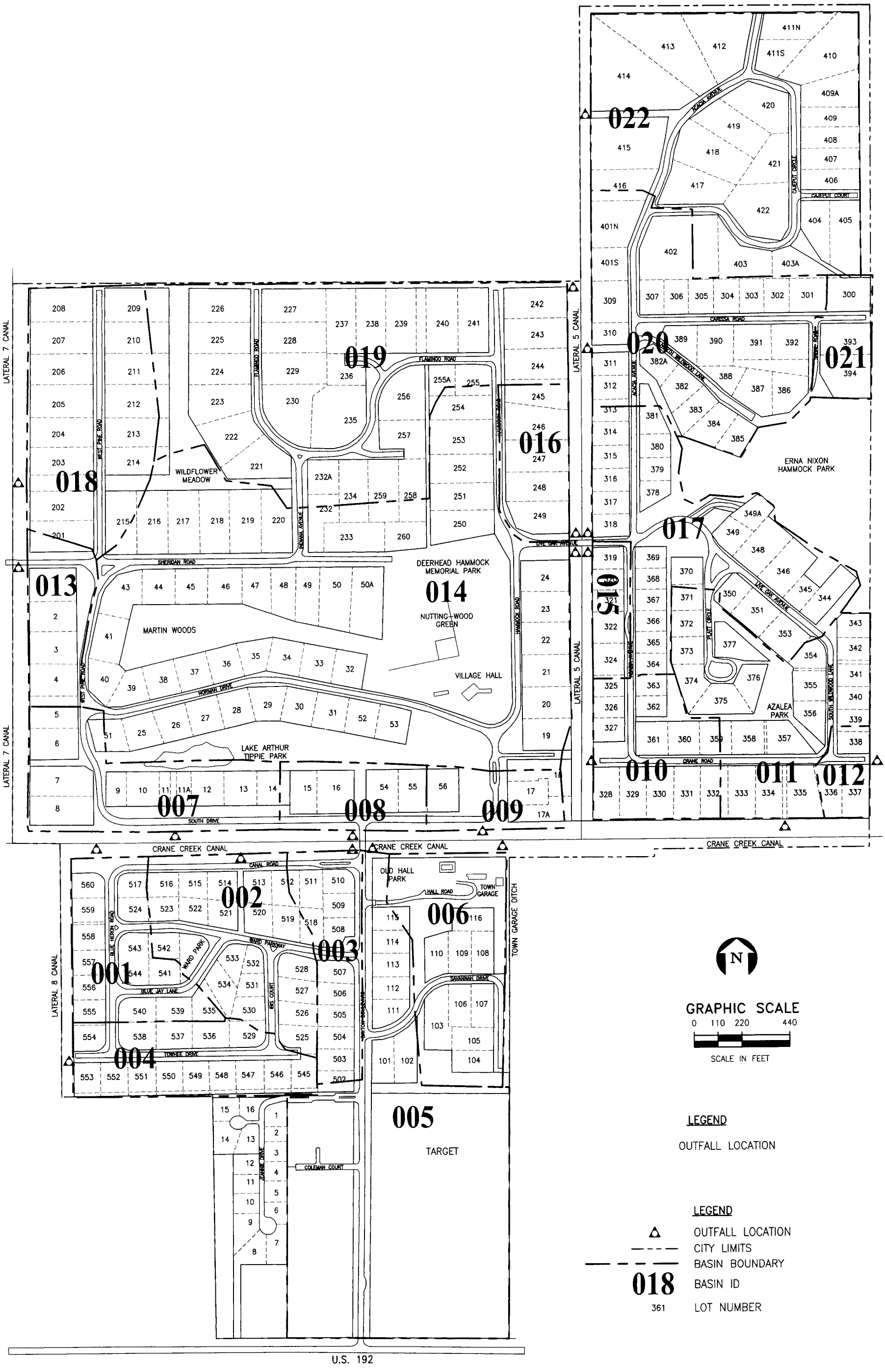

FIGURE 2-10.

DRAINAGE BASINS WITHIN THE TOWN OF MELBOURNE VILLAGE

Sources: Melbourne Village, 1988; ECT, 2002.

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3.0 METHODOLOGIES

3.1 WATER QUANTITY

The identification and evaluation of flooding problems is a main focus of the master planning effort. Using the information collected and developed, as described in Section 2.0 of this report, an engineering assessment of the existing condition of the stormwater management system, including evaluations of known flooding problems, was performed. Methods utilized to perform evaluations are described in the following sections.

3.1.1 METHODOLOGY

Drainage patterns, as established by previous studies, provided a baseline to perform field investigations and assess problem areas. Field investigations were performed in conjunction with Town staff in which known drainage problems were identified. These investigations, along with survey data and structure inventories, provided the information necessary to assess the existing condition of the stormwater management system, determine the cause of the drainage problems, and develop alternatives to alleviate the problem. These investigations also provided the information necessary to construct a computer model to evaluate the existing drainage system and to evaluate corrective measures for flooding. Due to the systemic nature of the flooding problem, a computer model was constructed for the Platt Circle area to adequately evaluate the causes of the flooding and alternatives to correct the problem, as described below.

3.1.2 MODEL SELECTION

Interconnected Pond Routing (ICPR) program was used to assess the flooding problems and to evaluate several options to alleviate flooding in the Platt Circle area. The ICPR program was selected due largely to its extensive use across the southeastern United States, and, particularly, to its use by Brevard County to construct a model of the Crane Creek and Hickory Ditch basins (Post, Buckley, Schuh and Jernigan, Inc. [PBSJ], 2001). The ICPR program, developed by Streamline Technologies, Inc., has been formally accepted by the Federal Emergency Management Agency for use in performing flood studies associated with the National Flood Insurance Program. The NRCS unit hydrograph method, as contained in ICPR, was used to generate runoff hydrographs. These hydro-

graphs are subsequently routed through the Platt Circle drainage system in its existing condition and configuration and in possible future alternative configurations

3.1.3 STORMWATER MODELING FOR PLATT CIRCLE SYSTEM

Hydrologic Parameters

This subsection presents the methodologies for developing the required hydrologic parameters used in the water quantity evaluations for the Platt Circle drainage system.

Basin Sizes

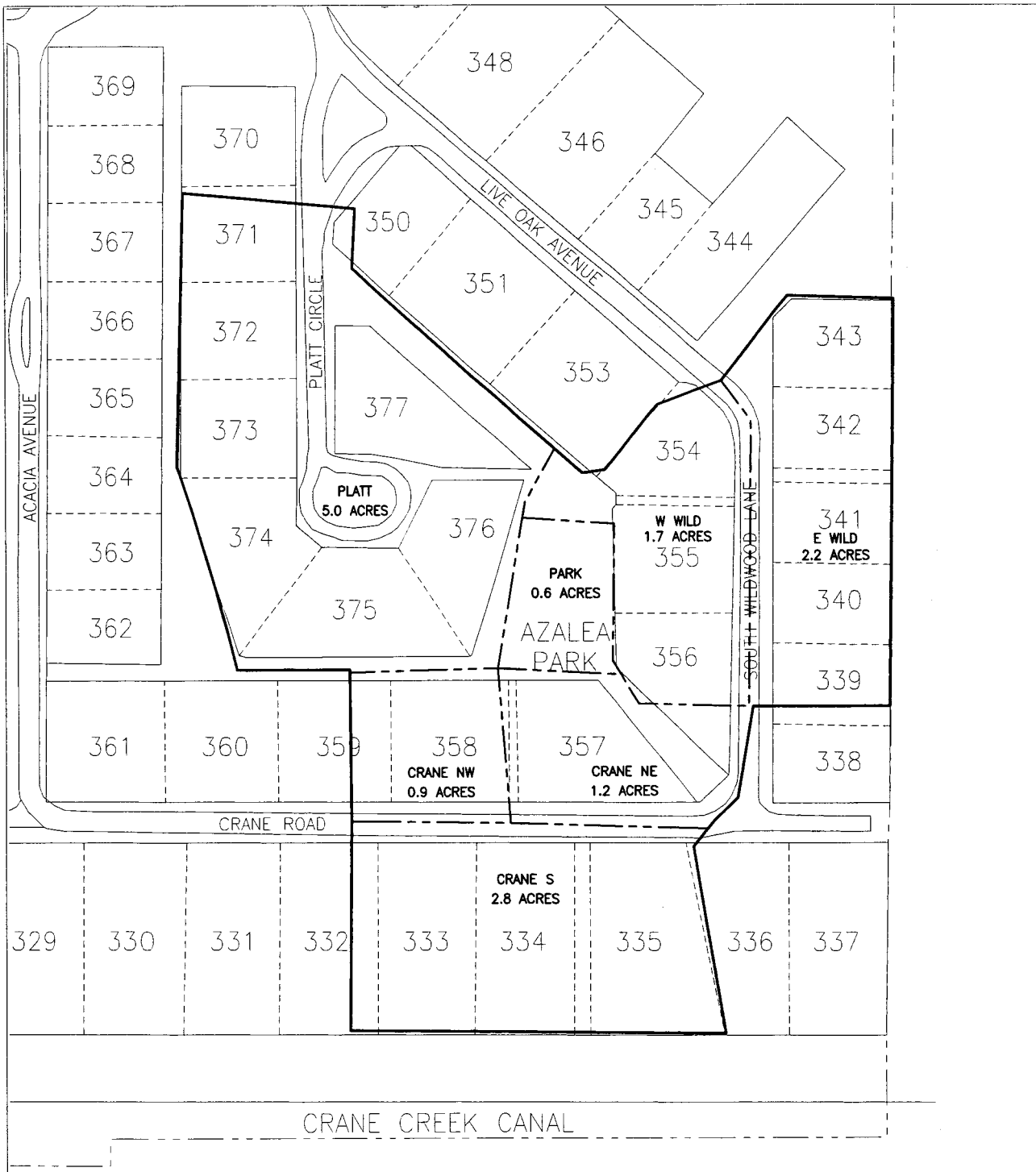
Basin boundaries were determined by reviewing the Town's drainage map, supplemental survey data, and field observations. The Platt Circle drainage system has been broken down into seven basins. Figure 3-1 presents the Platt Circle basins and their associated acreages.

Soil Parameters

Soil parameters, primarily hydrologic soil group, were broken down by basin and were used with land cover data to develop runoff curve numbers for use in the NRCS Unit Hydrograph method. The average Antecedent Moisture Condition (AMCII) was used for all design storm analyses per SJRWMD guidelines.

Hydraulic Lengths and Slopes

Characteristic hydraulic lengths and slopes were determined for each basin. Hydraulic length is defined as the length from the hydraulically most distant point in the basin to the basin outlet or to high water levels where ponding is expected to occur. Slope is defined as the change in elevation along the hydraulic length divided by the hydraulic length. Multiple lengths and slopes were calculated for each basin, the number depending upon the geometry of the basin. Asymmetrical basin geometries require more length and slope calculations to adequately characterize the basin. The characteristic basin slope was calculated as the average of all slopes calculated for the basin. These data were used to develop runoff times of concentration (Tc) using the NRCS velocity method for use in the NRCS Unit Hydrograph method.



LEGEND

W WILD 1.702 ACRES — BASIN AND ACREAGE

——— BASIN BOUNDARY

— — — — SUB-BASIN BOUNDARY

N

GRAPHIC SCALE

0 50 100 200

SCALE IN FEET

FIGURE 3-1.

PLATT CIRCLE BASINS AND ACREAGES

Sources: Town of Melbourne Village, 1988; ECT, 2002.

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Impervious Areas

The impervious areas for each basin were calculated by estimating the average impervious area per lot, then determining the number of lots per basin. The area of each road within a basin was planimetered and added to the impervious area within the lots. Hydrologic parameters used in the Platt Circle drainage system model are presented in Table 3-1.

Hydraulic Parameters

Structures/Facilities

Hydraulic data for system culverts were gathered by ECT. These data include elevations, lengths, geometries, surface roughness, local energy loss characteristics, and other pertinent features. Driveway culvert data were also gathered by ECT. These data included culvert geometry, headwall type, amount of siltation, estimated length, and other pertinent features. Table 3-2 presents a summary of these data.

Stage-Area Data

Stage-area information depressional and storage areas was developed by digitizing the Town drainage map and analyzing drainage patterns and spot elevations for major depressional areas within a basin. The data were used to either refine basin depression storage estimates or more typically, were used in the hydraulic routings. The volume of storage is internally calculated by ICPR by use of the trapezoidal method.

Boundary Conditions

Stage-time or discharge-time data is necessary to use as boundary conditions for the hydraulic simulations in ICPR. The Crane Creek and Hickory Ditch Basins Stormwater Master Plan (PBSJ, 2001) projected a peak stage in the Crane Creek Canal near Dayton Boulevard for the 25- and 100-year storm events. These peak stages were used as boundary conditions in the stage-time data where the peak stage occurred slightly after the local rainfall or watercourse stage peak.

Table 3-1. Summary of Hydrologic Parameters within the Platt Circle Drainage Basin

Basin Name	Basin Size (acres)	Soil Parameters		Hydraulic Length (ft)	Slope (ft/ft)	Impervious Area	
		Curve Number (CN)	Hydrologic Soil Group (HSG)			(acres)	Percent Coverage (%)
Platt	5.0	78	B/D	650	0.007	0.8	16%
E wild	2.2	78	B/D	424	0.007	0.4	18%
W wild	1.7	78	B/D	658	0.007	0.3	17%
Park	0.6	74	B/D	120	0.007	0.0	0%
Crane NW	0.9	77	B/D	325	0.015	0.1	14%
Crane NE	1.2	77	B/D	300	0.021	0.2	13%
Cran S	2.8	77	B/D	400	0.015	0.3	10%

Source: ECT, 2002.

Table 3-2. Summary of Hydraulic Structures within the Platt Circle Drainage Basin

Structure Name	Type	Invert Upstream (ft-NGVD)	Invert Downstream (ft-NGVD)	Length (ft)	Structure Size (inches)
WWildC	CMP 50% Silted	23.66	23.64	22	18
Azalea N	Ditch	23.94	23.29	220	BW: 24, SS: 1:2, D: 12*
Azalea S	Ditch	23.29	22.77	175	BW: 30, SS: 1:1.5, D: 12
NCraneC	CMP	22.77	22.58	90	22
CraneC	CMP	22.58	22.8	50	30
CraneD	Ditch	22.8	22.32	267	BW: 30, SS: 4:1, D: 24
Outfall C	Elliptical Culvert	20.05	18.56	20	27 X 18

* BW - Bottom Width, SS - Side Slope (V:H), D - Depth

Source: ECT, 2002.

Model Schematic

Figure 3-2 presents the model schematic for existing conditions in the Platt Circle drainage system.

3.2 WATER QUALITY

Water quality evaluations were performed to identify water quality problems related to stormwater discharges from the Town stormwater management system to Brevard County's canal system. The evaluation consisted of the development of runoff pollutant loading estimates based on an analysis of land use characteristics and stormwater best management practices (BMPs) of the Town.

Spreadsheet Model Selection/Description

The Watershed Treatment Model (WTM), developed by the Center for Watershed Protection (CWP, 2002), was selected to develop annual pollutant loading estimates from the Town. The WTM is a simple spreadsheet-based approach that evaluates loads from a wide range of pollutant sources based on rainfall, soils, and land cover characteristics and incorporates a full suite of watershed treatment options. In addition, the model allows for the adjustment of these loads based on the level of effort put forth for BMP implementation. WTM generates pollutant loading estimates with, and without, BMPs for the following parameters: total suspended solids (TSS), total nitrogen (TN), total phosphorus (TP), and bacteria.

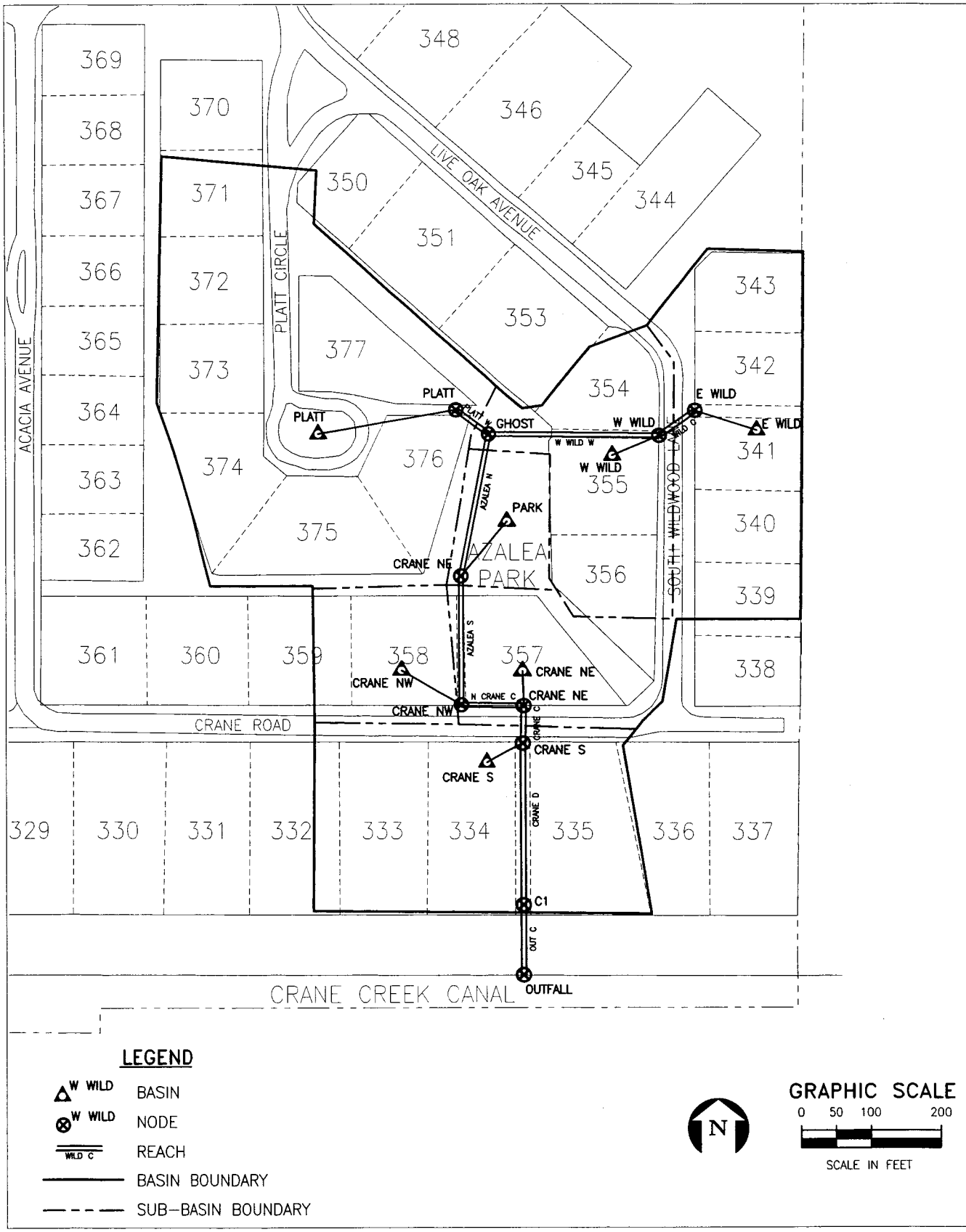

FIGURE 3-2.

PLATT CIRCLE DRAINAGE SYSTEM MODEL SCHEMATIC

Sources: Town of Melbourne Village, 1988; ECT, 2002.

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4.0 ASSESSMENT OF EXISTING CONDITIONS

This section presents the results of the engineering assessment, including the stormwater model simulations, of the existing stormwater management system. The results presented include a general assessment of overall system condition and detailed discussions of specific water quantity problem areas. Also presented are the results of the pollutant loading estimates for the Town.

4.1 GENERAL SYSTEM ASSESSMENT

The overall condition of the Town's drainage system reflects a lack of routine maintenance with some recent exceptions. Outfall ditches to county canals contain accumulated sediments and mature trees which provide a significant obstruction to flows. Observations of roadside ditches and driveway culverts indicate some culverts to be completely occluded. This is due to sedimentation and, in some cases, crushed culverts. Areas of erosion around driveway culverts and in some ditches were noted.

4.2 IDENTIFIED WATER QUANTITY PROBLEMS

The following sections describe areas identified as having flooding problems in the past. Figure 4-1 presents the locations of these problem areas.

4.2.1 PROBLEM AREA #1 (DAYTON BOULEVARD)

Drainage of runoff occurs along both sides of Dayton Boulevard. The drainage facilities along the east side begin as a swale near State Road 192 joining with the discharge structure for the Target department store detention pond. At that point, stormwater is conveyed north for about 250 ft via 30-inch corrugated metal pipe (CMP). Once conveyed through the pipe, stormwater is discharged to a ditch along Dayton Avenue to Crane Creek Canal. This ditch is heavily vegetated between Savannah Drive and Hall Road. The conveyance along the west side of Dayton Boulevard is a swale with several culverts for driveway and road crossings. The culvert under Jeannie Drive and the driveway culvert to the north of Jeannie Drive have inverts higher than the existing swale grade,

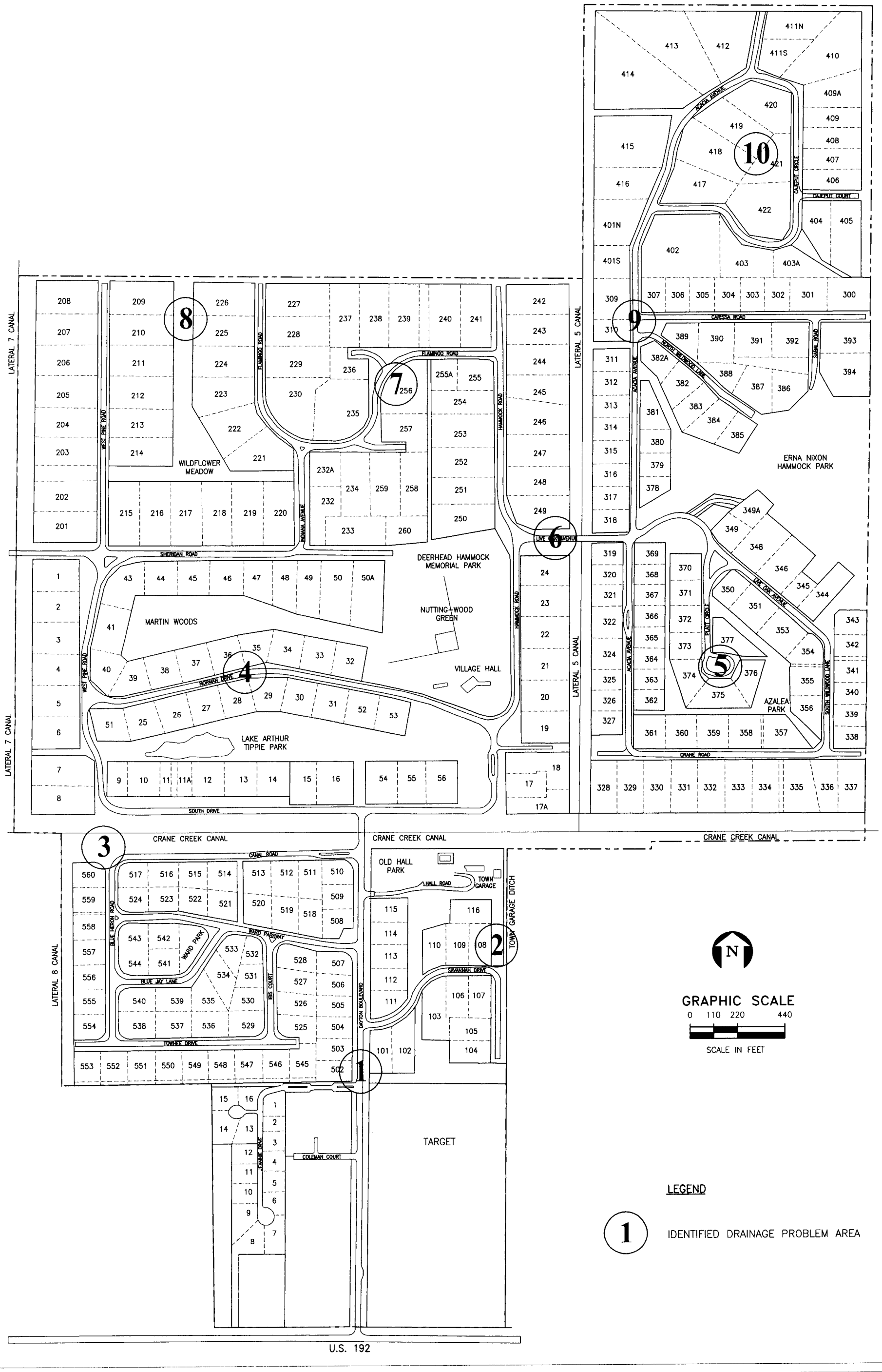

FIGURE 4-1.
DRAINAGE PROBLEM AREAS

Sources: Melbourne Village, 1988; ECT, 2002.

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thereby blocking stormwater flow to the north. Also on the western side of Dayton Boulevard the culvert immediately south of Crane Creek Canal, at Canal Road, has an invert that is approximately 1 ft higher than the grade of the swale to the south. It appears that to deal with this situation two culverts have been installed to convey stormwater to the east of Dayton Boulevard. These culverts were observed to be clean and free of obstructions. Due to the culvert invert at Canal Road on the western side being approximately 1-ft higher than the swale grade, water will pond prior to discharge occurring. Figure 4-2 presents the location of drainage problems in the Dayton Boulevard area.

4.2.2 PROBLEM AREA #2 (TOWN GARAGE)

A ditch located along the eastern border of the Town near the Town Garage receives runoff from parts of Savannah Drive and a portion of the area around the Town Garage, and ultimately discharges to the north into Crane Creek Canal. The ditch is approximately 3-ft deep by 5-ft wide and is mostly covered with weeds. Exposed soils in the ditch appear to be susceptible to erosion. The swales and ditches located adjacent to Savannah Drive discharge to the Town Garage Ditch near the northeast corner of Savannah Drive. The swale along the north side of Savannah Drive appears to have filled in with sediment over time which may be causing some standing water to occur after storm events. Figure 4-3 shows a culvert located on the north side of Savannah Drive that has been filled in. A 24-inch CMP crosses Savannah Drive in the northeast corner draining the south and west sides. This culvert is half full of sediment. Downstream of the 24-inch cross culvert, elevations in the ditch that discharges to the Town garage ditch appear to increase toward the Town Garage ditch. This adverse slope would cause water in the upstream culvert and ditch to stage up before discharging to the Town Garage ditch. Figure 4-2 also presents the location of drainage problems in the Town Garage area.

4.2.3 PROBLEM AREA #3 (CANAL ROAD AND BLUE HERON ROAD)

A small portion of Canal Road and the majority of Blue Heron Road drains toward the intersection of these roads, at which point stormwater flows north through a ditch to Crane Creek Canal. This ditch is relatively clean with some leaf litter and a small amount

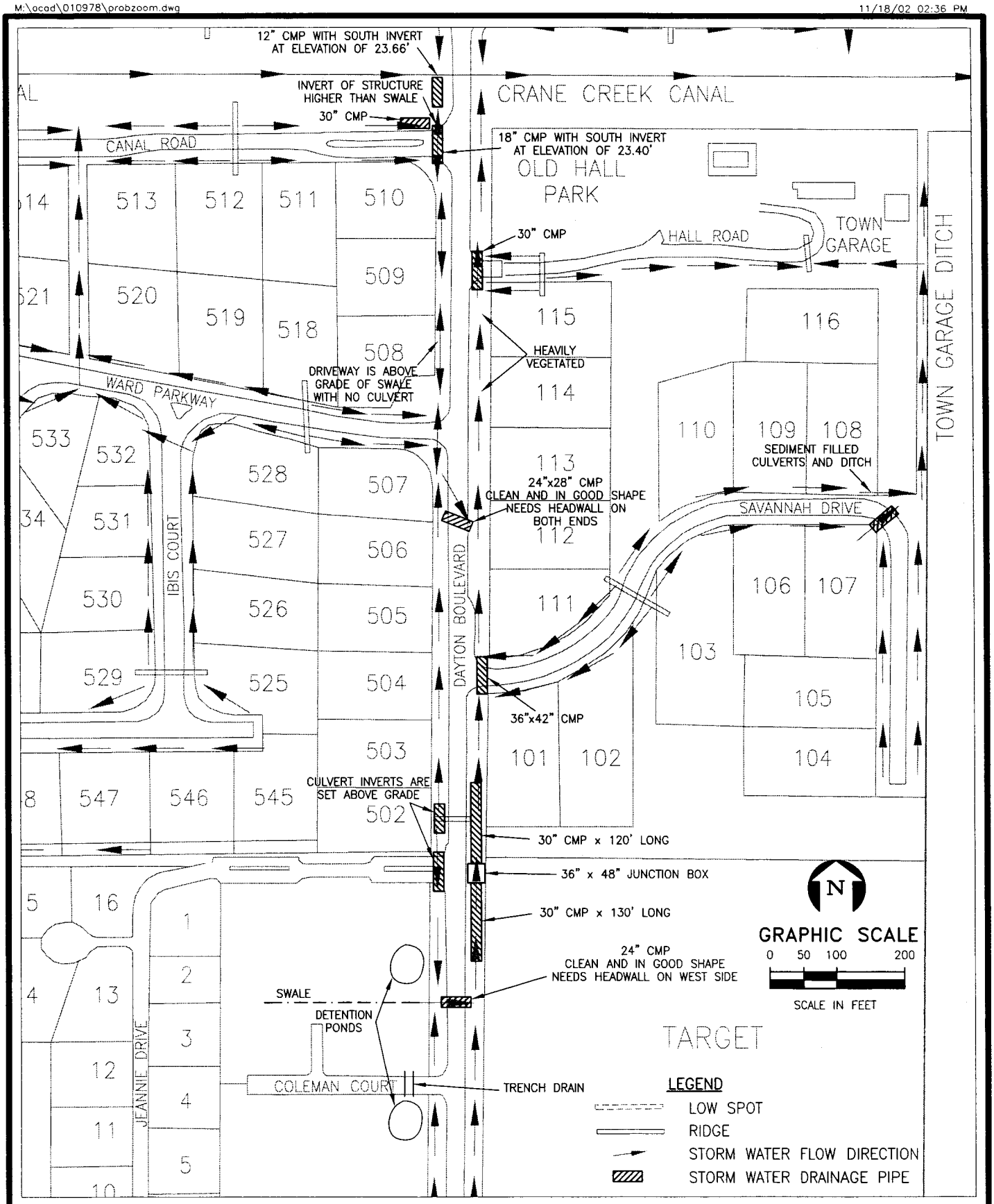

FIGURE 4-2.

DETAILED VIEW OF PROBLEM AREAS 1 AND 2

Sources: Town of Melbourne Village, 1988; ECT, 2002.

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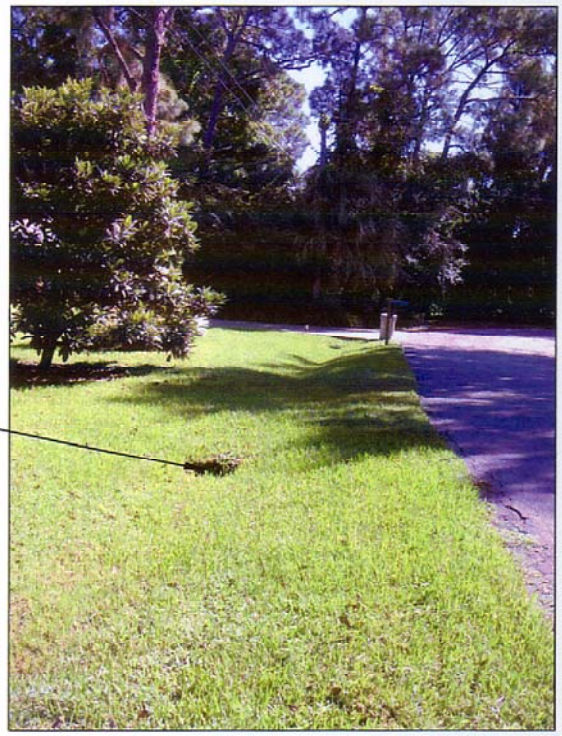

FIGURE 4-3.

PHOTO SHOWING SILTED CULVERT ALONG NORTH SIDE OF SAVANNAH DRIVE

Source: ECT, 2002.

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of weeds. Before discharging to Crane Creek Canal, stormwater must pass through an 18-inch CMP that is almost completely clogged with debris (see Figure 4-4). Figure 4-5 presents the location of drainage problems in the Canal Road area.

4.2.4 PROBLEM AREA #4 (NORMAN DRIVE)

Swales/ditches are located along both sides of Norman Drive. Originally, drainage was designed to flow east along Norman Drive to a point approximately behind the Town Hall, then northwest through Nutting-Wood Green to Hammock Road then, north to Live Oak Avenue and, finally, east to Lateral 5 Canal. At the present time elevations in the road side swales somewhat undulate along Norman Drive causing stormwater to pond in certain places. Also, over time, the swales and driveway culverts have accumulated sediment and in some cases, even completely burying culverts. Four pictures of culverts with varying amount of sediment found on Norman Drive are shown in Figure 4-6. The location of drainage problems in the Norman Drive area is presented in Figure 4-5.

4.2.5 PROBLEM AREA #5 (PLATT CIRCLE)

Platt Circle is a topographic low area in which collected stormwater is discharged from the area through a single ditch through Azalea Park. Review of the Town drainage map indicates that stormwater must stage up approximately 0.75 ft before releasing to the ditch through Azalea Park due to a high spot near the beginning of the ditch. This has been verified through observations of ponded water in front lawns following storms this past summer. This high spot not only restricts flow from the Platt Circle area, but it prevents complete bleed-down of accumulated runoff in the circle. The Azalea Park ditch continues south approximately 400 ft to Crane Road. The Azalea Park ditch conveyance capacity is further reduced due to the build up of pine straw and weeds. At Crane Road, stormwater has to make a 90-degree bend and is then conveyed via a 22-inch CMP approximately 75 ft where it takes another 90-degree bend and is conveyed under Crane Road via a 22-inch CMP. This configuration results in significant turbulence when flowing causing erosion in this area. The CMP under Crane Road is half-full of sediment. Stormwater then flows through a ditch between Lots 334 and 335. This ditch is built-up

FIGURE 4-4.

PHOTO OF CULVERT DISCHARGING TO CRANE CREEK CANAL NEAR THE INTERSECTION OF CANAL AND BLUE HERON ROADS

Source: ECT, 2002.

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Environmental Consulting & Technology, Inc.

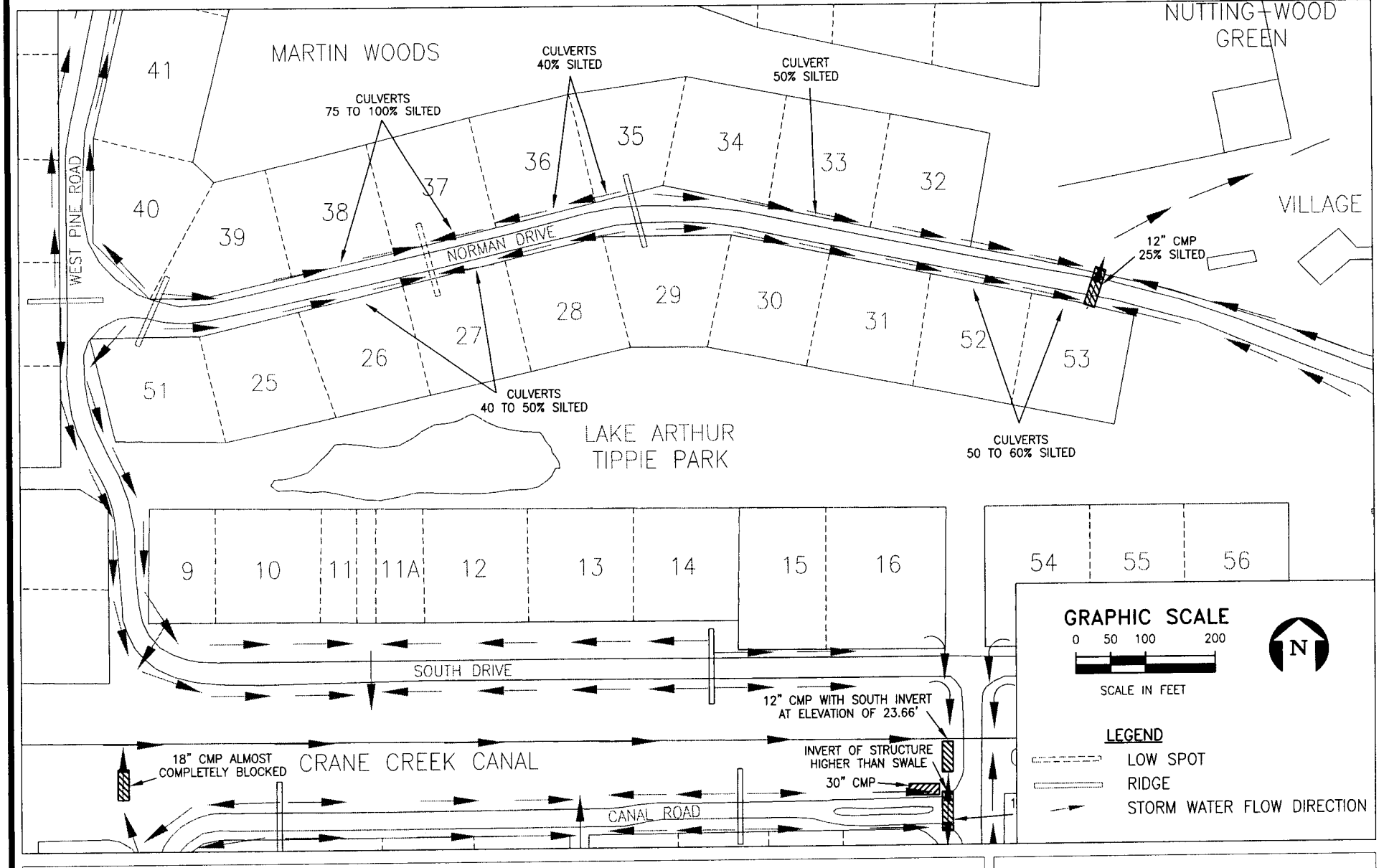

FIGURE 4-5.

DETAILED VIEW OF PROBLEM AREAS 3 AND 4

Sources: Town of Melbourne Village, 1988; ECT, 2002.

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FIGURE 4-6. (1 OF 2)

PICTURES OF SILTED CULVERTS ALONG NORMAN DRIVE

Source: ECT, 2002.

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FIGURE 4-6. (2 OF 2)

PICTURES OF SILTED CULVERTS ALONG NORMAN DRIVE

Source: ECT, 2002.

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with pine straw and weeds and contains several trees in the ditch bottom. Four photographs are presented in Figure 4-7 showing the condition of the ditch through Azalea Park and the ditch south of Crane Road. Before discharging to Crane Creek Canal, stormwater must pass through an 18-inch-tall by 29-inch-wide CMP that is approximately 20 ft long. This outfall pipe does not have a headwall. Figure 4-8 presents the location of drainage problems in the Platt Circle area.

4.2.6 PROBLEM AREA #6 (LIVE OAK NEAR LATERAL-5 CANAL)

In large storm events the Lateral-5 Canal stages up and backflows into the Town's drainage system through a 12-inch CMP located on the north side of Live Oak Avenue. This results in standing water in the ditch and several lawns adjacent to the ditch. Figure 4-9 presents the location of drainage problems at Live Oak Avenue and Lateral-5 Canal.

4.2.7 PROBLEM AREA #7 (FLAMINGO ROAD AREA)

The ditches located on both sides of the road near Lots 257, 256, 235, and 236 drain to the northwest to a ditch that flows north to an east-west ditch along the northern border of the Town boundary. This ditch eventually discharges to the Lateral-5 Canal. The ditch on the north side of Flamingo is deeper than the down stream ditches causing the ditch to act as a retention area. The downstream ditches are controlled by a 24-inch culvert that discharges to the Lateral-5 Canal. Figure 4-9 presents the location of drainage problems in the Flamingo Road area.

4.2.8 PROBLEM AREA #8 (WILDFLOWER MEADOW)

The 1988 Town drainage map shows a low spot in the northern portion of Wildflower Meadow and also a ridge in the ditch along the northern border of the Town. It appears that any flooding in these areas is minimal. The elevation difference between the low spot and ridge is less than 0.5 ft. The ditch along the northern boundary of the Town is clean near Wildflower meadow. Further to the west toward the end of West Pine Road, the ditch becomes more heavily vegetated. A ditch draining the community to the north also connects to the ditch along the northern boundary near the Wildflower Meadow. Figure 4-10 presents the location of drainage problems near Wildflower Meadow.

LOOKING SOUTH AT DITCH DISCHARGING
TO CRANE CREEK CANAL

LOOKING NORTH AT DITCH THROUGH
AZALEA PARK NEAR SOUTHERN END OF PARK

FIGURE 4-7. (1 OF 2)

PHOTOS ILLUSTRATING SEVERAL PROBLEMS IN PROBLEM AREA NO. 5

Source: ECT, 2002.

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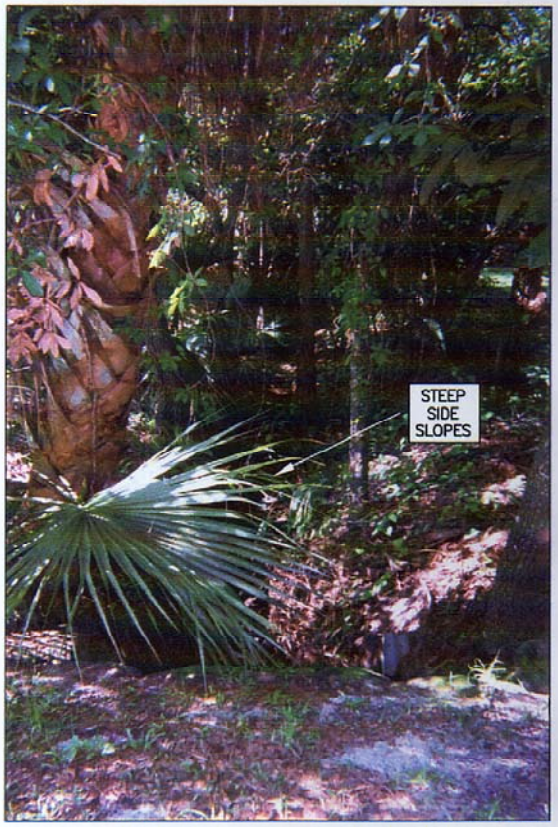
LOOKING NORTH FROM CRANE ROAD AT DITCH THROUGH AZALEA PARK



LOOKING SOUTH FROM CRANE ROAD AT DITCH DISCHARGING TO CRANE CREEK CANAL

FIGURE 4-7. (2 OF 2)

PHOTOS ILLUSTRATING SEVERAL PROBLEMS IN PROBLEM AREA NO. 5

Source: ECT, 2002.

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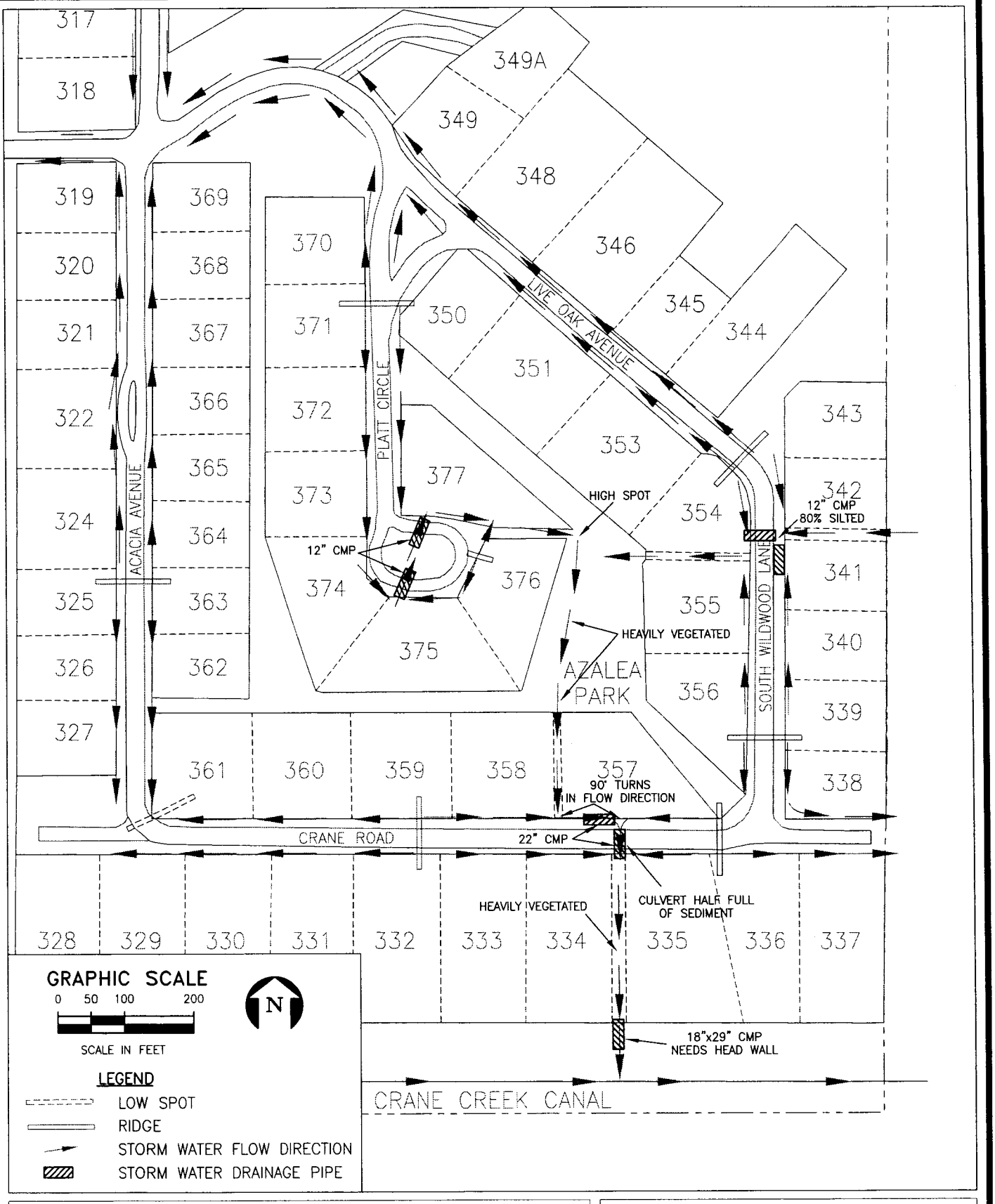

FIGURE 4-8.

DETAILED VIEW OF PROBLEM AREA 5

Sources: Town of Melbourne Village, 1988; ECT, 2002.

ECT
Environmental Consulting & Technology, Inc.

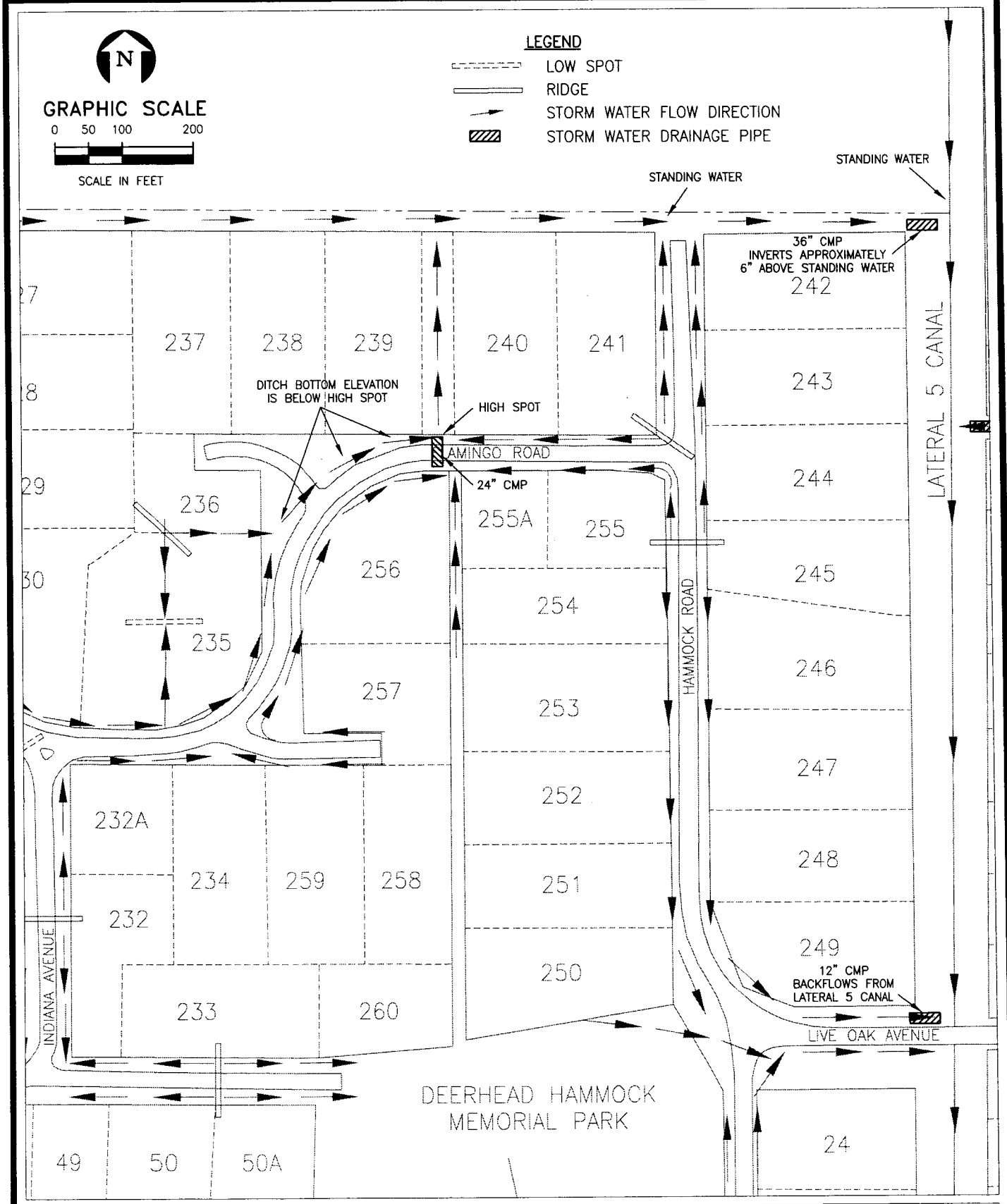

FIGURE 4-9.

DETAILED VIEW OF PROBLEM AREAS 6 AND 7

Sources: Town of Melbourne Village, 1988; ECT, 2002.

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Environmental Consulting & Technology, Inc.

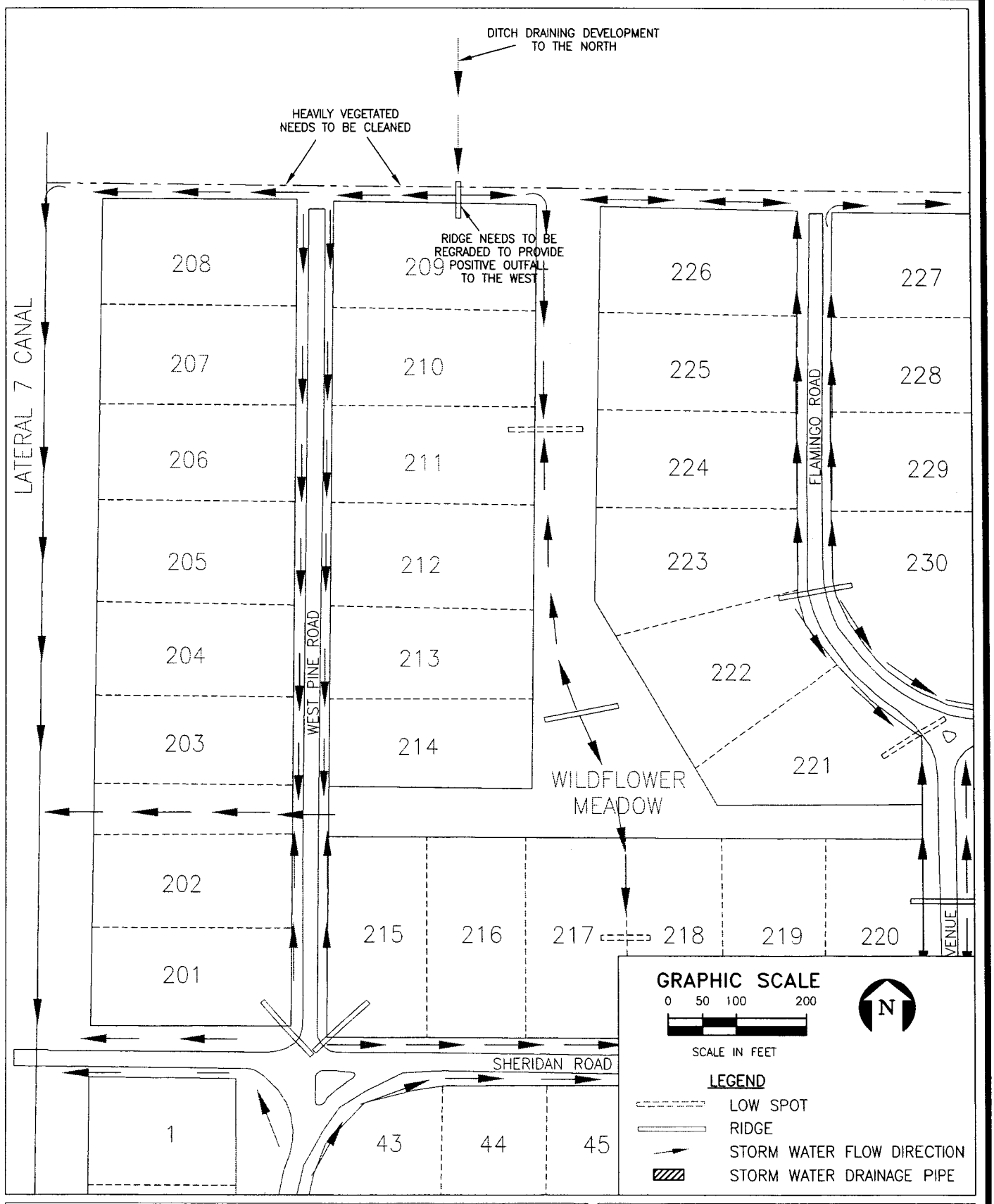

FIGURE 4-10.

DETAILED VIEW OF PROBLEM AREA 8

Sources: Town of Melbourne Village, 1988; ECT, 2002.

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4.2.9 PROBLEM AREA #9 (ACACIA AVENUE NEAR CARISSA ROAD AND NORTH WILDWOOD LANE)

Drainage in this area is provided by swales located along Carissa Road and North Wildwood Lane toward Acacia Avenue. A 15-inch CMP crosses Carissa Road and North Wildwood Lane at Acacia Avenue. A 30-inch CMP (see Figure 4-11) then crosses Acacia Avenue just south of North Wildwood Lane. These culverts are 30 to 50 percent filled with sediment. The southern invert of the culvert under North Wildwood Lane is approximately 0.75 ft higher than the upstream culvert invert. A ditch then conveys flow west about 175 ft toward the Lateral-5 canal. This ditch is about 2 to 3 ft wide near Acacia Avenue then narrows to less than 1-ft wide by 2-ft deep near the outfall. An 18-inch culvert at the end of the ditch discharges to the Lateral-5 Canal. Figure 4-12 presents the location of drainage problems in the Acacia Avenue near Carissa Road and North Wildwood Lane area.

4.2.10 PROBLEM AREA #10 (CAJEPUT CIRCLE)

Drainage in the southwest corner of Cajeput Circle flows west to approximately the lot line between Lots 417 and 422. Then it flows north-northeast to the northeast corner of Lot 418 where it makes a 90-degree counterclockwise bend and flows toward Cajeput Circle. When it reaches Cajeput Circle, it passes though a 28-inch CMP to the west side at which point stormwater then travels approximately 400 ft to the Lateral 5 Canal. It appears that at the northeast corner of Lot 418 is a high spot that results in ponding following storm events. Figure 4-13 presents the location of drainage problems in the Cajeput Circle area.

4.3 WATER QUALITY ASSESSMENT

The following is a summary of findings for the water quality analysis. The Town was subdivided into 22 basins. Each basin was grouped into larger basin units, 5 in total, based on flow to a common receiving body of water. Using the WTM, nonpoint source pollutant loadings were estimated for each basin and for the larger aggregated basin units corresponding to county laterals and canals.

SILTED CULVERT UNDER
ACACIA AVENUE

FIGURE 4-11.

PHOTO OF SILTED CULVERT UNDER ACACIA AVENUE

Source: ECT, 2002.

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Environmental Consulting & Technology, Inc.

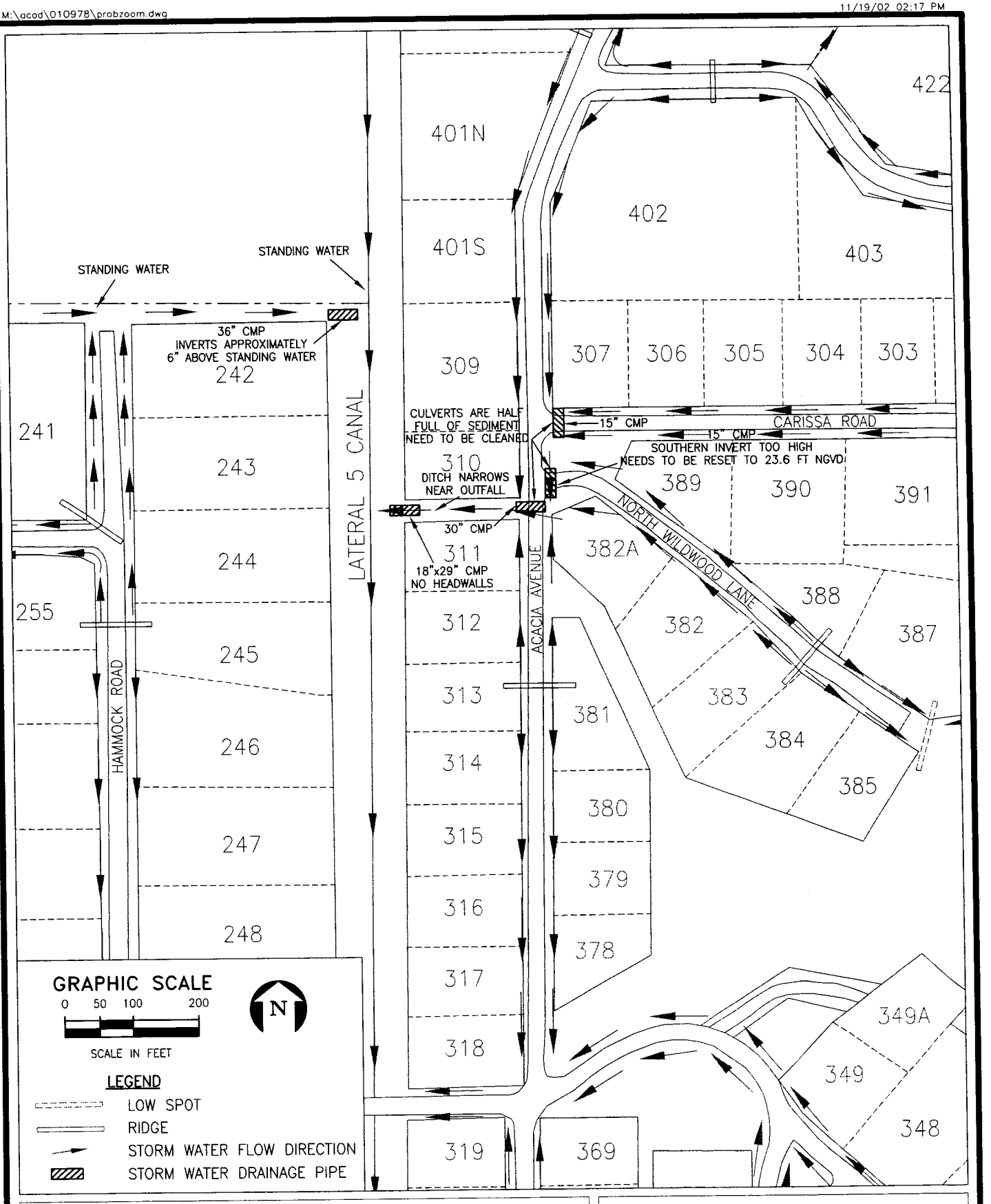

FIGURE 4-12.

DETAILED VIEW OF PROBLEM AREA 9

Sources: Town of Melbourne Village, 1988; ECT, 2002.

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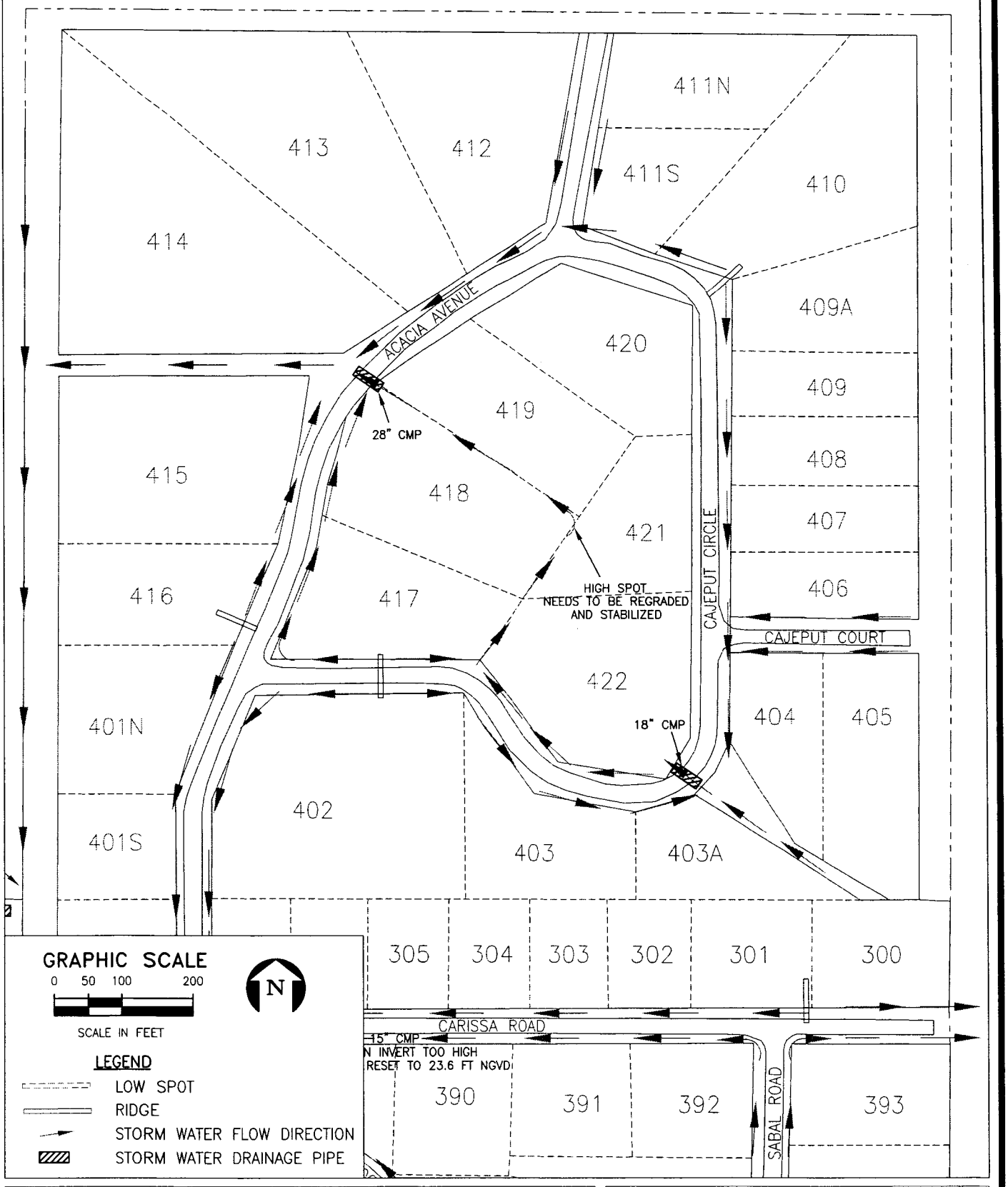

FIGURE 4-13.

DETAILED VIEW OF PROBLEM AREA 10

Sources: Town of Melbourne Village, 1988; ECT, 2002.

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Table 4-1 presents a listing of basin areas, unit loadings (pounds/acre/year), and annual loadings (pounds/year) with and without BMPs for present land use. As previously noted, BMP efficiencies were applied to pollutant loadings whenever such facilities were found to be present, in this case, vegetated roadside swales. The basins were grouped according to the larger canal basin units to which they belong. Table 4-2 presents a summary of pollutant loads to the canal system.

The most significant pollutant being generated from the Town appears to be suspended sediment. Suspended sediments may cause sedimentation in water bodies over a period of time; they also function as conveyers of pollutants that are physically bound to the suspended particles.

Table 4-1. Summary of Pollutant Loads by Basin

Basin ID	Annual Load (Raw) TN lb/year	TP lb/year	TSS lb/year	FC # billion/year	Annual Load Discounted for Stormwater Management TN lb/year	TP lb/year	TSS lb/year	FC # billion/year	Size acres	TSS Load Rate Raw lb/acre	TSS Load Rate treated lb/acre
001	47	8	2,228	1,738	33	6	1,560	1,216	7.9	281	196
002	72	13	3,398	2,656	50	9	2,379	1,859	12.2	279	195
003	34	6	1,582	1,253	23	4	1,108	877	6.2	253	177
004	51	9	2,410	1,876	36	6	1,687	1,313	8.4	288	202
005	56	10	2,687	1,932	39	7	1,881	1,352	8.2	326	229
005 including Target	427	47	16,618	18,862	138	15	5,372	6,097	33.4	498	161
006	50	7	2,260	1,412	35	5	1,582	988	11.4	198	138
007	50	8	2,347	1,719	35	6	1,643	1,203	10.8	217	152
008	24	4	1,138	795	17	3	797	556	5.0	228	159
009	19	3	916	655	14	2	642	459	4.1	221	155
010	42	7	1,943	1,531	29	5	1,360	1,072	8.2	237	166
011	75	13	3,532	2,672	53	9	2,472	1,870	14.5	244	170
012	10	2	489	386	7	1	342	270	2.1	231	162
013	18	3	832	666	12	2	582	467	5.0	166	116
014	272	42	12,492	8,088	190	29	8,745	5,662	66.9	187	131
015	17	3	789	637	12	2	552	446	2.6	304	213
016	22	4	1,029	810	15	3	720	567	5.4	192	134
017	88	16	4,131	3,308	62	11	2,892	2,315	17.6	234	164
018	60	11	2,830	2,250	42	7	1,981	1,575	15.3	185	129
019	136	23	6,409	4,878	95	16	4,487	3,415	35.3	182	127
020	104	18	4,941	3,794	73	13	3,459	2,656	20.3	243	170
021	12	2	539	441	8	1	377	308	3.2	167	117
022	125	22	5,898	4,652	87	15	4,128	3,257	28.8	205	143

Note: FC = fecal coliform.

Source: ECT, 2002.

Table 4-2. Summary of Pollutant Loads to Canal Systems

Outfall ID	Annual Load (existing treatment) TN lb/year	TP lb/year	TSS lb/year	FC # billion/yr	Basin Size acres	TSS Load Rate treated lb/acre
L-8	36	6	1,687	1,313	8.4	202
L-7	54	10	2,563	2,041	20.3	126
L-5	563	95	26,343	19,388	185.2	142
Crane Creek Canal N	118	20	5,554	4,089	34.5	161
Crane Creek Canal S	280	39	12,000	11,038	71.2	169

Note: FC = fecal coliform.

Source: ECT, 2002.

5.0 ALTERNATIVE EVALUATIONS

This section contains an evaluation of alternatives to alleviate existing flooding and water quality problems. The following guidelines were considered in evaluating the alternatives:

1. Solutions will involve the incorporation of both structural and non-structural approaches to stormwater management.
2. Solutions should be acceptable to regulatory agencies and be permittable.
3. Solutions should be cost effective and affordable.
4. Solutions should seek to provide comprehensive environmental benefits. Benefits include reduced flooding, pollutant load reductions, and wetland enhancement and preservation.
5. Solutions must be technically feasible, implementable, and reliable. For example, infiltration-based BMPs (i.e., retention ponds, exfiltration) would not be proposed for areas having poorly drained soils since they would not function properly and would promote mosquito development.

Alternatives to alleviate flooding were developed and evaluated for the most critical flooding problems. Improved maintenance is proposed for all problem areas, and in most cases, is sufficient to correct problems. Structural improvements were proposed if better maintenance was not adequate to correct problems. These alternatives are discussed in the following sections.

5.1 PROBLEM AREA #1 (DAYTON BOULEVARD)

5.1.1 ALTERNATIVE 1—ENHANCE CURRENT DRAINAGE PATTERN

Perform maintenance cleaning in the ditch along the east side of Dayton Boulevard to restore the conveyance capacity of the ditch. Also, fit cross culverts under Dayton Boulevard with mitered end sections to improve conveyance, increase safety from protruding culverts, and reduce erosion around culvert inlets and outlets.

5.1.2 ALTERNATIVE 2—RECONFIGURE DRAINAGE ALONG WEST SIDE OF DAYTON BOULEVARD

The culvert under Jeannie Drive and the driveway culvert to the north would need to be lowered to reestablish flow direction to the north. The inverts of the culvert north of Canal Road are set so that stormwater must stage up approximately 1ft before discharge can occur to the Crane Creek Canal. The inverts of this structure need to be lowered to elevation 22.6 ft. Also, the swale between Ward Parkway and Canal Road would possibly need to be regraded and culverts installed under any driveways that are above swale grade.

5.2 PROBLEM AREA #5 (PLATT CIRCLE)

Many alternatives were developed and evaluated to alleviate persistent ponding in this area. The alternatives, described below, reflect a range of maintenance and structural improvements. The alternatives tend to build on themselves in that structural modifications to the system are proposed and evaluated after necessary maintenance, such as ditch cleaning and regrading, have been performed.

5.2.1 ALTERNATIVE 1—CLEANING AND STABILIZING

Clean and stabilize the culverts and ditches in and downstream of Platt Circle. This would include removal of vegetation from ditches and sodding or seeding of ditch banks to reduce the amount of erosion due to loose soils. It would also include removing sediment from culverts or replacing them, if necessary. Headwalls should be installed to reduce the amount of erosion occurring at culvert inlets and outlets.

5.2.2 ALTERNATIVE 2—REMOVING HIGH SPOT

Regrading the high spot located near the north end of Azalea Park to provide relief to the Platt Circle area. This would reduce the elevation at which stormwater begins to discharge by approximately 0.5 ft. This alternative also includes everything prescribed in Alternative 1.

5.2.3 ALTERNATIVE 3—REMOVING 90-DEGREE BENDS IN CULVERTS AT CRANE ROAD

Reconfigure the culvert north of Crane Road and the culvert crossing of Crane Road by installing a single 30-inch reinforced concrete pipe (RCP) diagonally across Crane Road

to the ditch south of Crane Road. This will reduce the amount of head loss created by the 90-degree bends that are currently in the system. It would also reduce the erosion at the location of these bends by reducing the turbulence. This alternative would also include tasks prescribed in Alternatives 1 and 2.

5.2.4 ALTERNATIVE 4—INSTALLING DROP INLET IN PLATT CIRCLE

Install an inlet in Platt Circle and pipe stormwater between Lots 375 and 376 to the ditch near the south end of Azalea Park. This would include obtaining an easement from the homeowners on Lots 375 and 376. This alternative would also include everything prescribed in Alternative 3.

5.2.5 ALTERNATIVE 5—INSTALLING DROP INLET IN PLATT CIRCLE WITHOUT RECONFIGURING CRANE ROAD

Install an inlet in Platt Circle and pipe stormwater between Lots 375 and 376 to the ditch near the south end of Azalea Park. This would include obtaining an easement from the homeowners on Lots 375 and 376. This alternative would also include everything prescribed in Alternatives 1 and 2.

5.2.6 ALTERNATIVE 6—STABILIZE THE DITCH SOUTH OF CRANE ROAD AND UPGRADE CULVERT DISCHARGING TO CRANE CREEK CANAL

The ditch south of Crane Road is currently overgrown with trees and has steep side slopes. Flatter side slopes will reduce the amount of erosion and improve conveyance. The culvert that discharges to Crane Creek Canal is 18 inches tall by 29 inches wide. Increasing this culvert to a 30-inch culvert will increase the conveyance capacity of the system.

5.2.7 ALTERNATIVE 7—INSTALL PIPE AND BAFFLE BOX FROM CRANE ROAD TO OUTFALL

Install a 30-inch pipe from Crane Road to Crane Creek Canal in the existing ditch. Replacing the ditch that is currently in place with a piped system will reduce the amount of channel erosion and provide a location for a stormwater treatment unit. Sediment loads to Crane Creek Canal would also be reduced by this alternative.

5.2.8 EVALUATION SUMMARY

The goals of the developed alternatives were to correct two main issues:

1. Persistent ponding in Platt Circle, lasting on the order of days following storm events.
2. Erosive conditions at Crane Road and in the outfall ditch south of Crane Road.

Details of the model simulations are contained in Appendix B. The simulations demonstrated that Alternative 2 (maintenance clearing, regrading, and removal of the high spot in the ditch from Platt Circle) would result in a 0.4-ft decrease in peak stages and would decrease time to complete drawdown from days to approximately 18 hours. Construction of a drop inlet and pipe system in Platt Circle (Alternatives 4 and 5) resulted in an additional 0.05-ft decrease in peak stages.

Alternatives 3, 6, and 7 all provide for less erosive conditions at Crane Road and the downstream ditch. Alternative 6 has the advantage of lower costs than Alternative 7, but results in more vegetative clearing between Lots 334 and 335. Alternative 7 provided for less vegetative clearing and higher reductions in sediment loads.

5.3 PROBLEM AREA #6 (LIVE OAK AVENUE AT LATERAL-5 CANAL)

The primary flooding problem is due to back water from the Lateral-5 (L-5) Canal and occurs in the northwest ditch. End-of-pipe backflow prevention through installation of a flap-gate value on the 12-inch CMP is proposed to prevent back flow from the L-5 Canal and to allow flow from the Town drainage system when the water level in the L-5 recedes.

5.4 PROBLEM AREA #7 (FLAMINGO ROAD AREA)

5.4.1 ALTERNATIVE 1

The ditch flowing north should be regraded to reestablish a positive grade-line between the Flamingo Road ditch and the ditch along the northern boundary of the Town.

5.4.2 ALTERNATIVE 2

Investigate the Lateral-5 Canal to determine the reason for the standing water. If the investigation showed that the water level could be lowered, then the grade-line between Flamingo Road ditch and Lateral-5 Canal could be reestablished.

5.5 PROBLEM AREA #8 (WILDFLOWER MEADOW)

5.5.1 ALTERNATIVE 1

Clean the ditch along the northern border of the Town increasing the flow capacity.

5.5.2 ALTERNATIVE 2

Regrade the ditch in Wildflower Meadow to promote flow toward the north and clean/regrade the ditch along the northern boundary of the Town to restore the flow path toward the west.

5.6 PROBLEM AREA #10 (CAJEPUT CIRCLE)

Regrade the ditch including removal of the high spot near the northeast corner of Lot 418 to provide a consistent flow line toward the Lateral-5 Canal.

5.7 WATER QUALITY IMPROVEMENT ALTERNATIVES

Based on the pollutant loading analysis and observations of the drainage system, erosion and suspended sediment transport is the major water quality issue. The need to reduce sediment loads is important from an environmental perspective. There are also regulatory incentives to reduce pollutant loads for two primary reasons. First, alternatives to reduce flooding and improve system conveyance capacity beyond maintenance work will require the incorporation of stormwater BMPs for water quality treatment per SJRWMD requirements. Second, compliance with NPDES Phase II requirements presents a need to promote and achieve pollutant reduction.

Alternatives to reduce sediment loads from the Town were evaluated. The goal is to find a BMP which could be implemented near outfall locations where the largest contributing drainage area could be treated and could be installed within the available drainage easements. Four types of devices were investigated including the Stormceptor, CDS Tech-

nologies, Vortechnics, and traditional baffle boxes. These devices function as liquid/solid separators and with proper design, are expected to achieve a 70 percent reduction in TSS loads and 25 percent reduction in nutrients (Herr and Harper, no date given). Based on a lower cost as compared to the others, the baffle box was selected as the device of choice. It also has been widely applied in Brevard County.

Baffle boxes have been pioneered by Brevard County to provide an end-of-pipe treatment method where traditional treatment methods, such as ponds, are not feasible. Baffle boxes are concrete or fiberglass sediment boxes constructed in-line with existing storm drain pipes. They are typically 3 to 5 meters (10 to 15 ft) long, 0.79 meter (2 ft) wider than the pipe, and 1.8 to 2.4 meters (6 to 8 ft) high. The box is divided into three chambers by weirs set at the same level as the pipe invert to minimize hydraulic losses. There are trash screens or skimmers to trap floating trash and yard debris. Manholes are set over each chamber to allow access for cleaning with vacuum trucks. Baffle boxes are principally designed for sediment removal. The trash screens will trap floating trash, but will swivel up in high flows losing the accumulated trash. Heavy metals and particulate phosphorus will bind to suspended solids and be removed also. Costs per device range from $20,000 to $35,000, assuming minimal additional piping costs.

Figure 5-1 presents possible locations of baffle box installation based on optimal TSS capture. Table 5-1 presents a summary of estimated load reductions achieved if baffle boxes are installed at all locations shown.

All of the locations identified in Figure 5-1 are in open ditch systems and would require significant additional piping for the baffle boxes to function properly. Previous experience with installing baffle boxes in an open ditch system has not been favorable due to excessive sediment accumulation resulting in a nonfunctioning system and high maintenance costs. Given the relatively low loadings for TSS, the construction and maintenance of a baffle box system at each of the locations shown is not considered cost effective and, therefore, is not recommended. However, where conveyance and infrastructure improvements are proposed, such as in the Platt Circle area (see Section 5.2), baffle boxes can

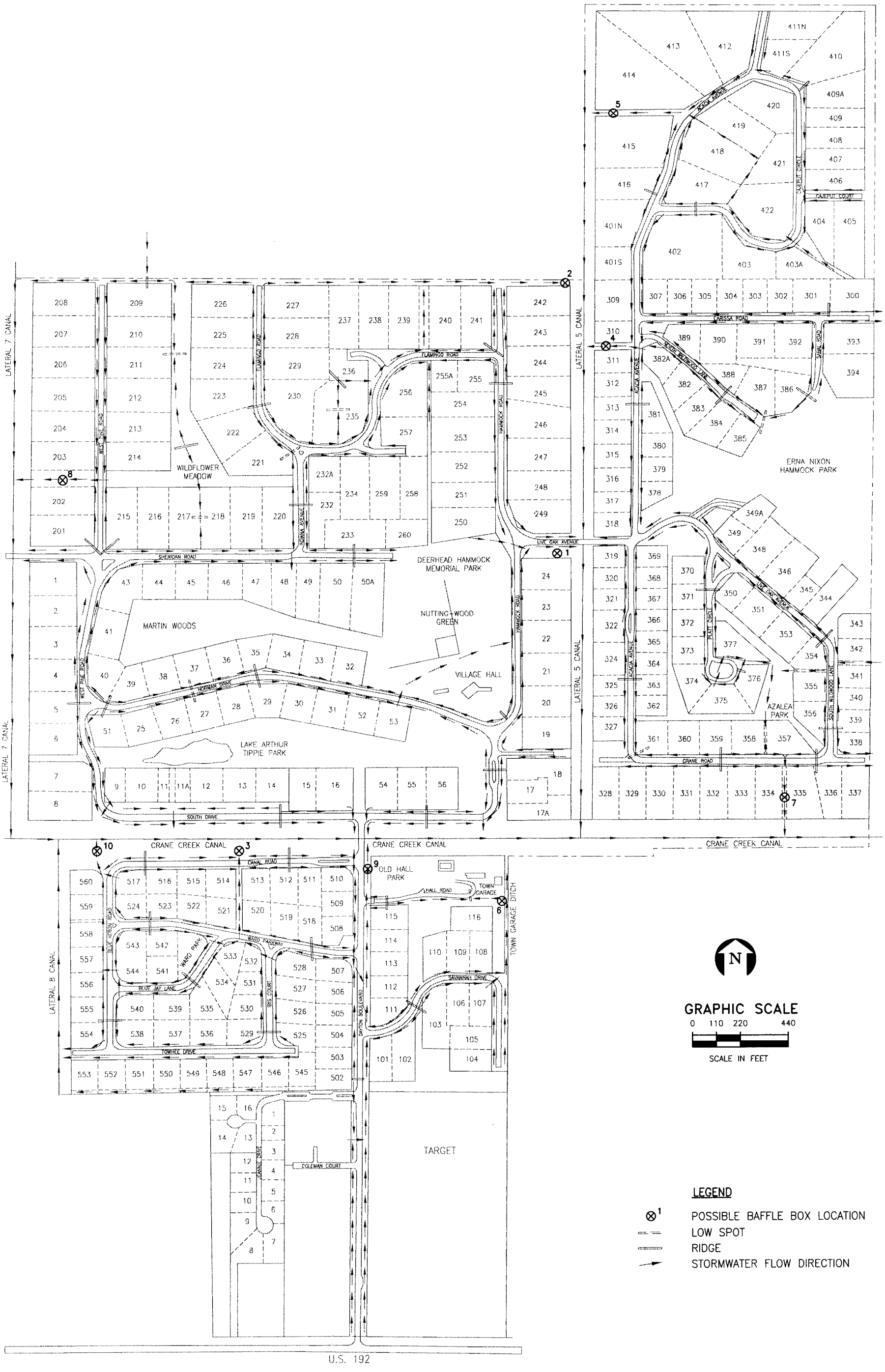

FIGURE 5-1.

BAFFLE BOX LOCATIONS

Sources: Melbourne Village, 1988; ECT, 2002.

ECT

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Table 5-1. Summary of Pollutant Loads with Baffle Boxes Installed

Basin ID	Annual Load Discounted for Stormwater Management				Annual Load with Baffle Boxes				Basin Size	TSS Load Rate treated	TSS Load Rate Baffle Boxes
	TN lb/year	TP lb/year	TSS lb/year	FC # billion/yr	TN lb/year	TP lb/year	TSS lb/year	FC # billion/yr	acres	lb/acre	lb/acre
001	33	6	1,560	1,216	33	6	468	1,216	7.9	196	59
002	50	9	2,379	1,859	50	9	714	1,859	12.2	195	58
003	23	4	1,108	877	23	4	1,108	877	6.2	177	177
004	36	6	1,687	1,313	36	6	1,687	1,313	8.4	202	202
005	39	7	1,881	1,352	39	7	564	1,352	8.2	229	69
005 including Target	138	15	5,372	6,097	138	15	1,611	6,097	33.4	161	48
006	35	5	1,582	988	35	5	475	988	11.4	138	42
007	35	6	1,643	1,203	35	6	1,643	1,203	10.8	152	152
008	17	3	797	556	17	3	797	556	5.0	159	159
009	14	2	642	459	14	2	642	459	4.1	155	155
010	29	5	1,360	1,072	29	5	1,360	1,072	8.2	166	166
011	53	9	2,472	1,870	53	9	742	1,870	14.5	170	51
012	7	1	342	270	7	1	342	270	2.1	162	162
013	12	2	582	467	12	2	582	467	5.0	116	116
014	190	29	8,745	5,662	190	29	2,623	5,662	66.9	131	39
015	12	2	552	446	12	2	552	446	2.6	213	213
016	15	3	720	567	15	3	720	567	5.4	134	134
017	62	11	2,892	2,315	62	11	2,892	2,315	17.6	164	164
018	42	7	1,981	1,575	42	7	594	1,575	15.3	129	39
019	95	16	4,487	3,415	95	16	1,346	3,415	35.3	127	38
020	73	13	3,459	2,656	73	13	1,038	2,656	20.3	170	51
021	8	1	377	308	8	1	377	308	3.2	117	117
022	87	15	4,128	3,257	87	15	1,239	3,257	28.8	143	43
L-8	36	6	1,687	1,313	36	6	1,687	1,313	8.4	202	202
L-7	54	10	2,563	2,041	54	10	1,176	2,041	20.3	126	58
L-5	563	95	26,343	19,388	563	95	11,770	19,388	185.2	142	64
Crane Creek Canal N	118	20	5,554	4,089	118	20	3,823	4,089	34.5	161	111
Crane Creek Canal S	280	39	12,000	11,038	280	39	4,375	11,038	71.2	169	61

Source: ECT, 2002.

serve to provide effective water quality treatment to meet retrofit requirements (see Section 5.2.7).

Nutrient load reduction is a priority in the Indian River Lagoon and its contributing basins (such as the Crane Creek Canal, or M-1 Canal, basin). The estimated nutrient loadings generated by the Town are considered low for this type of development. Opportunities to implement BMPs to address nutrient loadings such as wet detention ponds are available in the Lake Arthur Tippie Park area, the Wildflower Meadow area, and the Martin Woods area. The costs to implement such BMPs would be large since significant infrastructure improvements would also be required to revise existing drainage patterns as needed. These costs are not deemed justified given the low nutrient loadings. Reductions in nutrient loadings can also be accomplished using more economical, nonstructural BMPs such as improved operations and maintenance, and public education. Opportunities to implement these nonstructural practices are available in the Town and can provide measurable reductions in nutrient loadings. Further discussion of these BMPs is provided in the Recommendations section (Section 6.0).

6.0 RECOMMENDATIONS

This section of the report presents recommendations for a stormwater master plan based on ECT's evaluation of the stormwater management system. Included are recommendations for projects for correcting water quantity and quality problems. The recommendations include structural and non-structural measures to relieve flooding while providing for pollutant load reductions to the M-1 Canal and improving operation and maintenance.

6.1 RECOMMENDED PROJECTS

Five main factors were listed in Section 5.0 as guidelines to be considered in developing alternatives and recommendations:

- Technical feasibility and reliability.
- Permittability.
- Cost effectiveness and affordability.
- Environmental soundness and consistency.
- Applicability.

The recommended projects are summarized in the following paragraphs. Project cost details are included as Appendix C.

6.1.1 PROBLEM AREA #1 (DAYTON BOULEVARD)

The ditch along the east side of Dayton Boulevard has the capability to carry large stormwater flows and, with some minor improvements, is capable of conveying stormwater flows for the Dayton Boulevard area. Improving the drainage along the west side of Dayton Boulevard would entail lowering at least three culverts and possibly adding two culverts. Also it may entail several hundred feet of ditch regrading. It is recommended that maintenance cleaning in the ditch along the east side of Dayton Boulevard be performed to restore the conveyance capacity of the ditch. Also, construct headwalls on cross culverts under Dayton Boulevard to improve conveyance, increase safety from protruding culverts, and reduce erosion around culvert inlets and outlets. This alternative is recommended due to the ease of implementation and level of service that would be provided.

Estimated costs: $10,300.

6.1.2 PROBLEM AREA #2 (TOWN GARAGE)

It is recommended that the culverts along the north side of Savannah Drive be cleaned out. Also, the swale associated with these culverts needs to be regraded down to the Town Garage ditch to remove accumulated sediment and restore conveyance capacity.

Bank slopes of the Town Garage ditch, near the Town Garage, need to be regraded to provide stability and reduce channel erosion.

Estimated costs: $5,500.

6.1.3 PROBLEM AREA #3 (CANAL ROAD AND BLUE HERON ROAD)

The 18-inch CMP at the end of Canal Road needs to be cleaned out to restore conveyance capacity.

Estimated costs: $900.

6.1.4 PROBLEM AREA #4 (NORMAN DRIVE)

It is recommended that roadside swales on both sides of the road be regraded to restore flow line (approximately to driveway culvert inverts). Driveway culverts should be cleaned to remove accumulated sediments.

Estimated costs: $11,800.

6.1.5 PROBLEM AREA #5 (PLATT CIRCLE)

To alleviate the problem of persistent ponding in Platt Circle and to reduce erosion at Crane Road the outfall ditch, the following recommendations are made:

1. Clean and stabilize the culverts and ditches in and downstream of Platt Circle. This would include removal of vegetation from ditches and sodding or seeding of ditch banks to reduce the amount of channel erosion.

2. Regrade the high spot located near the north end of Azalea Park. This would reduce the elevation at which stormwater begins to discharge by approximately 0.5 ft and relieve the persistent ponding condition following large storm events.
3. Reconfigure the culvert north of Crane Road and the culvert crossing of Crane Road by installing a single 30-inch RCP diagonally across Crane Road to the ditch south of Crane Road. This will reduce the amount of head loss created by the 90-degree bends that are currently in the system. It would also reduce the erosion at the location of these bends due to flow turbulence. Existing culverts would be removed.
4. Install a 30-inch pipe from Crane Road to Crane Creek Canal in the existing ditch. Replacing the ditch that is currently in place with a piped system would reduce the amount of erosion and provide a location for installation of a baffle box. Sediment loads to Crane Creek Canal would be reduced by this alternative.

Estimated costs: $123,700 (includes monitoring).

6.1.6 PROBLEM AREA #6 (LIVE OAK AVENUE NEAR THE L-5 CANAL)

It is recommended that end-of-pipe backflow prevention through installation of a flapgate valve on the 12-inch CMP be performed to prevent flow from the L-5 Canal and to allow flow from the Town when the water level in the L-5 Canal recedes.

Estimated costs: $800.

6.1.7 PROBLEM AREA #7 (FLAMINGO ROAD AREA)

It is recommended that the ditch flowing north should be regraded to reestablish a positive grade-line between the Flamingo Road ditch and the ditch along the northern boundary of the Town. This would provide immediate relief from standing water in the Flamingo ditch.

Estimated costs: $1,900.

6.1.8 PROBLEM AREA #8 (WILDFLOWER MEADOW)

It is recommended that the ditch along the northern border of the Town be cleaned to restore conveyance capacity. Ponding in the low spot in Wildflower Meadow does not appear to have an adverse impact.

Estimated costs: $1,700.

6.1.9 PROBLEM AREA #9 (CARISSA AVENUE NEAR CARISSA ROAD AND NORTH WILDWOOD LANE)

It is recommended that the culverts crossing Carissa Road and North Wildwood Lane be cleaned of accumulated sediments. The 15-inch CMP should be reset to correct the existing adverse slope. Install a mitered-end section to the outfall structure to reduce erosion around the culvert entrance.

Estimated costs: $4,500.

6.1.10 PROBLEM AREA #10 (CAJEPUT CIRCLE)

It is recommended that the swale at the northeast corner of Lot 418 be regraded (including sodding) to remove the high spot and restore flow gradients toward the L-5 Canal.

Estimated costs: $700.

6.2 NON-STRUCTURAL CONTROLS

Recommended non-structural source controls include:

- Improved system maintenance.
- Public education programs.
- Fertilizer and pesticide application control.

6.3 OPERATION AND MAINTENANCE

Proper operation and maintenance is essential for any designed system to function effectively and provide the desired level of service. Thus, operation and maintenance are criti-

cal elements of a stormwater master plan. The recommended alternatives include those BMPs which are easily maintained.

The current level of maintenance on Town drainage facilities has not been adequate to maintain system conveyance capacity over the long-term. Recently, there has been improved operation and maintenance of the drainage system resulting in positive improvements in the drainage level of service for the areas receiving attention.

A goal of this master plan is to provide guidance and recommendations for a routine operations and maintenance program. Inspections of ditches, swales, and culverts should be performed by the Town quarterly and after every major storm event. Excess vegetation and accumulated sediment should be removed as required. To assist Town staff in performing this inspection, a maintenance inspection form for open channels and swales is included as Appendix D. The form provides a checklist of inspection items and provides for a means of assessing condition, establishing maintenance priorities, and maintaining system records.

It is also recommended that the installation of driveway culverts, both for new construction or replacement of existing culverts, be reviewed and approved by the Town for proper size, pipe material, and alignment. Installations should be of a size and material that is consistent with adjacent culverts. New installations should be surveyed to ensure that the alignment and invert elevations are consistent with existing drainage patterns and will not cause flow obstructions or reversals. Culvert replacements should be performed using the same pipe size, material, and alignment as the existing culvert. Any proposed modifications should be reviewed and approved by the Town.

6.4 PUBLIC EDUCATION

An essential component of any stormwater program is public education. Many people do not fully realize that the runoff from streets, parking lots, roof tops, lawns, etc., contribute pollutant loading to their recreational and scenic water bodies. The public is also usually unaware of what effects their actions can have on a stormwater management system. The implementation of a public education program is viewed by EPA as a positive step in the

direction of controlling pollutants in stormwater discharges since it falls under the classification of a non-structural BMP. EPA has required it as part of the NPDES Phase II compliance requirements. As a result, numerous public education programs have been implemented in the past decade which emphasize stormwater management.

Various types of public education programs have been designed to inform residents about the need for proper waste disposal techniques and the harm that improper methods can have on the environment. Information should be developed and distributed that encourages efficient landscaping practices, particularly with respect to irrigation, fertilization, pesticide and herbicide applications. In addition, the proper treatment of hazardous materials, proper waste disposal, and non-toxic substitutes for common household cleaning products should also be included in the public education program.

A complete summary of potential control measures which can be implemented as part of a full-scale public education program are presented in Table 6-1.

These public education goals can be met through various public participation and education components which are incorporated into the program framework. Components to be incorporated into the formal program may include public hearings and meetings, citizen advisory committees, workshops and education programs, informational newsletters, press releases, bill stuffers, telephone information hot line, and other informational materials. Through the formal adoption of public education program, each component can be well defined, planned, and implemented with success.

6.5 NPDES PROGRAM COMPLIANCE

This master plan report will benefit the Town of Melbourne Village in its effort to meet the anticipated permitting requirements of the Phase 2 NPDES permit. Regulated small MS4 operators will need to obtain permit coverage by **March 10, 2003**. Although FDEP has not yet issued regulations or permits for regulated small MS4s, it is anticipated that the requirements will closely track the requirements prescribed in the federal Phase II Rule and outlined below. Additional requirements may be included in the FDEP-issued

Table 6-1. Potential Educational Control Measures for Stormwater Discharges

5. Emphasize impacts which result when oil, antifreeze, pesticides, herbicides, paints, solvents, or other potentially harmful chemicals are dumped into the storm sewer system of drainage canals.
6. Educate homeowners on the proper use and management of fertilizers, pesticides, herbicides, and other potentially harmful chemicals.
7. Promote the effective use of *housekeeping* practices, including the use of absorbents, cleaning compounds, and oil/grease traps for controlling oil and grease in gas stations, automotive repair shops, parking areas, commercial and industrial facilities, and food service facilities.
8. Emphasize non-point source pollution impacts which result from littering and improper solid waste management practices.
9. Promote the need to keep rainfall and runoff from contacting potential contaminants.
10. Emphasize the need to minimize the total volume of runoff and the peak rate of runoff from a given area.
11. Promote efforts to reduce leaking of oil, antifreeze, hydraulic fluid, etc.
12. Educate the public on the environmental impacts which result from leaks and spills of gasoline, fuel oil, and chemical tanks.
13. Educate contractors and public works personnel about the need for and practical methods for erosion control, sediment control, site waste disposal, ground water disposal, etc.
14. Educate homeowners on the need to clean up and properly dispose of pet wastes.

Source: ECT, 2002.

regulations. Operators of regulated small MS4s must develop and implement a stormwater management program that includes the measurable goals and BMPs of their choosing for the following six **minimum control measures**:

1. **Public Education and Outreach**—Perform educational outreach regarding the harmful impacts of polluted stormwater runoff.
2. **Public Participation/Involvement**—Comply with state and local public notice requirements and encourage other avenues for citizen involvement.
3. **Illicit Discharge Detection and Elimination**—Implement a plan to detect and eliminate any non-stormwater discharges to the MS4 and create a system map showing outfall locations.
4. **Construction Site Runoff Control**—Implement and enforce an erosion and sediment control program for construction activities.
5. **Post-construction Runoff Control**—Implement and enforce a program to address discharges of post-construction stormwater runoff from new development and redevelopment areas.
6. **Pollution Prevention/Good Housekeeping**—Implement a program to prevent/reduce pollutant runoff from municipal operations and property and perform staff pollution prevention training.

An additional requirement includes periodic evaluation reports. These reports will be required using the measurable goals for each minimum control measure as benchmarks for evaluating program effectiveness.

This master plan will place the Town in a proactive role with respect to the future compliance standards which are expected under the NPDES program.

REFERENCES

Center for Watershed Protection (CWP). 2002. The Watershed Treatment Model, Version 3.1. Ellicott City, Maryland.

Herr, J.L. and Harper, H.H. No date given. Removal of Gross Pollutants from Stormwater Runoff Using Liquid/Solid Separation Structures. Environmentla Research and Design, Inc. Orlando, Florida.

Post, Buckley, Schuh and Jernigan, Inc. (PBSJ). 2001. Crane Creek and Hickory Ditch Basins Stormwater Master Plan Brevard County Government. Viera, Florida.

APPENDIX A
DRIVEWAY CULVERT INVENTORY

Melbourne Village Driveway Culvert Inventory

Lot		Street Address	Number of Culverts	Culvert Material	Diameter inches	Approximate Length	Headwall Type	Condition	Crushed End	Percent Silted	Pipe Failed	Water Depth (Inches)
541	6776	BLUE JAY LN.										
542	6777	WARD PKWY	2	CMP	12	SD		G		30		
543	6885	WARD PKWY										
544	6885	WARD PKWY										
545	6545	TOWHEE DR.	1	CMP	12	DD	CB	G		40		
546	6587	TOWHEE DR.	1	CMP	12	SD	C	G		50		
547	6629	TOWHEE DR.	1	RCP	12	SD	C	G		50		
548	6691	TOWHEE DR.	1							100		
549	6763	TOWHEE DR.	1	CMP	10	DD	C	P		90		1
550	6817	TOWHEE DR.	1	CMP	14	SD		G		20		3
551	6879	TOWHEE DR.										
552	6915	TOWHEE DR.	1	CMP	12	DD	C	G		30		
554	331	BLUE HERON RD.	1	CMP	14	DD		F	Yes	50		
555	349	BLUE HERON RD.	1	CMP	14	SD		G		60		
556	365	BLUE HERON RD.	2	CMP	16	SD	CB	G		60		
557	395	BLUE HERON RD.	1	CMP	14	DD	CB	F		60		
558	395	BLUE HERON RD.	1	CMP	14	DD	CB	F		60		
559	439	BLUE HERON RD.	1	RRCP	20	DD	CB	G		20		
560	485	BLUE HERON RD.	1	CMP	14	DD		P	Yes	90		

TOTAL LOTS 305
TOTAL CULVERTS 275

APPENDIX A

DRIVEWAY CULVERT INVENTORY

Melbourne Village Driveway Culvert Inventory

Lot	Street Address		Number of Culverts	Culvert Material	Diameter inches	Approximate Length	Headwall Type	Condition	Crushed End	Percent Silted	Pipe Failed	Water Depth (Inches)
1	6915	SHERIDAN RD.	2	CMP	10	SD	CB	G		40		
2	569	W. PINE RD.	1	C	14	SD	C	G		50		
3	555	W. PINE RD.	1			SD	C	P		90		
4	543	W. PINE RD.										
5	531	W. PINE RD.										
6	531	W. PINE RD.										
7	515	W. PINE RD.										
8	505	W. PINE RD.										
9	508	W. PINE RD.	2	CMP	10	DD	C	F	Yes	75		
10	508	W. PINE RD.	2	CMP	10	DD	C	F	Yes	75		
11	6730	SOUTH DR.										
12	6730	SOUTH DR.										
13	6680	SOUTH DR.										
14	6600	SOUTH DR.										
15	6550	SOUTH DR.										
16	6520	SOUTH DR.										
17	514	HAMMOCK RD.										
18	500	HAMMOCK RD.										
18	510	HAMMOCK RD.										
19	522	HAMMOCK RD.										
20	530	HAMMOCK RD.	1	CMP	10	SD		G		70		
21	542	HAMMOCK RD.	1	CMP	10	SD	C	G				7
22	566	HAMMOCK RD.	1	CMP	12	SD	B	G		10		3
23	574	HAMMOCK RD.	1	RCP	16	SD	C	F		20		3
24	590	HAMMOCK RD.	1	CMP	30	SD	C	G		50		
25	6831	NORMAN DR.	1	CMP	8	SD	C	G		30		
26	6793	NORMAN DR.	2	CMP	12	SD	C	G		50		
27	6725	NORMAN DR.	1	RCP	14	SD	CB	G		40		
28	6689	NORMAN DR.	1	CMP	12	SD	C	G		10		
29	6663	NORMAN DR.	1	PVC	8	DD	C	G		10		
30	6597	NORMAN DR.	1	CMP	10	DD	CB	G		30		
31	6529	NORMAN DR.	2	CMP	12	SD	CB	G		10		2
32	6518	NORMAN DR.	2	CB	10	SD	CB	F		15		
33	6530	NORMAN DR.	1	CMP	12	DD	CB	G		50		
34	6556	NORMAN DR.										
35	6598	NORMAN DR.	1	CMP	16	DD	B	F	Yes	40		

Melbourne Village Driveway Culvert Inventory

Lot	Street Address		Number of Culverts	Culvert Material	Diameter inches	Approximate Length	Headwall Type	Condition	Crushed End	Percent Silted	Pipe Failed	Water Depth (Inches)
36	6654	NORMAN DR.	1	CMP	10	SD	C	G		40		
37	6718	NORMAN DR.	1	CMP	14	SD	RD	G		75		0.5
38	6770	NORMAN DR.	1			SD	RD/B	P		100	Yes	8
39	6848	NORMAN DR.	2	CMP	14	DD	RD	G		10		
40	550	W. PINE RD.	1	CMP	14	SD	B	F	Yes	60		
41	562	W. PINE RD.	1	CMP		SD	CB			90		
42	588	W. PINE RD.	1	CMP	12	SD		G		60		
43	588	W. PINE RD.	1	CMP	12	SD		G		60		
44	6815	SHERIDAN RD.	1	CMP	8	DD	CB	G		50		
45	6737	SHERIDAN RD.	1	RCP	8	SD		F		80		
46	6699	SHERIDAN RD.	1	CMP	16	SD		G				6
47	6629	SHERIDAN RD.	2	CMP	12	SD		G				6
48	6595	SHERIDAN RD.	2	CMP	10	SD	CB	F				6
49	6573	SHERIDAN RD.	1	CMP	20	SD	C	G				6
50A	6489	SHERIDAN RD.	1	CMP	20	DD	C	F				10
50	6535	SHERIDAN RD.	2	CMP	20	SD	C	G				8
51	530	W. PINE RD.										
52	6511	NORMAN DR.	1	CMP	10	DD	CB	G		60		
53	6507	NORMAN DR.	2	RCP	18	SD	C	G		50		
54	6410	SOUTH DR.										
55	6410	SOUTH DR.										
56	6414	SOUTH DR.										
101	6399	SAVANNAH DR.										
102	6395	SAVANNAH DR.	1	CMP	12	SD	C	F		50		
103	6303	SAVANNAH DR.	1	CMP	12	SD		F		50		
104	6217	SAVANNAH DR.										
105	6229	SAVANNAH DR.	1	CMP	10	SD	CMB	G		50		
106	6257	SAVANNAH DR.	1	CMP	10	SD	C	F		50		
107	6241	SAVANNAH DR.	1	CMP	10	DD	CB	G		50		
108	6250	SAVANNAH DR.	1	RCP	10	SD	C	G		50		
109	6262	SAVANNAH DR.	1	CMP	10	SD	C	G		50		
110	6330	SAVANNAH DR.										
111	6400	SAVANNAH DR.										
112	398	DAYTON BLVD.	1	CMP	30	SD	S	G				10
113	398	DAYTON BLVD.	1	CMP	30	SD	S	G				10
114	410	DAYTON BLVD.	1	CMP	30	SD	C	G				10

Melbourne Village Driveway Culvert Inventory

Lot		Street Address	Number of Culverts	Culvert Material	Diameter inches	Approximate Length	Headwall Type	Condition	Crushed End	Percent Silted	Pipe Failed	Water Depth (Inches)
115	430	DAYTON BLVD.										
116	6231	HALL RD.										
201	6910	SHERIDAN RD.	2	CMP	14	SD	RD/CM	G				
202	621	W. PINE RD.	1	CMP	12	SD	CB	F		75		
203	635	W. PINE RD.	2	CMP	14	SD	C	F	Yes	60		
204	643	W. PINE RD.	1	CMP	12	SD	C	G		50		
205	643	W. PINE RD.	1	CMP	12	SD	C	G		50		
206	655	W. PINE RD.										
207	677	W. PINE RD.										
209	690	W. PINE RD.										
209	678	W. PINE RD.	1	RCP	8	SD	CB	G		50		
210	678	W. PINE RD.	2	CMP	14	SD		F		90		
211	654	W. PINE RD.	1							100		
212	654	W. PINE RD.	1							100		
213	642	W. PINE RD.	1			SD	CB	P		90	Yes	
214		EMPTY LOT										
215	620	W. PINE RD.	1	C	14	SD	S	F		80		
216	6830	SHERIDAN RD.	1	RCP	12	SD	RD/CB	G		50		
217	6776	SHERIDAN RD.	1	RCP	10	DD	CB	G		15		
218	6734	SHERIDAN RD.	2	CMP	14	SD	B	G		60		
219	6660	SHERIDAN RD.	1	RCP	10	SD	C	G				6
220	6604	SHERIDAN RD.	1	RCP	8	DD		G		50		
221	6619	FLAMINGO RD.	1	RCP	10	DD	C	F		100		
222	6641	FLAMINGO RD.	2	RCP	8	SD	CB	F		50		
223	6663	FLAMINGO RD.	1	CMP	8	SD	C	G		10		
224	6675	FLAMINGO RD.	1	CMP	10	SD	C	F		60		
225	6687	FLAMINGO RD.	1							100		
226	6695	FLAMINGO RD.	1	CMP	12	SD		P		75		
227	6694	FLAMINGO RD.	2	CMP	12	SD						
228	6686	FLAMINGO RD.	1	CMP	14	SD	C	G				
229	6674	FLAMINGO RD.										
230	6660	FLAMINGO RD.										
231A	6516	FLAMINGO RD.	2	CMP	14	SD	C	G		10		3
231	6548	FLAMINGO RD.	1	RCP	12	DD	C	G		30		3
232	6545	FLAMINGO RD.	1	CMP	12	SD		G		40		3
233	6524	SHERIDAN RD.	1	RCP	10	DD	C	G		30		5

Melbourne Village Driveway Culvert Inventory

Lot		Street Address	Number of Culverts	Culvert Material	Diameter inches	Approximate Length	Headwall Type	Condition	Crushed End	Percent Silted	Pipe Failed	Water Depth (Inches)
234	6519	FLAMINGO RD.	1	CMP	8	DD	CB	F				5
235	6485	FLAMINGO RD.	1	RCP	14	DD	C	G		10		5
236	6493	FLAMINGO CT.										
238	6464	FLAMINGO CT.	1	CMP	10	SD	CB	G		50		
239	6398	FLAMINGO RD.	2	CMP	16	SD	CB	G				3
240	6330	FLAMINGO RD.	2	CMP	20	SD		G		30		2
241	6304	FLAMINGO RD.	1	RCP	10	DD	C	G		50		
242	694	HAMMOCK RD.	1	RCP	8	DD	C	G		40		2
243	686	HAMMOCK RD.	1	CMP	10	SD		G		70		
244	678	HAMMOCK RD.										
245	672	HAMMOCK RD.										
246	666	HAMMOCK RD.	1	CMP	14	SD		F				30
247	642	HAMMOCK RD.	1	CMP	12	SD		F	Yes			20
248	630	HAMMOCK RD.	1	C	16	SD	RD/C	G				5
249	6100	LIVE OAK AVE.	1	CMP	12	SD		F		10		3
250	611	HAMMOCK RD.	1	CBP	12	SD	CB	G				3
251	627	HAMMOCK RD.	1	CMP	18	SD	CB	G		30		3
251	627	HAMMOCK RD.	1	RCP	16	SD	CB	G		50		3
252	639	HAMMOCK RD.	1	CMP						100		
253	651	HAMMOCK RD.	1	CMP	12	SD	C	G		50		5
254	651	HAMMOCK RD.	1	CMP	12	SD	C	G		50		
255	675	HAMMOCK RD.	1	RCP	10	DD	C	P		80		
255	6480	FLAMINGO RD.	1	CMP	18	DD	RD/C	G				1
256	6477	FLAMINGO RD.	1	RCP	10	SD		G				3
257	6470	FLAMINGO RD.	2	CMP	10	DD	CB	G		10		3
258	6363	WOOD LN.	1	CMP	14	SD	CB	F	Yes	50		
259	6375	WOOD LN.										
260	6464	SHERIDAN RD.	1									
300	5602	CARISSA RD.	1	RCP	17	SD	C	G		50		
301	5626	CARISSA RD.	1	RCP		SD	CB	P	Yes	75	Yes	
302	5690	CARISSA RD.	1	CMP	11	SD	C	G		75		
303	5752	CARISSA RD.	1	CMP	12	SD	B	G		50		
304	5794	CARISSA RD.	2	RCP	15	SD	C	F		75		3
305	5798	CARISSA RD.	1	CMP	14	SD	C	G		50		
306	5888	CARISSA RD.	1	CMP	11	SD	C	G		50		
309	691	ACACIA AVE.	1	CMP	12	SD		G		30		

Melbourne Village Driveway Culvert Inventory

Lot		Street Address	Number of Culverts	Culvert Material	Diameter inches	Approximate Length	Headwall Type	Condition	Crushed End	Percent Silted	Pipe Failed	Water Depth (Inches)
310	683	ACACIA AVE.	1	CMP	10	SD	RD/C	F		50		
311	667	ACACIA AVE.	1	RCP	10	SD	C	G		50		
313	659	ACACIA AVE.	1	CMP	11	SD		F		30		
314	651	ACACIA AVE.										
315	641	ACACIA AVE.	1	RCP	10	SD	CB	G		30		
316	627	ACACIA AVE.	1	RCP	10	SD	C	G		15		1
317	615	ACACIA AVE.	1	CMP	10	SD		G				1
318	611	ACACIA AVE.	1	RCP	14	SD	C	G				3
319	6125	LIVE OAK AVE.	1	RCP	8	DD		F		75		
320	585	ACACIA AVE.	1	RCP	12	DD	C	G		50		
321	571	ACACIA AVE.	1	CMP	8	SD		F		75		
322	565	ACACIA AVE.										
323	565	ACACIA AVE.										
324	545	ACACIA AVE.										
325	537	ACACIA AVE.										
326	529	ACACIA AVE.										
327	529	ACACIA AVE.										
328	5959	CRANE RD.										
329	5917	CRANE RD.										
330	5885	CRANE RD.										
331	5843	CRANE RD.	1	CMP				P		100		
332	5819	CRANE RD.	1	RCP	14	SD		F		50		
333	5755	CRANE RD.	2	CMP	12	SD	B	G		40		
334	5687	CRANE RD.	1					P		100		
335	5645	CRANE RD.	1	CMP	12	SD		G		75		
336	5609	CRANE RD.	1				C	P		100		
337	5555	CRANE RD.	1	RCP	10	DD	C	F		75		
338	506	S. WILDWOOD LN.										
339	520	S. WILDWOOD LN.	1	RCP	12	SD		G		75		
340	532	S. WILDWOOD LN.	2	CMP	10	DD		F		80		
341	544	S. WILDWOOD LN.	2	CMP	12	DD	S	F		50		
342	556	S. WILDWOOD LN.	1	CMP	8	DD	C	F		75		
343	568	S. WILDWOOD LN.	1	RCP	16	SD		F		15		
344	5610	LIVE OAK AVE.	1	CMP	12	DD		P	Yes	80		
345	5640	LIVE OAK AVE.	1	RCP	8	SD	CB	F				
347	5680	LIVE OAK AVE.	2	CMP	8	DD	C	G		50		

Melbourne Village Driveway Culvert Inventory

Lot		Street Address	Number of Culverts	Culvert Material	Diameter inches	Approximate Length	Headwall Type	Condition	Crushed End	Percent Silted	Pipe Failed	Water Depth (Inches)
348	5770	LIVE OAK AVE.	1	CMP	10	DD	C	G		50		
349	5806	LIVE OAK AVE.	1	RCP	10	DD	C	F		75		
349	5800	LIVE OAK AVE.										
350	570	PLATT CR.	1	CMP	10	DD	CB	F		75		
351	5665	LIVE OAK AVE.	1					P		100		
353	5625	LIVE OAK AVE.	1	CMP	10	SD	C	F		90		
354	5605	LIVE OAK AVE.	1	CMP	12	DD		P	Yes	80		
355	541	S. WILDWOOD RD.										
356	525	S. WILDWOOD RD.	1	RCP	14	DD		G		40		
357	5660	CRANE RD.	2	RCP	14	SD	C	G		75		
358	5730	CRANE RD.	1				CB	P		100		
359	5792	CRANE RD.	1	CMP	10	DD		G		75		
360	5834	CRANE RD.	1	RCP	16	SD		G		75		
361	5880	CRANE RD.	2	CMP	10	SD		G		50		
363	542	ACACIA AVE.	1	CMP				P		100		
364	542	ACACIA AVE.										
367	570	ACACIA AVE.	2	C	14	SD		G		40		
368	582	ACACIA AVE.	1	CMP	16	SD	RD	G		10		
369	594	ACACIA AVE.	1	CMP	14	SD		G		30		2
370	585	PLATT CR.										
371	571	PLATT CR.	1				CB			100		
372	557	PLATT CR.	2	RCP	12	SD	CB	F		50		
373	545	PLATT CR.	1	RCP	12	SD	CB	F		40		
374	527	PLATT CR.	1	CMP	12	DD	C	G				5
375	520	PLATT CR.	1	CMP	16	DD	C	G	Yes			7
376	536	PLATT CR.	1	CMP	12	DD		F	Yes	80		
377	548	PLATT CR.	1	CMP	12	SD		F	Yes	50		
378	620	ACACIA AVE.	1	RCP	10	SD	C	G				3
379	648	ACACIA AVE.										
381	648	ACACIA AVE.										
381	660	ACACIA AVE.										
382	676	N. WILDWOOD LN.	2	RCP	14	SD	C	G		50		
382	669	N. WILDWOOD LN.	1	RCP	12	SD	C	G		50		
383	643	N. WILDWOOD LN.	1	RCP	11	SD	C	G		50		
384	643	N. WILDWOOD LN.	1	CMP	12	SD		F		30		
385	639	N. WILDWOOD LN.										

Melbourne Village Driveway Culvert Inventory

Lot		Street Address	Number of Culverts	Culvert Material	Diameter inches	Approximate Length	Headwall Type	Condition	Crushed End	Percent Silted	Pipe Failed	Water Depth (Inches)
386	665	SABAL RD.	1	CMP	8	SD	C	F		30		
387	665	SABAL RD.										
388	658	N. WILDWOOD LN.	1	RCP	10	SD	C	F		75		
389	5863	CARISSA RD.	1	CMP	12	SD	C	G		40		
390	5837	CARISSA RD.	1	CMP	10	SD	C	G		15		
391	5749	CARISSA RD.	2	CMP	13	SD	C	G		10		4
392	5633	CARISSA RD.	1	CMP	12	SD		F				5
393	690	SABAL RD.	1	CMP	10	SD	RD/S	F				3
394	670	SABAL RD.										
401	721	ACACIA AVE.	1	RCP	8	SD		P		75		
402	710	ACACIA AVE.	2	CMP	12	SD		F		30		
402	5747	CAJEPUT CR.	1	CMP	8	SD	C	F		50		
403	5745	CAJEPUT CR.	1	RCP	11	SD	C	F				
403	5621	CAJEPUT CR.	1	RCP	11	SD	C	F		50		
404	5589	CAJEPUT CR.	1	CMP	14	SD	C	G				3
405	5527	CAJEPUT CR.	1	CMP	14	SD	C	G		50		
406	740	CAJEPUT CR.	1	RCP	10	SD		F		50		
407	750	CAJEPUT CR.	1	RCP	10	SD		F				
408	760	CAJEPUT CR.	1	RCP	12	DD	C	G				3
409	764	CAJEPUT CR.	1	CMP	12	SD	C	G				3
409.1	766	CAJEPUT CR.	1	CMP	12	SD	C	G				3
410	778	CAJEPUT CR.	1	RCP	11	SD	C	G				3
411	786	ACACIA AVE.	1	CMP	12	SD	C	G				3
411	788	ACACIA AVE.	1	CMP	12	SD	C	G				3
412	795	ACACIA AVE.	2	CMP, RCP	12	SD	C	G				
413	787	ACACIA AVE.	1	CMP	12	SD		G				3
414	779	ACACIA AVE.	1	CMP	12	SD		G				
415	767	ACACIA AVE.	1	RCP	14	SD	C	P		50		
415.1	NVA	ACACIA AVE.										
416	735	ACACIA AVE.	1	RCP	12	SD	C	G				
417	738	ACACIA AVE.	2	RCP	10	SD		P		50		
418	756	ACACIA AVE.	1	RCP	12	SD		F		75		
419	772	ACACIA AVE.	1	RCP	12	SD	C	G		50		
420	780	ACACIA AVE.	1	CMP	13	SD		F		50		
421	755	CAJEPUT CR.	1	CMP	13	CD		F		50		
422	5630	CAJEPUT CR.	1	CMP	11	SD		G				3

Melbourne Village Driveway Culvert Inventory

Lot		Street Address	Number of Culverts	Culvert Material	Diameter inches	Approximate Length	Headwall Type	Condition	Crushed End	Percent Silted	Pipe Failed	Water Depth (Inches)
502	299	DAYTON BLVD.	1	CMP	12	SD		F		80		
503	325	DAYTON BLVD.	1				C	P		100		
504	353	DAYTON BLVD.	1	CMP	12	SD	CB	G		50		
505	381	DAYTON BLVD.	1	CMP	12	SD		G		10		
506	381	DAYTON BLVD.	1	CMP	12	SD		G		10		
507	6505	WARD PKWY	2	RCP	10	SD	CB	G		20		4
508	405	DAYTON BLVD.										
509	433	DAYTON BLVD.	1	RCP	8	SD	C	G		30		
510	6535	CANAL RD.	1				C	P		100		
511	6545	CANAL RD.	1	CMP	8	SD	C	G		50		
512	6587	CANAL RD.	1	CMP	12	DD		G		10		
513	6629	CANAL RD.										
514	6693	CANAL RD.	1	RCP	12	DD	CB	G		15		
515	6767	CANAL RD.	1	CMP	12	DD		G		80		
516	6825	CANAL RD.										
517	6825	CANAL RD.										
519	6592	WARD PKWY										
521	6712	WARD PKWY	1	RCP	12	DD	CB	G		50		
522	6750	WARD PKWY	1	RCP	10	DD	C	F		40		
523	6824	WARD PKWY	1	CMP	10	SD	B	G		50		
524	6890	WARD PKWY										
525	346	IBIS CT.	1	CMP	12	SD		P		90		
526	366	IBIS CT.	1	CMP	14	DD		G		60		
527	384	IBIS CT.	1	RCP	10	SD	C	F		40		3
528	6565	WARD PKWY										
529	381	IBIS CT.	1	CMP	12	DD	CB	F		50		
530	363	IBIS CT.	1	RCP	12	DD	C	G		60		
531	377	IBIS CT.	1	RCP	12	DD	C	G		60		2
532	379	IBIS CT.	1	CMP	10	DD	RD/C	F		10		1
533	6725	BLUE JAY LN.	1	RCP	12	DD	CM	F		20		4
534	6725	BLUE JAY LN.	1	RCP	14	SD	CM	F		20		7
535	6743	BLUE JAY LN.	1				CB			100		
536	6692	TOWHEE DR.										
538	6770	TOWHEE DR.	1	CMP	14	DD		G		40		
539	6757	BLUE JAY LN.	1	CMP	12	SD	C	F	Yes	50		
540	6889	BLUE JAY LN.	1	CMP						90		

Melbourne Village Driveway Culvert Inventory

Lot		Street Address	Number of Culverts	Culvert Material	Diameter inches	Approximate Length	Headwall Type	Condition	Crushed End	Percent Silted	Pipe Failed	Water Depth (Inches)
541	6776	BLUE JAY LN.										
542	6777	WARD PKWY	2	CMP	12	SD		G		30		
543	6885	WARD PKWY										
544	6885	WARD PKWY										
545	6545	TOWHEE DR.	1	CMP	12	DD	CB	G		40		
546	6587	TOWHEE DR.	1	CMP	12	SD	C	G		50		
547	6629	TOWHEE DR.	1	RCP	12	SD	C	G		50		
548	6691	TOWHEE DR.	1							100		
549	6763	TOWHEE DR.	1	CMP	10	DD	C	P		90		1
550	6817	TOWHEE DR.	1	CMP	14	SD		G		20		3
551	6879	TOWHEE DR.										
552	6915	TOWHEE DR.	1	CMP	12	DD	C	G		30		
554	331	BLUE HERON RD.	1	CMP	14	DD		F	Yes	50		
555	349	BLUE HERON RD.	1	CMP	14	SD		G		60		
556	365	BLUE HERON RD.	2	CMP	16	SD	CB	G		60		
557	395	BLUE HERON RD.	1	CMP	14	DD	CB	F		60		
558	395	BLUE HERON RD.	1	CMP	14	DD	CB	F		60		
559	439	BLUE HERON RD.	1	RRCP	20	DD	CB	G		20		
560	485	BLUE HERON RD.	1	CMP	14	DD		P	Yes	90		

TOTAL LOTS 305
TOTAL CULVERTS 275

APPENDIX B

PLATT CIRCLE ICPR MODELING REPORTS

Mean Annual, 24-Hour Event Node Maximum Conditions

	C1	CRANENE	CRANENW	CRANES	EWILD	GHOST	OUTFALL	PARK	PLATT	WWILD
	feet	feet	feet	feet	feet	feet	feet	feet	feet	feet
Existing Conditions	22.83	24.44	24.47	23.91	24.87	24.88	22.80	24.49	24.91	24.89
Alternative 1	22.90	24.14	24.26	23.96	24.66	24.61	22.80	24.30	24.68	24.64
Alternative 2	22.93	24.19	24.36	23.98	24.54	24.50	22.80	24.34	24.52	24.51
Alternative 3	22.98	-	24.26	24.11	24.54	24.48	22.80	24.25	24.52	24.49
Alternative 4	23.00	-	24.28	24.13	24.50	24.40	22.80	24.28	24.48	24.45
Alternative 5	22.94	24.21	24.37	24.00	24.50	24.43	22.80	24.35	24.48	24.47
Alternative 6	22.82	-	24.12	23.36	24.53	24.47	22.80	24.13	24.52	24.49
Alternative 7	-	-	24.18	23.94	24.54	24.47	22.79	24.20	24.52	24.50

10-Year, 24-Hour Event Node Maximum Conditions

	C1 feet	CRANENE feet	CRANENW feet	CRANES feet	EWILD feet	GHOST feet	OUTFALL feet	PARK feet	PLATT feet	WWILD feet
Existing Conditions	22.94	24.92	25.02	24.45	25.36	25.38	22.80	25.05	25.42	25.38
Alternative 1	23.18	24.65	25.03	24.35	25.12	25.07	22.80	24.99	25.14	25.09
Alternative 2	23.21	24.65	25.00	24.37	25.06	25.04	22.80	24.98	25.05	25.04
Alternative 3	23.49	-	24.83	24.60	25.02	24.95	22.80	24.82	25.00	24.98
Alternative 4	23.52	-	24.83	24.61	25.00	24.92	22.80	24.83	24.98	24.96
Alternative 5	23.22	24.65	25.01	24.39	25.05	25.06	22.80	24.97	25.04	25.03
Alternative 6	22.87	-	24.67	23.64	24.98	24.89	22.80	24.68	24.97	24.93
Alternative 7	-	-	24.76	24.45	25.00	24.93	22.80	24.75	24.98	24.95

25-Year, 24-Hour Event Node Maximum Conditions

	C1 feet	CRANENE feet	CRANENW feet	CRANES feet	EWILD feet	GHOST feet	OUTFALL feet	PARK feet	PLATT feet	WWILD feet
Existing Conditions	23.06	25.18	25.34	24.72	25.60	25.62	22.80	25.37	25.66	25.63
Alternative 1	23.39	24.83	25.26	24.53	25.33	25.31	22.80	25.24	25.34	25.31
Alternative 2	23.49	24.89	25.29	24.61	25.36	25.32	22.80	25.30	25.36	25.34
Alternative 3	23.99	-	25.14	24.88	25.30	25.23	22.80	25.13	25.29	25.26
Alternative 4	24.01	-	25.15	24.89	25.26	25.21	22.80	25.14	25.28	25.25
Alternative 5	23.50	24.90	25.30	24.62	25.35	25.35	22.80	25.30	25.35	25.34
Alternative 6	22.93	-	25.00	23.80	25.25	25.15	22.80	25.00	25.23	25.19
Alternative 7	-	-	25.09	24.73	25.28	25.20	22.80	25.06	25.26	25.22

100-Year, 24-Hour Event Node Maximum Conditions

	C1 feet	CRANENE feet	CRANENW feet	CRANES feet	EWILD feet	GHOST feet	OUTFALL feet	PARK feet	PLATT feet	WWILD feet
Existing Conditions	23.26	25.46	25.67	25.04	25.86	25.86	22.80	25.69	25.90	25.87
Alternative 1	23.85	25.16	25.62	24.84	25.68	25.65	22.80	25.63	25.69	25.67
Alternative 2	23.86	25.17	25.61	24.86	25.65	25.65	22.80	25.61	25.66	25.64
Alternative 3	24.49	-	25.47	25.16	25.59	25.54	22.80	25.46	25.58	25.55
Alternative 4	24.50	-	25.47	25.16	25.58	25.53	22.80	25.45	25.58	25.54
Alternative 5	23.87	25.18	25.60	24.87	25.65	25.64	22.80	25.61	25.65	25.64
Alternative 6	23.03	-	25.32	23.95	25.53	25.43	22.80	25.31	25.52	25.46
Alternative 7	-	-	25.37	24.99	25.56	25.47	22.79	25.40	25.55	25.51

Platt Circle ICPR Modeling Reports
Existing Conditions

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [1]

Platt Circle Existing Conditions
Input Report

********** Input Report **********
--------Class: Node--------
Name: C1 Base Flow(cfs): 0 Init Stage(ft): 22.32
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
22.32	0.01
25	0.1

--------Class: Node--------
Name: CRANENE Base Flow(cfs): 0 Init Stage(ft): 22.58
Group: BASE Warn Stage(ft): 25.83
Comment:

Stage(ft)	Area(ac)
22.58	0
23.5	0.05
24	0.1
25	0.3
25.83	1.25

--------Class: Node--------
Name: CRANENW Base Flow(cfs): 0 Init Stage(ft): 22.77
Group: BASE Warn Stage(ft): 25.5
Comment:

Stage(ft)	Area(ac)
22.77	0
23.5	0.05
24	0.1
25	0.3
25.5	0.9

--------Class: Node--------
Name: CRANES Base Flow(cfs): 0 Init Stage(ft): 22.8
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
22.8	0
23.5	0.1
25	0.5

--------Class: Node--------
Name: EWILD Base Flow(cfs): 0 Init Stage(ft): 23.66
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.66	0
25	0.7
26	2.22

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [2]

Platt Circle Existing Conditions

********** Input Report **********
--------Class: Node----------
Name: GHOST Base Flow(cfs): 0 Init Stage(ft): 23.94
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
23.94	0.01
25	0.1

--------Class: Node----------
Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 16
Group: BASE Warn Stage(ft): 26
Comment:

Time(hrs)	Stage(ft)
0	16
12	17.7
13	22.8
24	16

--------Class: Node----------
Name: PARK Base Flow(cfs): 0 Init Stage(ft): 23.19
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.19	0
23.3	0.1
25	0.59

--------Class: Node----------
Name: PLATT Base Flow(cfs): 0 Init Stage(ft): 23.17
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.17	0
24	0.15
25.11	0.27
25.5	0.7
26.5	5

--------Class: Node----------
Name: WWILD Base Flow(cfs): 0 Init Stage(ft): 23.29
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.29	0
23.66	0.1
24	0.25
25	0.4
26	1.7

Platt Circle Existing Conditions

********** Input Report **********

--------Class: Basin--------

Basin: CRANENE Node: CRANENE Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.25 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: CRANENW Node: CRANENW Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.9 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: CRANES Node: CRANES Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.84 Concentration Time(min): 26
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: EWILD Node: EWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.22 Concentration Time(min): 26
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Platt Circle Existing Conditions

********** Input Report **********

--------Class: Basin----------

Basin: PARK Node: PARK Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.59 Concentration Time(min): 20
Curve #: 74 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin----------

Basin: PLATT Node: PLATT Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 5 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin----------

Basin: WWILD Node: WWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.7 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [5]

Platt Circle Existing Conditions

********** Input Report **********
--------Class: Pipe----------

Name:	CRANC	From Node:	CRANENE	Length(ft): 25
Group:	BASE	To Node:	CRANES	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	22	22	Flow:	Both
Rise(in):	22	22	Entrance Loss Coef:	0.4
Invert(ft):	22.58	22.8	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0.7
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	11	11	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Half full of sediment

--------Class: Pipe----------

Name:	NCRANEC	From Node:	CRANENW	Length(ft): 60
Group:	BASE	To Node:	CRANENE	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	22	22	Flow:	Both
Rise(in):	22	22	Entrance Loss Coef:	0.4
Invert(ft):	22.77	22.58	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0.7
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [6]

Platt Circle Existing Conditions

********** Input Report **********
--------Class: Pipe----------

Name:	OUTC	From Node:	C1	Length(ft):	20
Group:	BASE	To Node:	OUTFALL	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	29	29	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.9
Invert(ft):	20.05	18.56	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

--------Class: Pipe----------

Name:	WILDC	From Node:	EWILD	Length(ft):	25
Group:	BASE	To Node:	WWILD	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.4
Invert(ft):	23.66	23.64	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	12	12	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Culvert more than half full of sediment

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [7]

Platt Circle Existing Conditions

********** Input Report **********

--------Class: Channel--------

Name: AZALEAN From Node: GHOST Length(ft): 220
Group: BASE To Node: PARK Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.94	23.29	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.07	0.07	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.83	1.667		
LSdSlp(h/v):	0.67	0.67		
RSdSlp(h/v):	0.67	0.67		

--------Class: Channel--------

Name: AZALEAS From Node: PARK Length(ft): 175
Group: BASE To Node: CRANENW Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.29	22.77	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.07	0.05	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	1.667	3.5		
LSdSlp(h/v):	0.67	0.5		
RSdSlp(h/v):	0.67	0.5		

Platt Circle Existing Conditions

********** Input Report **********

--------Class: Channel----------

Name: CRANED From Node: CRANES Length(ft): 270
Group: BASE To Node: C1 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	22.8	22.32	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.05	0.05	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.5	2.5		
LSdSlp(h/v):	0.25	0.25		
RSdSlp(h/v):	0.25	0.25		

--------Class: Weir----------

Name: PLATTW From Node: PLATT
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft):	5	
Left Side Slope(h/v):	1	
Right Side Slope(h/v):	1	
Invert(ft):	23.94	
Control Elev(ft):	23.94	
StructOpeningDim(ft):	9999	TABLE
Bottom Clip(ft):	0	
Top Clip(ft):	0	
Weir Discharge Coef:	2	
Orifice Discharge Coef:	0	

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Platt Circle Existing Conditions

********** Input Report **********
--------Class: Weir----------
Name: WWILDW From Node: WWILD
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft): 5
Left Side Slope(h/v): 1
Right Side Slope(h/v): 1
Invert(ft): 23.94
Control Elev(ft): 23.94
StructOpeningDim(ft): 9999 TABLE
Bottom Clip(ft): 0
Top Clip(ft): 0
Weir Discharge Coef: 2
Orifice Discharge Coef: 0

--------Class: Simulation----------
C:\ICPR2\MVILL\EX-25YR
Execution: Both
Header: 25 Year Event Existing Conditions

---------HYDRAULICS----------HYDROLOGY----------
Max Delta Z (ft): 1
Delta Z Factor: 0.05 Override Defaults: Yes
Time Step Optimizer: 0 Storm Dur(hrs): 24
Drop Structure Optimizer: 0 Rain Amount(in): 9.5
Sim Start Time(hrs): 0 Rainfall File: SCSII-24
Sim End Time(hrs): 45
Min Calc Time(sec): 15
Max Calc Time(sec): 300

To Hour:	PInc(min):	To Hour:	PInc(min):
0	60	30	5
10	15		
12	5		
13	15		
15	60		

---------GROUP SELECTIONS----------
+ BASE [11/20/02]

Platt Circle Existing Conditions

********** Input Report **********
--------Class: Simulation----------
C:\ICPR2\MVILL\EX-100YR
Execution: Both
Header: 100-Year Event Existing Conditions

---------HYDRAULICS----------HYDROLOGY----------
Max Delta Z (ft): 1
Delta Z Factor: 0.05
Override Defaults: Yes
Time Step Optimizer: 0
Storm Dur(hrs): 24
Drop Structure Optimizer: 0
Rain Amount(in): 12.25
Sim Start Time(hrs): 0
Rainfall File: SCSII-24
Sim End Time(hrs): 45
Min Calc Time(sec): 15
Max Calc Time(sec): 300

To Hour:	PInc(min):	To Hour:	PInc(min):
0	60	30	5
10	15		
12	5		
13	15		
15	60		

---------GROUP SELECTIONS----------
+ BASE [11/20/02]

--------Class: Simulation----------
C:\ICPR2\MVILL\EX-MEAN
Execution: Both
Header: Mean Annual Event Existing Conditions

---------HYDRAULICS----------HYDROLOGY----------
Max Delta Z (ft): 1
Delta Z Factor: 0.05
Override Defaults: No
Time Step Optimizer: 0
Drop Structure Optimizer: 0
Sim Start Time(hrs): 0
Sim End Time(hrs): 45
Min Calc Time(sec): 15
Max Calc Time(sec): 300

To Hour:	PInc(min):	To Hour:	PInc(min):
0	60	30	5
10	15		
12	5		
13	15		
15	60		

---------GROUP SELECTIONS----------
+ BASE [11/20/02]

Mean Annual Event Existing Conditions
Node Maximum Conditions Report

********** Node Maximum Conditions - EX-MEAN **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.02	22.83	26.00	-0.7910	1572.12	13.02	2.76	0.00	14.91
CRANENE	BASE	16.12	24.44	25.83	0.0456	8237.12	14.63	1.76	16.12	1.71
CRANENW	BASE	16.07	24.47	25.50	0.0432	8853.06	14.52	1.76	15.59	1.60
CRANES	BASE	12.91	23.91	25.00	0.0486	9594.94	12.24	3.82	13.02	2.76
EWILD	BASE	18.09	24.87	26.00	0.0242	27612.47	12.18	3.07	15.83	0.18
GHOST	BASE	13.87	24.88	25.00	0.0452	4351.52	18.50	4.03	13.80	2.20
OUTFALL	BASE	13.00	22.80	26.00	0.1393	1.21	0.00	14.91	0.00	0.00
PARK	BASE	15.99	24.49	26.50	0.0282	19939.79	13.62	2.35	14.65	1.62
PLATT	BASE	13.82	24.91	26.50	0.0466	10827.26	12.24	6.31	12.43	4.44
WWILD	BASE	13.90	24.89	26.00	0.0397	16717.48	12.24	2.14	18.50	1.98

10-Year Event Existing Conditions

********** Node Maximum Conditions - EX-10YR **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.06	22.94	26.00	-0.7910	1741.97	13.06	5.39	0.00	14.91
CRANENE	BASE	15.93	24.92	25.83	0.0375	12407.00	14.18	3.66	14.95	3.48
CRANENW	BASE	15.59	25.02	25.50	0.0365	14654.02	14.14	3.62	14.84	3.33
CRANES	BASE	13.42	24.45	25.00	0.0496	15823.53	12.18	8.11	13.06	5.39
EWILD	BASE	15.54	25.36	26.00	0.0249	54053.30	12.18	6.02	19.45	0.72
GHOST	BASE	13.77	25.38	25.00	0.0486	6244.91	17.17	9.05	13.27	4.38
OUTFALL	BASE	13.01	22.80	26.00	0.1114	1.21	0.00	14.91	0.00	0.00
PARK	BASE	15.47	25.05	26.50	0.0298	27177.65	13.01	4.91	14.48	3.32
PLATT	BASE	13.62	25.42	26.50	0.0466	26553.15	12.25	12.38	12.33	8.14
WWILD	BASE	13.84	25.38	26.00	0.0403	39026.22	12.25	4.18	17.17	4.52

25-Year Event Existing Conditions

********** Node Maximum Conditions - EX-25YR **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.08	23.06	26.00	-0.7910	1925.47	13.07	7.18	0.00	14.91
CRANENE	BASE	15.58	25.18	25.83	0.0315	22171.60	15.10	4.50	15.58	4.45
CRANENW	BASE	15.48	25.34	25.50	0.0411	31589.23	13.90	4.62	15.32	4.14
CRANES	BASE	13.01	24.72	25.00	0.0474	19014.48	12.18	11.27	13.07	7.18
EWILD	BASE	16.51	25.60	26.00	0.0268	70241.38	12.18	8.28	24.85	0.89
GHOST	BASE	13.98	25.62	25.00	0.0487	7194.81	15.00	13.05	13.07	5.43
OUTFALL	BASE	13.00	22.80	26.00	0.1114	1.21	0.00	14.91	0.00	0.00
PARK	BASE	15.38	25.37	26.50	0.0318	31315.48	12.81	6.31	14.49	4.18
PLATT	BASE	13.82	25.66	26.50	0.0496	61211.32	12.24	16.98	12.33	9.75
WWILD	BASE	14.04	25.63	26.00	0.0434	52978.00	12.18	5.40	15.00	5.98

```
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    Platt Circle Existing Conditions


    ********** Input Report ************************************************
    --------Class: Simulation-----------------------------------------------
 C:\ICPR2\MVILL\EX-10YR
 Execution: Both
    Header: 10 Year Event Existing Conditions


---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: Yes
     Time Step Optimizer: 0                Storm Dur(hrs): 24
Drop Structure Optimizer: 0               Rain Amount(in): 7.5
     Sim Start Time(hrs): 0                 Rainfall File: SCSII-24
       Sim End Time(hrs): 45
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):               To Hour:   PInc(min):
        0          60                       30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE     [11/20/02]
```

100-Year Event Existing Conditions

********** Node Maximum Conditions - EX-100YR **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.13	23.26	26.00	-0.7910	2240.12	13.08	9.50	0.00	14.91
CRANENE	BASE	15.47	25.46	25.83	0.0316	36175.95	12.16	5.51	16.50	5.18
CRANENW	BASE	15.78	25.67	25.50	0.0307	48359.95	13.33	5.82	16.33	4.66
CRANES	BASE	12.88	25.04	25.00	0.0498	22656.20	12.16	15.49	13.08	9.50
EWILD	BASE	17.89	25.86	26.00	0.0278	87560.03	12.18	11.37	29.49	1.08
GHOST	BASE	14.23	25.86	25.00	0.0492	8125.74	24.02	12.20	13.04	6.30
OUTFALL	BASE	13.00	22.80	26.00	0.1114	1.21	0.00	14.91	0.00	0.00
PARK	BASE	15.68	25.69	26.50	0.0292	35344.69	12.37	7.78	14.34	4.82
PLATT	BASE	14.08	25.90	26.50	0.0478	106081.93	12.25	23.38	12.27	11.76
WWILD	BASE	14.30	25.87	26.00	0.0387	66658.60	12.25	7.18	24.02	6.24

Mean Annual Event Existing Conditions
Link Maximum Conditions Report

********** Link Maximum Conditions - EX-MEAN **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.80	2.20	-0.07	13.87	24.88	15.99	24.49
AZALEAS	BASE	14.65	1.62	-0.46	15.99	24.49	16.07	24.47
CRANC	BASE	16.12	1.71	0.04	16.12	24.44	16.12	24.02
CRANED	BASE	13.02	2.76	0.12	12.91	23.91	13.02	22.83
NCRANEC	BASE	15.59	1.60	1.78	16.07	24.47	16.12	24.44
OUTC	BASE	0.00	14.91	14.91	13.02	22.83	13.00	22.80
PLATTW	BASE	12.43	4.44	0.79	13.82	24.91	13.87	24.88
WILDC	BASE	15.83	0.18	0.03	18.09	24.87	13.90	24.89
WWILDW	BASE	18.50	1.98	0.75	13.90	24.89	13.87	24.88

10-Year Event Existing Conditions

********** Link Maximum Conditions - EX-10YR **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.27	4.38	0.39	13.77	25.38	15.47	25.05
AZALEAS	BASE	14.48	3.32	1.35	15.47	25.05	15.59	25.02
CRANC	BASE	14.95	3.48	0.12	15.93	24.92	13.42	24.45
CRANED	BASE	13.06	5.39	0.17	13.42	24.45	13.06	22.94
NCRANEC	BASE	14.84	3.33	-1.17	15.59	25.02	15.93	24.92
OUTC	BASE	0.00	14.91	14.91	13.06	22.94	13.01	22.80
PLATTW	BASE	12.33	8.14	-3.52	13.62	25.42	13.77	25.38
WILDC	BASE	19.45	0.72	0.15	15.54	25.36	13.84	25.38
WWILDW	BASE	17.17	4.52	3.37	13.84	25.38	13.77	25.38

25-Year Event Existing Conditions

********** Link Maximum Conditions - EX-25YR **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.07	5.43	0.64	13.98	25.62	15.38	25.37
AZALEAS	BASE	14.49	4.18	0.69	15.38	25.37	15.48	25.34
CRANC	BASE	15.58	4.45	0.14	15.58	25.18	13.01	24.72
CRANED	BASE	13.07	7.18	0.23	13.01	24.72	13.08	23.06
NCRANEC	BASE	15.32	4.14	1.10	15.48	25.34	15.58	25.18
OUTC	BASE	0.00	14.91	14.91	13.08	23.06	13.00	22.80
PLATTW	BASE	12.33	9.75	-4.33	13.82	25.66	13.98	25.62
WILDC	BASE	24.85	0.89	0.09	16.51	25.60	14.04	25.63
WWILDW	BASE	15.00	5.98	-4.71	14.04	25.63	13.98	25.62

100-Year Event Existing Conditions

********** Link Maximum Conditions - EX-100YR **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.04	6.30	0.77	14.23	25.86	15.68	25.69
AZALEAS	BASE	14.34	4.82	0.77	15.68	25.69	15.78	25.67
CRANC	BASE	16.50	5.18	0.14	15.47	25.46	12.88	25.04
CRANED	BASE	13.08	9.50	0.27	12.88	25.04	13.13	23.26
NCRANEC	BASE	16.33	4.66	-1.32	15.78	25.67	15.47	25.46
OUTC	BASE	0.00	14.91	14.91	13.13	23.26	13.00	22.80
PLATTW	BASE	12.27	11.76	-4.61	14.08	25.90	14.23	25.86
WILDC	BASE	29.49	1.08	0.09	17.89	25.86	14.30	25.87
WWILDW	BASE	24.02	6.24	-4.30	14.30	25.87	14.23	25.86

Platt Circle ICPR Modeling Reports

Alternative 1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [1]

Platt Circle Alternative 1
Input Report

********** Input Report **********

--------Class: Node--------

Name: C1 Base Flow(cfs): 0 Init Stage(ft): 22.32
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
22.32	0.01
25	0.1

--------Class: Node--------

Name: CRANENE Base Flow(cfs): 0 Init Stage(ft): 22.58
Group: BASE Warn Stage(ft): 25.83
Comment:

Stage(ft)	Area(ac)
22.58	0
23.5	0.05
24	0.1
25	0.3
25.83	1.25

--------Class: Node--------

Name: CRANENW Base Flow(cfs): 0 Init Stage(ft): 22.77
Group: BASE Warn Stage(ft): 25.5
Comment:

Stage(ft)	Area(ac)
22.77	0
23.5	0.05
24	0.1
25	0.3
25.5	0.9

--------Class: Node--------

Name: CRANES Base Flow(cfs): 0 Init Stage(ft): 22.8
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
22.8	0
23.5	0.1
25	0.5

--------Class: Node--------

Name: EWILD Base Flow(cfs): 0 Init Stage(ft): 23.66
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.66	0
25	0.7
26	2.22

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [3]

Platt Circle Alternative 1

********** Input Report **********

--------Class: Basin--------

Basin: CRANENE Node: CRANENE Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.25 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: CRANENW Node: CRANENW Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.9 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: CRANES Node: CRANES Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.84 Concentration Time(min): 26
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: EWILD Node: EWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.22 Concentration Time(min): 26
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [4]

Platt Circle Alternative 1

********** Input Report **********
--------Class: Basin----------
Basin: PARK Node: PARK Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.59 Concentration Time(min): 20
Curve #: 74 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin----------
Basin: PLATT Node: PLATT Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 5 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin----------
Basin: WWILD Node: WWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.7 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [5]

Platt Circle Alternative 1

********** Input Report **********
--------Class: Pipe----------

Name:	CRANC	From Node:	CRANENE	Length(ft):	25
Group:	BASE	To Node:	CRANES	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	22	22	Flow:	Both
Rise(in):	22	22	Entrance Loss Coef:	0.4
Invert(ft):	22.58	22.8	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0.7
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Half full of sediment

--------Class: Pipe----------

Name:	NCRANEC	From Node:	CRANENW	Length(ft):	60
Group:	BASE	To Node:	CRANENE	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	22	22	Flow:	Both
Rise(in):	22	22	Entrance Loss Coef:	0.4
Invert(ft):	22.77	22.58	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0.7
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [6]

Platt Circle Alternative 1

********** Input Report **********
--------Class: Pipe--------

Name:	OUTC	From Node:	C1	Length(ft):	20
Group:	BASE	To Node:	OUTFALL	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	29	29	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.7
Invert(ft):	20.05	18.56	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

--------Class: Pipe--------

Name:	WILDC	From Node:	EWILD	Length(ft):	25
Group:	BASE	To Node:	WWILD	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.4
Invert(ft):	23.66	23.64	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Culvert more than half full of sediment

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [7]

Platt Circle Alternative 1

********** Input Report **********

--------Class: Channel----------

Name: AZALEAN From Node: GHOST Length(ft): 220
Group: BASE To Node: PARK Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.94	23.29	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.83	1.667		
LSdSlp(h/v):	1.5	1.5		
RSdSlp(h/v):	1.5	1.5		

--------Class: Channel----------

Name: AZALEAS From Node: PARK Length(ft): 175
Group: BASE To Node: CRANENW Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.29	22.77	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	1.667	3.5		
LSdSlp(h/v):	1.5	2		
RSdSlp(h/v):	1.5	2		

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [8]

Platt Circle Alternative 1

********** Input Report **********

--------Class: Channel----------

Name: CRANED From Node: CRANES Length(ft): 270
Group: BASE To Node: C1 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	22.8	22.32	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.5	2.5		
LSdSlp(h/v):	0.25	0.25		
RSdSlp(h/v):	0.25	0.25		

--------Class: Weir----------

Name: PLATTW From Node: PLATT
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft):	5		
Left Side Slope(h/v):	1		
Right Side Slope(h/v):	1		
Invert(ft):	23.94		
Control Elev(ft):	23.94		
StructOpeningDim(ft):	9999	TABLE	
Bottom Clip(ft):	0		
Top Clip(ft):	0		
Weir Discharge Coef:	2		
Orifice Discharge Coef:	0		

Platt Circle Alternative 1

********** Input Report **********

--------Class: Weir----------

Name: WWILDW From Node: WWILD
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft): 5
Left Side Slope(h/v): 1
Right Side Slope(h/v): 1
Invert(ft): 23.94
Control Elev(ft): 23.94
StructOpeningDim(ft): 9999 TABLE
Bottom Clip(ft): 0
Top Clip(ft): 0
Weir Discharge Coef: 2
Orifice Discharge Coef: 0

--------Class: Simulation----------

C:\ICPR2\MVILL\ATL1\ATL1-MA
Execution: Both
Header: Mean Annual Event Alternative 1
Cleaned and maintained pipes and ditches

---------HYDRAULICS----------HYDROLOGY----------

Max Delta Z (ft): 1
Delta Z Factor: 0.05 Override Defaults: No
Time Step Optimizer: 0
Drop Structure Optimizer: 0
Sim Start Time(hrs): 0
Sim End Time(hrs): 30
Min Calc Time(sec): 15
Max Calc Time(sec): 300

To Hour:	PInc(min):
0	60
10	15
12	5
13	15
15	60

To Hour:	PInc(min):
30	5

---------GROUP SELECTIONS----------

+ BASE [11/20/02]

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [10]
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    Platt Circle Alternative 1


    ********** Input Report ************************************************
    --------Class: Simulation-----------------------------------------------
 C:\ICPR2\MVILL\ATL1\ALT1-10Y
 Execution: Both
    Header: 10 Year Event Existing Conditions
            Cleaned and Maintained Pipes and Ditches

---------HYDRAULICS-----------------------------HYDROLOGY-------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: Yes
     Time Step Optimizer: 0                Storm Dur(hrs): 24
Drop Structure Optimizer: 0               Rain Amount(in): 7.5
     Sim Start Time(hrs): 0                 Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        0          60                         30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE     [11/20/02]
    --------Class: Simulation-----------------------------------------------
 C:\ICPR2\MVILL\ATL1\ALT1-25Y
 Execution: Both
    Header: 25 Year Event Existing Conditions
            Cleaned and Maintained Pipes and Ditches

---------HYDRAULICS-----------------------------HYDROLOGY-------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: Yes
     Time Step Optimizer: 0                Storm Dur(hrs): 24
Drop Structure Optimizer: 0               Rain Amount(in): 9
     Sim Start Time(hrs): 0                 Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        0          60                         30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE     [11/20/02]
```

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Platt Circle Alternative 1

********** Input Report **********
--------Class: Simulation--------
C:\ICPR2\MVILL\ATL1\ALT1-100
Execution: Both
Header: 110 Year Event Existing Conditions
Cleaned and Maintained Pipes and Ditches

---------HYDRAULICS----------HYDROLOGY----------

Max Delta Z (ft):	1		
Delta Z Factor:	0.05	Override Defaults:	Yes
Time Step Optimizer:	0	Storm Dur(hrs):	24
Drop Structure Optimizer:	0	Rain Amount(in):	12.25
Sim Start Time(hrs):	0	Rainfall File:	SCSII-24
Sim End Time(hrs):	30		
Min Calc Time(sec):	15		
Max Calc Time(sec):	300		

To Hour:	PInc(min):
0	60
10	15
12	5
13	15
15	60

To Hour:	PInc(min):
30	5

---------GROUP SELECTIONS----------
+ BASE [11/20/02]

Mean Annual Event - Node Maximum Conditions Report
Cleaned and Maintained Pipes and Ditches

********** Node Maximum Conditions - ATL1-MA **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.05	22.90	26.00	-0.7910	1673.06	13.90	4.87	0.00	14.91
CRANENE	BASE	14.17	24.14	25.83	0.0499	5651.66	13.82	3.84	14.34	4.14
CRANENW	BASE	14.26	24.26	25.50	0.0452	7420.99	14.12	10.49	14.39	3.53
CRANES	BASE	13.90	23.93	25.00	0.0490	9785.03	13.42	4.97	13.90	4.87
EWILD	BASE	13.60	24.66	26.00	0.0254	22676.94	12.17	3.08	14.34	1.01
GHOST	BASE	13.33	24.61	25.00	0.0418	3415.59	13.32	4.10	13.39	4.10
OUTFALL	BASE	13.00	22.80	26.00	0.1515	1.21	0.00	14.91	0.00	0.00
PARK	BASE	14.23	24.30	26.50	0.0338	17968.87	13.26	4.33	14.20	10.29
PLATT	BASE	12.76	24.68	26.50	0.0494	9731.12	12.25	6.33	12.47	4.67
WWILD	BASE	13.49	24.64	26.00	0.0389	15064.93	12.25	2.81	14.23	1.85

10-Year Event
Cleaned and Maintained Pipes and Ditches

********** Node Maximum Conditions - ALT1-10Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.12	23.18	26.00	-0.7910	2099.05	13.11	8.93	0.00	14.91
CRANENE	BASE	13.87	24.65	25.83	0.0463	10009.73	13.92	6.98	14.23	6.76
CRANENW	BASE	14.21	25.03	25.50	0.0500	15706.89	12.67	10.31	14.50	6.49
CRANES	BASE	13.58	24.35	25.00	0.0495	14728.25	12.33	9.24	13.11	8.93
EWILD	BASE	13.80	25.12	26.00	0.0303	38400.70	12.18	6.03	15.03	1.57
GHOST	BASE	13.92	25.07	25.00	0.0452	5309.98	12.77	9.03	12.83	8.79
OUTFALL	BASE	13.01	22.80	26.00	0.1393	1.21	0.00	14.91	0.00	0.00
PARK	BASE	14.23	24.99	26.50	0.0415	26976.11	12.79	9.51	12.67	8.88
PLATT	BASE	12.62	25.14	26.50	0.0494	13285.99	12.26	12.36	12.41	9.53
WWILD	BASE	13.83	25.09	26.00	0.0317	22746.60	12.15	3.39	13.27	2.64

25-Year Event
Cleaned and Maintained Pipes and Ditches

********** Node Maximum Conditions - ALT1-25Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.16	23.39	26.00	-0.7910	2423.09	13.11	11.06	12.46	16.42
CRANENE	BASE	13.69	24.83	25.83	0.0445	11589.47	13.61	7.62	14.46	7.64
CRANENW	BASE	14.08	25.26	25.50	0.0411	27920.57	14.88	24.72	14.45	7.05
CRANES	BASE	13.01	24.53	25.00	0.0453	16773.72	12.25	11.97	13.11	11.06
EWILD	BASE	14.15	25.33	26.00	0.0289	52585.76	12.18	7.70	16.62	1.85
GHOST	BASE	14.15	25.31	25.00	0.0485	6279.92	12.63	11.29	12.67	10.86
OUTFALL	BASE	13.00	22.80	26.00	0.1114	1.21	12.46	16.42	0.00	0.00
PARK	BASE	14.46	25.24	26.50	0.0424	30321.54	12.61	11.98	14.88	24.46
PLATT	BASE	13.73	25.34	26.50	0.0486	22624.70	12.25	15.82	12.38	11.70
WWILD	BASE	14.17	25.31	26.00	0.0327	35132.37	12.16	4.27	15.79	4.94

100-Year Event
Cleaned and Maintained Pipes and Ditches

********** Node Maximum Conditions - ALT1-100 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.21	23.85	26.00	-0.7910	3115.97	13.05	14.82	12.46	18.44
CRANENE	BASE	13.32	25.16	25.83	0.0337	21286.82	15.23	8.52	14.50	8.98
CRANENW	BASE	13.83	25.62	25.50	0.0348	46812.87	14.83	34.95	15.68	8.07
CRANES	BASE	12.80	24.84	25.00	0.0342	20433.95	12.24	17.62	13.05	14.82
EWILD	BASE	14.55	25.68	26.00	0.0267	75584.64	12.17	11.39	18.69	2.08
GHOST	BASE	13.83	25.65	25.00	0.0452	7652.45	12.45	14.60	12.50	13.55
OUTFALL	BASE	13.00	22.80	26.00	0.0891	1.21	12.46	18.44	0.00	0.00
PARK	BASE	14.28	25.63	26.50	0.0344	35412.44	12.46	15.64	14.83	34.57
PLATT	BASE	13.94	25.69	26.50	0.0416	66328.93	12.24	23.35	12.38	15.47
WWILD	BASE	14.31	25.67	26.00	0.0292	55088.38	12.24	6.56	15.43	6.12

Mean Annual Event - Link Maximum Conditions Report
Cleaned and Maintained Pipes and Ditches

********** Link Maximum Conditions - ATL1-MA **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.39	4.10	0.17	13.33	24.61	14.23	24.30
AZALEAS	BASE	14.20	10.29	-6.14	14.23	24.30	14.26	24.26
CRANC	BASE	14.34	4.14	0.32	14.17	24.14	13.90	23.93
CRANED	BASE	13.90	4.87	0.22	13.90	23.93	13.05	22.90
NCRANEC	BASE	14.39	3.53	0.71	14.26	24.26	14.17	24.14
OUTC	BASE	0.00	14.91	14.91	13.05	22.90	13.00	22.80
PLATTW	BASE	12.47	4.67	0.79	12.76	24.68	13.33	24.61
WILDC	BASE	14.34	1.01	-0.57	13.60	24.66	13.49	24.64
WWILDW	BASE	14.23	1.85	0.77	13.49	24.64	13.33	24.61

10-Year Event
Cleaned and Maintained Pipes and Ditches

********** Link Maximum Conditions - ALT1-10Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.83	8.79	-0.88	13.92	25.07	14.23	24.99
AZALEAS	BASE	12.67	8.88	12.62	14.23	24.99	14.21	25.03
CRANC	BASE	14.23	6.76	-0.33	13.87	24.65	13.58	24.35
CRANED	BASE	13.11	8.93	0.29	13.58	24.35	13.12	23.18
NCRANEC	BASE	14.50	6.49	1.12	14.21	25.03	13.87	24.65
OUTC	BASE	0.00	14.91	14.91	13.12	23.18	13.01	22.80
PLATTW	BASE	12.41	9.53	-0.66	12.62	25.14	13.92	25.07
WILDC	BASE	15.03	1.57	0.18	13.80	25.12	13.83	25.09
WWILDW	BASE	13.27	2.64	0.55	13.83	25.09	13.92	25.07

25-Year Event
Cleaned and Maintained Pipes and Ditches

********** Link Maximum Conditions - ALT1-25Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.67	10.86	6.33	14.15	25.31	14.46	25.24
AZALEAS	BASE	14.88	24.46	33.97	14.46	25.24	14.08	25.26
CRANC	BASE	14.46	7.64	0.32	13.69	24.83	13.01	24.53
CRANED	BASE	13.11	11.06	0.31	13.01	24.53	13.16	23.39
NCRANEC	BASE	14.45	7.05	1.69	14.08	25.26	13.69	24.83
OUTC	BASE	12.46	16.42	14.91	13.16	23.39	13.00	22.80
PLATTW	BASE	12.38	11.70	3.09	13.73	25.34	14.15	25.31
WILDC	BASE	16.62	1.85	-0.21	14.15	25.33	14.17	25.31
WWILDW	BASE	15.79	4.94	3.12	14.17	25.31	14.15	25.31

100-Year Event
Cleaned and Maintained Pipes and Ditches

********** Link Maximum Conditions - ALT1-100 **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.50	13.55	10.50	13.83	25.65	14.28	25.63
AZALEAS	BASE	14.83	34.57	45.94	14.28	25.63	13.83	25.62
CRANC	BASE	14.50	8.98	0.13	13.32	25.16	12.80	24.84
CRANED	BASE	13.05	14.82	0.33	12.80	24.84	13.21	23.85
NCRANEC	BASE	15.68	8.07	0.76	13.83	25.62	13.32	25.16
OUTC	BASE	12.46	18.44	14.91	13.21	23.85	13.00	22.80
PLATTW	BASE	12.38	15.47	-2.81	13.94	25.69	13.83	25.65
WILDC	BASE	18.69	2.08	0.49	14.55	25.68	14.31	25.67
WWILDW	BASE	15.43	6.12	-2.77	14.31	25.67	13.83	25.65

Platt Circle ICPR Modeling Reports

Alternative 2

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [1]

Alternative 2 - Ditch high spot regraded
Input Report

********** Input Report **********

--------Class: Node----------

Name: C1 Base Flow(cfs): 0 Init Stage(ft): 22.32
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
22.32	0.01
25	0.1

--------Class: Node----------

Name: CRANENE Base Flow(cfs): 0 Init Stage(ft): 22.58
Group: BASE Warn Stage(ft): 25.83
Comment:

Stage(ft)	Area(ac)
22.58	0
23.5	0.05
24	0.1
25	0.3
25.83	1.25

--------Class: Node----------

Name: CRANENW Base Flow(cfs): 0 Init Stage(ft): 22.77
Group: BASE Warn Stage(ft): 25.5
Comment:

Stage(ft)	Area(ac)
22.77	0
23.5	0.05
24	0.1
25	0.3
25.5	0.9

--------Class: Node----------

Name: CRANES Base Flow(cfs): 0 Init Stage(ft): 22.8
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
22.8	0
23.5	0.1
25	0.5

--------Class: Node----------

Name: EWILD Base Flow(cfs): 0 Init Stage(ft): 23.66
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.66	0
25	0.7
26	2.22

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [2]

Alternative 2 - Ditch high spot regraded

********** Input Report **********

--------Class: Node--------

Name: GHOST Base Flow(cfs): 0 Init Stage(ft): 23.94
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
23.94	0.01
25	0.1

--------Class: Node--------

Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 16
Group: BASE Warn Stage(ft): 26
Comment:

Time(hrs)	Stage(ft)
0	16
12	17.7
13	22.8
24	16

--------Class: Node--------

Name: PARK Base Flow(cfs): 0 Init Stage(ft): 23.19
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.19	0
23.3	0.1
25	0.59

--------Class: Node--------

Name: PLATT Base Flow(cfs): 0 Init Stage(ft): 23.17
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.17	0
24	0.15
25.11	0.27
25.5	0.7
26.5	5

--------Class: Node--------

Name: WWILD Base Flow(cfs): 0 Init Stage(ft): 23.29
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.29	0
23.66	0.1
24	0.25
25	0.4
26	1.7

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [3]

Alternative 2 - Ditch high spot regraded

********** Input Report **
--------Class: Basin----------
Basin: CRANENE Node: CRANENE Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.25 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin----------
Basin: CRANENW Node: CRANENW Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.9 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin----------
Basin: CRANES Node: CRANES Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.84 Concentration Time(min): 26
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin----------
Basin: EWILD Node: EWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.22 Concentration Time(min): 26
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [4]

Alternative 2 - Ditch high spot regraded

********** Input Report **
--------Class: Basin--
Basin: PARK Node: PARK Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.59 Concentration Time(min): 20
Curve #: 74 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--
Basin: PLATT Node: PLATT Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 5 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--
Basin: WWILD Node: WWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.7 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [5]

Alternative 2 - Ditch high spot regraded

********** Input Report **********

--------Class: Pipe----------

Name:	CRANC	From Node:	CRANENE	Length(ft): 25
Group:	BASE	To Node:	CRANES	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	22	22	Flow:	Both
Rise(in):	22	22	Entrance Loss Coef:	0.4
Invert(ft):	22.58	22.8	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0.7
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Half full of sediment

--------Class: Pipe----------

Name:	NCRANEC	From Node:	CRANENW	Length(ft): 60
Group:	BASE	To Node:	CRANENE	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	22	22	Flow:	Both
Rise(in):	22	22	Entrance Loss Coef:	0.4
Invert(ft):	22.77	22.58	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0.7
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [6]

Alternative 2 - Ditch high spot regraded

********** Input Report **********

--------Class: Pipe----------

Name:	OUTC	From Node:	C1	Length(ft):	20
Group:	BASE	To Node:	OUTFALL	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	29	29	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.7
Invert(ft):	20.05	18.56	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

--------Class: Pipe----------

Name:	WILDC	From Node:	EWILD	Length(ft):	25
Group:	BASE	To Node:	WWILD	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.4
Invert(ft):	23.66	23.64	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Culvert more than half full of sediment

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [7]
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Alternative 2 - Ditch high spot regraded

********** Input Report **********

--------Class: Channel----------

Name: AZALEAN From Node: GHOST Length(ft): 220
Group: BASE To Node: PARK Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.5	23.29	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.83	1.667		
LSdSlp(h/v):	1.5	1.5		
RSdSlp(h/v):	1.5	1.5		

--------Class: Channel----------

Name: AZALEAS From Node: PARK Length(ft): 175
Group: BASE To Node: CRANENW Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.29	22.77	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	1.667	3.5		
LSdSlp(h/v):	1.5	2		
RSdSlp(h/v):	1.5	2		

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [8]

Alternative 2 - Ditch high spot regraded

********** Input Report **********

--------Class: Channel----------

Name: CRANED From Node: CRANES Length(ft): 270
Group: BASE To Node: C1 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	22.8	22.32	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.5	2.5		
LSdSlp(h/v):	0.25	0.25		
RSdSlp(h/v):	0.25	0.25		

--------Class: Weir----------

Name: PLATTW From Node: PLATT
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft):	5	
Left Side Slope(h/v):	1	
Right Side Slope(h/v):	1	
Invert(ft):	23.5	
Control Elev(ft):	23.5	
StructOpeningDim(ft):	9999	TABLE
Bottom Clip(ft):	0	
Top Clip(ft):	0	
Weir Discharge Coef:	2	
Orifice Discharge Coef:	0	

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [9]
    Copyright 1995, Streamline Technologies, Inc.

    Alternative 2 - Ditch high spot regraded


    ********** Input Report ************************************************
    --------Class: Weir-----------------------------------------------------
        Name: WWILDW             From Node: WWILD
       Group: BASE                 To Node: GHOST
       Count: 1

     Type: Mavis    Flow: Both       Geometry: Trapezoidal

          Bottom Width(ft): 5
      Left Side Slope(h/v): 1
     Right Side Slope(h/v): 1
                Invert(ft): 23.5
          Control Elev(ft): 23.5
      StructOpeningDim(ft): 9999        TABLE
           Bottom Clip(ft): 0
              Top Clip(ft): 0
       Weir Discharge Coef: 2
    Orifice Discharge Coef: 0



    --------Class: Simulation-----------------------------------------------
 C:\ICPR2\MVILL\ATL2\ALT2-MA
 Execution: Both
    Header: Mean Annual Event Alternative 1
            Cleaned and maintained pipes and ditches
            Highspot regraded
---------HYDRAULICS----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: No
     Time Step Optimizer: 0
Drop Structure Optimizer: 0
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        0          60                         30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE     [11/20/02]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [10]
    Copyright 1995, Streamline Technologies, Inc.

    Alternative 2 - Ditch high spot regraded


    ********** Input Report ************************************************************
    --------Class: Simulation-------------------------------------------------------------
 C:\ICPR2\MVILL\ATL2\ALT2-10Y
 Execution: Both
    Header: 10 Year Event
            Ditch cleaned and maintained
            High spot regraded
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05           Override Defaults: Yes
     Time Step Optimizer: 0                 Storm Dur(hrs): 24
Drop Structure Optimizer: 0               Rain Amount(in): 7.5
     Sim Start Time(hrs): 0                 Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                To Hour:   PInc(min):
        0          60                        30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [11/20/02]
    --------Class: Simulation-------------------------------------------------------------
 C:\ICPR2\MVILL\ATL2\ALT2-25Y
 Execution: Both
    Header: 25 Year Event
            Ditchs cleaned and maintained
            Highspot regraded
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05           Override Defaults: Yes
     Time Step Optimizer: 0                 Storm Dur(hrs): 24
Drop Structure Optimizer: 0               Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                 Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                To Hour:   PInc(min):
        0          60                        30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [11/20/02]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [11]
    Copyright 1995, Streamline Technologies, Inc.

    Alternative 2 - Ditch high spot regraded


    ********** Input Report ************************************************
    --------Class: Simulation-----------------------------------------------
 C:\ICPR2\MVILL\ATL2\ALT2-100
 Execution: Both
    Header: 100 Year Event
            Ditched cleaned and maintained
            highspot regraded
---------HYDRAULICS----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05           Override Defaults: Yes
     Time Step Optimizer: 0                 Storm Dur(hrs): 24
Drop Structure Optimizer: 0               Rain Amount(in): 12.25
     Sim Start Time(hrs): 0                 Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                To Hour:   PInc(min):
        0          60                        30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE     [11/20/02]
```

10-Year Event
Ditched cleaned and maintained
High spot regraded

********** Node Maximum Conditions - ALT2-10Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.13	23.21	26.00	-0.7910	2144.75	13.11	9.25	0.00	14.91
CRANENE	BASE	13.73	24.65	25.83	0.0277	10018.64	13.67	6.82	14.20	6.68
CRANENW	BASE	13.93	25.00	25.50	-0.0433	14155.37	14.57	20.13	14.16	6.23
CRANES	BASE	13.02	24.37	25.00	0.0273	14949.97	12.25	9.87	13.11	9.25
EWILD	BASE	13.98	25.06	26.00	0.0195	34372.60	12.17	6.04	15.61	1.47
GHOST	BASE	13.95	25.04	25.00	-0.1436	5310.27	15.45	10.68	12.68	8.57
OUTFALL	BASE	13.00	22.80	26.00	0.1114	1.21	0.00	14.91	0.00	0.00
PARK	BASE	14.20	24.98	26.50	0.0263	26861.57	12.68	9.40	14.57	19.88
PLATT	BASE	13.77	25.05	26.50	0.0478	11496.63	12.25	12.38	12.36	9.44
WWILD	BASE	13.91	25.04	26.00	0.0372	19702.73	12.13	4.14	15.45	5.61

Mean Annual Event - Node Maximum Conditions Report
Ditched cleaned and maintained
High spot regraded

********** Node Maximum Conditions - ALT2-MA **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.05	22.93	26.00	-0.7910	1710.29	13.68	5.28	0.00	14.91
CRANENE	BASE	13.86	24.19	25.83	0.0223	6086.30	13.84	4.65	14.04	4.33
CRANENW	BASE	13.84	24.36	25.50	-0.0321	8301.90	12.53	8.44	13.84	4.28
CRANES	BASE	13.68	23.98	25.00	0.0197	10406.61	13.22	5.44	13.68	5.28
EWILD	BASE	13.54	24.54	26.00	0.0100	20104.47	12.17	3.08	13.84	0.96
GHOST	BASE	13.84	24.50	25.00	-0.1436	3118.50	12.82	4.74	12.88	4.64
OUTFALL	BASE	13.00	22.80	26.00	0.1114	1.21	0.00	14.91	0.00	0.00
PARK	BASE	13.97	24.34	26.50	0.0182	18528.95	12.84	4.99	12.53	7.58
PLATT	BASE	13.08	24.52	26.50	0.0478	9004.70	12.25	6.33	12.39	4.38
WWILD	BASE	13.49	24.51	26.00	0.0372	14233.43	12.25	2.74	17.54	1.96

25-Year Event
Ditched cleaned and maintained
High spot regraded

********** Node Maximum Conditions - ALT2-25Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.17	23.49	26.00	-0.7910	2573.84	13.10	11.93	12.46	16.94
CRANENE	BASE	13.32	24.89	25.83	0.0284	12089.91	13.54	7.52	14.43	7.79
CRANENW	BASE	14.09	25.29	25.50	0.0328	29149.00	14.06	24.25	14.88	7.04
CRANES	BASE	12.98	24.61	25.00	0.0305	17655.60	12.24	13.31	13.10	11.93
EWILD	BASE	14.25	25.36	26.00	0.0207	54032.93	12.17	8.28	16.82	1.89
GHOST	BASE	14.10	25.32	25.00	-0.1436	6427.33	12.45	12.29	12.50	11.35
OUTFALL	BASE	13.00	22.80	26.00	0.0891	1.21	12.46	16.94	0.00	0.00
PARK	BASE	14.06	25.30	26.50	0.0270	31101.02	12.47	12.83	14.06	23.72
PLATT	BASE	13.88	25.36	26.50	0.0478	23607.99	12.24	16.98	12.34	13.18
WWILD	BASE	14.08	25.34	26.00	0.0372	36634.70	12.17	4.87	16.09	6.17

100-Year Event
Ditched cleaned and maintained
High spot regraded

********** Node Maximum Conditions - ALT2-100 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.20	23.86	26.00	-0.7910	3140.88	13.04	14.96	12.46	19.00
CRANENE	BASE	13.22	25.17	25.83	0.0361	21603.63	15.27	8.45	14.48	8.91
CRANENW	BASE	14.15	25.61	25.50	0.0438	46167.80	13.63	30.92	15.56	8.00
CRANES	BASE	12.78	24.86	25.00	0.0401	20612.92	12.24	17.87	13.04	14.96
EWILD	BASE	14.56	25.65	26.00	0.0319	73746.20	12.17	11.41	18.43	2.08
GHOST	BASE	14.15	25.65	25.00	-0.1436	7776.44	12.38	15.21	14.15	13.78
OUTFALL	BASE	13.00	22.80	26.00	0.0891	1.21	12.46	19.00	0.00	0.00
PARK	BASE	14.32	25.61	26.50	0.0336	35174.84	12.36	15.97	13.63	29.82
PLATT	BASE	14.18	25.66	26.50	0.0500	59602.60	12.24	23.32	12.34	16.60
WWILD	BASE	14.35	25.64	26.00	0.0372	53523.49	12.17	6.39	19.76	6.73

Mean Annual Event - Link Maximum Conditions Report
Ditched cleaned and maintained
High spot regraded

********** Link Maximum Conditions - ALT2-MA **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.88	4.64	0.98	13.84	24.50	13.97	24.34
AZALEAS	BASE	12.53	7.58	7.86	13.97	24.34	13.84	24.36
CRANC	BASE	14.04	4.33	0.14	13.86	24.19	13.68	23.98
CRANED	BASE	13.68	5.28	0.10	13.68	23.98	13.05	22.93
NCRANEC	BASE	13.84	4.28	-0.43	13.84	24.36	13.86	24.19
OUTC	BASE	0.00	14.91	14.91	13.05	22.93	13.00	22.80
PLATTW	BASE	12.39	4.38	-3.12	13.08	24.52	13.84	24.50
WILDC	BASE	13.84	0.96	-0.08	13.54	24.54	13.49	24.51
WWILDW	BASE	17.54	1.96	-3.12	13.49	24.51	13.84	24.50

10-Year Event
Ditched cleaned and maintained
High spot regraded

********** Link Maximum Conditions - ALT2-10Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.68	8.57	6.26	13.95	25.04	14.20	24.98
AZALEAS	BASE	14.57	19.88	26.01	14.20	24.98	13.93	25.00
CRANC	BASE	14.20	6.68	0.19	13.73	24.65	13.02	24.37
CRANED	BASE	13.11	9.25	0.20	13.02	24.37	13.13	23.21
NCRANEC	BASE	14.16	6.23	-1.76	13.93	25.00	13.73	24.65
OUTC	BASE	0.00	14.91	14.91	13.13	23.21	13.00	22.80
PLATTW	BASE	12.36	9.44	-3.41	13.77	25.05	13.95	25.04
WILDC	BASE	15.61	1.47	-0.33	13.98	25.06	13.91	25.04
WWILDW	BASE	15.45	5.61	-3.12	13.91	25.04	13.95	25.04

25-Year Event
Ditched cleaned and maintained
High spot regraded

********** Link Maximum Conditions - ALT2-25Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.50	11.35	8.66	14.10	25.32	14.06	25.30
AZALEAS	BASE	14.06	23.72	-8.44	14.06	25.30	14.09	25.29
CRANC	BASE	14.43	7.79	0.13	13.32	24.89	12.98	24.61
CRANED	BASE	13.10	11.93	0.22	12.98	24.61	13.17	23.49
NCRANEC	BASE	14.88	7.04	-0.99	14.09	25.29	13.32	24.89
OUTC	BASE	12.46	16.94	14.91	13.17	23.49	13.00	22.80
PLATTW	BASE	12.34	13.18	-3.12	13.88	25.36	14.10	25.32
WILDC	BASE	16.82	1.89	-0.30	14.25	25.36	14.08	25.34
WWILDW	BASE	16.09	6.17	-3.12	14.08	25.34	14.10	25.32

100-Year Event
Ditched cleaned and maintained
High spot regraded

********** Link Maximum Conditions - ALT2-100 **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	14.15	13.78	12.54	14.15	25.65	14.32	25.61
AZALEAS	BASE	13.63	29.82	40.41	14.32	25.61	14.15	25.61
CRANC	BASE	14.48	8.91	0.13	13.22	25.17	12.78	24.86
CRANED	BASE	13.04	14.96	0.36	12.78	24.86	13.20	23.86
NCRANEC	BASE	15.56	8.00	0.51	14.15	25.61	13.22	25.17
OUTC	BASE	12.46	19.00	14.91	13.20	23.86	13.00	22.80
PLATTW	BASE	12.34	16.60	4.33	14.18	25.66	14.15	25.65
WILDC	BASE	18.43	2.08	-0.26	14.56	25.65	14.35	25.64
WWILDW	BASE	19.76	6.73	4.60	14.35	25.64	14.15	25.65

Platt Circle ICPR Modeling Reports

Alternative 3

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [1]

Alternative 3 - Crane Road Reconfigured
Input Report

********** Input Report **********
--------Class: Node--------
Name: C1 Base Flow(cfs): 0 Init Stage(ft): 22.32
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
22.32	0.01
25	0.1

--------Class: Node--------
Name: CRANENW Base Flow(cfs): 0 Init Stage(ft): 22.77
Group: BASE Warn Stage(ft): 25.5
Comment:

Stage(ft)	Area(ac)
22.77	0
23.5	0.05
24	0.1
25	0.3
25.5	0.9

--------Class: Node--------
Name: CRANES Base Flow(cfs): 0 Init Stage(ft): 22.8
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
22.8	0
23.5	0.1
25	0.5

--------Class: Node--------
Name: EWILD Base Flow(cfs): 0 Init Stage(ft): 23.66
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.66	0
25	0.7
26	2.22

--------Class: Node--------
Name: GHOST Base Flow(cfs): 0 Init Stage(ft): 23.94
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
23.94	0.01
25	0.1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [2]

Alternative 3 - Crane Road Reconfigured

********** Input Report **********
--------Class: Node--------
Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 16
Group: BASE Warn Stage(ft): 26
Comment:

Time(hrs)	Stage(ft)
0	16
12	17.7
13	22.8
24	16

--------Class: Node--------
Name: PARK Base Flow(cfs): 0 Init Stage(ft): 23.19
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.19	0
23.3	0.1
25	0.59

--------Class: Node--------
Name: PLATT Base Flow(cfs): 0 Init Stage(ft): 23.17
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.17	0
24	0.15
25.11	0.27
25.5	0.7
26.5	5

--------Class: Node--------
Name: WWILD Base Flow(cfs): 0 Init Stage(ft): 23.29
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.29	0
23.66	0.1
24	0.25
25	0.4
26	1.7

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [3]

Alternative 3 - Crane Road Reconfigured

********** Input Report **********

--------Class: Basin--------

Basin: CRANENE Node: CRANENW Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.25 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: CRANENW Node: CRANENW Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.9 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: CRANES Node: CRANES Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.84 Concentration Time(min): 26
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: EWILD Node: EWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.22 Concentration Time(min): 26
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [4]

Alternative 3 - Crane Road Reconfigured

********** Input Report **********

--------Class: Basin----------

Basin: PARK Node: PARK Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.59 Concentration Time(min): 20
Curve #: 74 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin----------

Basin: PLATT Node: PLATT Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 5 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin----------

Basin: WWILD Node: WWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.7 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [5]

Alternative 3 - Crane Road Reconfigured

********** Input Report **********

--------Class: Pipe----------

Name:	CRANECC	From Node:	CRANENW	Length(ft): 90
Group:	BASE	To Node:	CRANES	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	30	30	Flow:	Both
Rise(in):	30	30	Entrance Loss Coef:	0.4
Invert(ft):	22.77	22.8	Exit Loss Coef:	1
Manning's N:	0.013	0.013	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

--------Class: Pipe----------

Name:	OUTC	From Node:	C1	Length(ft): 20
Group:	BASE	To Node:	OUTFALL	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	29	29	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.7
Invert(ft):	20.05	18.56	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [6]

Alternative 3 - Crane Road Reconfigured

********** Input Report **********

--------Class: Pipe----------

Name:	WILDC	From Node:	EWILD	Length(ft): 25
Group:	BASE	To Node:	WWILD	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.4
Invert(ft):	23.66	23.64	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Culvert more than half full of sediment

--------Class: Channel----------

Name:	AZALEAN	From Node:	GHOST	Length(ft): 220
Group:	BASE	To Node:	PARK	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.5	23.29	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.83	1.667		
LSdSlp(h/v):	1.5	1.5		
RSdSlp(h/v):	1.5	1.5		

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [7]

Alternative 3 - Crane Road Reconfigured

********** Input Report **********

--------Class: Channel--------

Name: AZALEAS	From Node: PARK	Length(ft): 175		
Group: BASE	To Node: CRANENW	Count: 1		

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.29	22.77	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	1.667	3.5		
LSdSlp(h/v):	1.5	2		
RSdSlp(h/v):	1.5	2		

--------Class: Channel--------

Name: CRANED	From Node: CRANES	Length(ft): 270		
Group: BASE	To Node: C1	Count: 1		

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	22.8	22.32	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.5	2.5		
LSdSlp(h/v):	0.25	0.25		
RSdSlp(h/v):	0.25	0.25		

Alternative 3 - Crane Road Reconfigured

********** Input Report **********

--------Class: Weir----------

Name:	PLATTW	From Node:	PLATT
Group:	BASE	To Node:	GHOST
Count:	1		

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft):	5	
Left Side Slope(h/v):	1	
Right Side Slope(h/v):	1	
Invert(ft):	23.5	
Control Elev(ft):	23.5	
StructOpeningDim(ft):	9999	TABLE
Bottom Clip(ft):	0	
Top Clip(ft):	0	
Weir Discharge Coef:	2	
Orifice Discharge Coef:	0	

--------Class: Weir----------

Name:	WWILDW	From Node:	WWILD
Group:	BASE	To Node:	GHOST
Count:	1		

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft):	5	
Left Side Slope(h/v):	1	
Right Side Slope(h/v):	1	
Invert(ft):	23.5	
Control Elev(ft):	23.5	
StructOpeningDim(ft):	9999	TABLE
Bottom Clip(ft):	0	
Top Clip(ft):	0	
Weir Discharge Coef:	2	
Orifice Discharge Coef:	0	

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [10]
    Copyright 1995, Streamline Technologies, Inc.

    Alternative 3 - Crane Road Reconfigured


    ********** Input Report **********************************************************
    --------Class: Simulation-------------------------------------------------------
 C:\ICPR2\MVILL\ALT3\ALT3-25Y
 Execution: Both
    Header: 25-Year Event
            Maintained/Cleaned Pipes and Ditch, Highspot
            Remove, and New Culvert Across Crane Road
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: Yes
     Time Step Optimizer: 0                Storm Dur(hrs): 24
Drop Structure Optimizer: 0              Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                To Hour:   PInc(min):
        0          60                        30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE     [11/20/02]
    --------Class: Simulation-------------------------------------------------------
 C:\ICPR2\MVILL\ALT3\ALT3-100
 Execution: Both
    Header: 100-Year Event
            Maintained/Cleaned Pipes and Ditch, Highspot
            Remove, and New Culvert Across Crane Road
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: Yes
     Time Step Optimizer: 0                Storm Dur(hrs): 24
Drop Structure Optimizer: 0              Rain Amount(in): 12.25
     Sim Start Time(hrs): 0                Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                To Hour:   PInc(min):
        0          60                        30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE     [11/20/02]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [9]
    Copyright 1995, Streamline Technologies, Inc.

    Alternative 3 - Crane Road Reconfigured


    ********** Input Report ************************************************************
    --------Class: Simulation-------------------------------------------------------------
 C:\ICPR2\MVILL\ALT3\ALT3-MA
 Execution: Both
    Header: Mean Annual Event
            Maintained/Cleaned Pipes and Ditch, Highspot
            Remove, and New Culvert Across Crane Road
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: No
     Time Step Optimizer: 0
Drop Structure Optimizer: 0
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                To Hour:   PInc(min):
        0          60                        30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [11/20/02]
    --------Class: Simulation-------------------------------------------------------------
 C:\ICPR2\MVILL\ALT3\ALT3-10Y
 Execution: Both
    Header: 10-Year Event
            Maintained/Cleaned Pipes and Ditch, Highspot
            Remove, and New Culvert Across Crane Road
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: Yes
     Time Step Optimizer: 0               Storm Dur(hrs): 24
Drop Structure Optimizer: 0              Rain Amount(in): 7.5
     Sim Start Time(hrs): 0                Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                To Hour:   PInc(min):
        0          60                        30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [11/20/02]
```

Mean Annual Event - Node Maximum Conditions Report
Maintained/Cleaned Pipes and Ditch, High spot
Remove, and New Culvert Across Crane Road

********** Node Maximum Conditions - ALT3-MA **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.07	22.98	26.00	-0.7910	1794.69	13.55	6.32	0.00	14.91
CRANENW	BASE	13.85	24.26	25.50	-0.0420	7434.01	13.20	5.37	13.85	5.56
CRANES	BASE	13.55	24.11	25.00	0.0213	11971.80	13.17	6.61	13.55	6.32
EWILD	BASE	13.46	24.54	26.00	0.0100	20034.44	12.17	3.08	13.91	1.08
GHOST	BASE	13.91	24.48	25.00	-0.1436	3031.18	12.87	4.74	12.96	4.67
OUTFALL	BASE	13.01	22.80	26.00	0.0891	1.21	0.00	14.91	0.00	0.00
PARK	BASE	13.67	24.25	26.50	0.0182	17362.19	12.89	5.00	13.43	4.36
PLATT	BASE	13.04	24.52	26.50	0.0478	8999.84	12.25	6.33	12.39	4.38
WWILD	BASE	13.28	24.50	26.00	0.0372	14193.79	12.25	2.75	17.12	2.01

10-Year Event
Maintained/Cleaned Pipes and Ditch, High spot
Remove, and New Culvert Across Crane Road

********** Node Maximum Conditions - ALT3-10Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.21	23.49	26.00	-0.7910	2577.91	13.26	12.05	0.00	14.91
CRANENW	BASE	13.61	24.83	25.50	-0.0473	12577.02	12.53	16.92	13.61	9.97
CRANES	BASE	13.43	24.60	25.00	0.0281	17735.86	13.22	12.22	13.26	12.05
EWILD	BASE	13.58	25.02	26.00	0.0228	31763.60	12.18	6.03	14.88	1.97
GHOST	BASE	13.46	24.95	25.00	-0.1436	4924.21	12.53	9.08	12.74	8.61
OUTFALL	BASE	13.00	22.80	26.00	0.1114	1.21	0.00	14.91	0.00	0.00
PARK	BASE	13.42	24.82	26.50	0.0291	24814.68	12.66	9.41	12.53	12.95
PLATT	BASE	13.14	25.00	26.50	0.0478	11258.14	12.25	12.38	12.36	9.42
WWILD	BASE	13.42	24.98	26.00	0.0372	17299.49	12.12	4.13	13.59	3.12

25-Year Event
Maintained/Cleaned Pipes and Ditch, High spot
Remove, and New Culvert Across Crane Road

********** Node Maximum Conditions - ALT3-25Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.29	23.99	26.00	-0.7910	3329.86	13.10	15.62	12.46	17.87
CRANENW	BASE	13.64	25.14	25.50	-0.0471	21588.06	12.45	21.14	13.86	12.85
CRANES	BASE	13.30	24.88	25.00	0.0252	20909.37	12.64	15.81	13.10	15.62
EWILD	BASE	13.78	25.30	26.00	0.0208	50412.97	12.16	8.28	15.23	2.85
GHOST	BASE	13.91	25.23	25.00	-0.1436	6065.40	12.45	12.03	13.91	11.43
OUTFALL	BASE	13.00	22.80	26.00	0.0891	1.21	12.46	17.87	0.00	0.00
PARK	BASE	13.44	25.13	26.50	0.0257	28917.34	12.48	12.55	12.45	15.08
PLATT	BASE	13.25	25.29	26.50	0.0478	20251.07	12.25	17.01	12.33	13.10
WWILD	BASE	13.54	25.26	26.00	0.0372	31945.13	12.16	4.86	14.75	4.06

100-Year Event
Maintained/Cleaned Pipes and Ditch, High spot
Remove, and New Culvert Across Crane Road

********** Node Maximum Conditions - ALT3-100 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.35	24.49	26.00	-0.7910	4096.64	12.99	19.34	12.46	20.53
CRANENW	BASE	13.86	25.47	25.50	0.0500	38639.37	14.29	39.60	13.86	15.17
CRANES	BASE	13.41	25.16	25.00	0.0350	24184.60	12.32	21.43	12.99	19.34
EWILD	BASE	14.02	25.59	26.00	0.0297	69791.97	12.18	11.38	16.55	3.47
GHOST	BASE	13.86	25.54	25.00	-0.1436	7318.81	15.46	16.20	13.86	15.20
OUTFALL	BASE	13.00	22.80	26.00	0.0891	1.21	12.46	20.53	0.00	0.00
PARK	BASE	13.87	25.46	26.50	0.0406	33204.74	13.86	15.60	14.29	38.29
PLATT	BASE	13.47	25.58	26.50	0.0478	46120.01	12.25	23.36	12.33	16.34
WWILD	BASE	13.71	25.55	26.00	0.0372	48418.15	12.16	6.30	15.46	9.06

Mean Annual Event - Link Maximum Conditions Report
Maintained/Cleaned Pipes and Ditch, High spot
Remove, and New Culvert Across Crane Road

********** Link Maximum Conditions - ALT3-MA **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.96	4.67	0.98	13.91	24.48	13.67	24.25
AZALEAS	BASE	13.43	4.36	5.54	13.67	24.25	13.85	24.26
CRANECC	BASE	13.85	5.56	0.66	13.85	24.26	13.55	24.11
CRANED	BASE	13.55	6.32	0.12	13.55	24.11	13.07	22.98
OUTC	BASE	0.00	14.91	14.91	13.07	22.98	13.01	22.80
PLATTW	BASE	12.39	4.38	-3.12	13.04	24.52	13.91	24.48
WILDC	BASE	13.91	1.08	-0.09	13.46	24.54	13.28	24.50
WWILDW	BASE	17.12	2.01	-3.12	13.28	24.50	13.91	24.48

10-Year Event
Maintained/Cleaned Pipes and Ditch, High spot
Remove, and New Culvert Across Crane Road

********** Link Maximum Conditions - ALT3-10Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.74	8.61	0.98	13.46	24.95	13.42	24.82
AZALEAS	BASE	12.53	12.95	-7.45	13.42	24.82	13.61	24.83
CRANECC	BASE	13.61	9.97	-0.69	13.61	24.83	13.43	24.60
CRANED	BASE	13.26	12.05	0.22	13.43	24.60	13.21	23.49
OUTC	BASE	0.00	14.91	14.91	13.21	23.49	13.00	22.80
PLATTW	BASE	12.36	9.42	-3.12	13.14	25.00	13.46	24.95
WILDC	BASE	14.88	1.97	-0.36	13.58	25.02	13.42	24.98
WWILDW	BASE	13.59	3.12	-3.12	13.42	24.98	13.46	24.95

25-Year Event
Maintained/Cleaned Pipes and Ditch, High spot
Remove, and New Culvert Across Crane Road

********** Link Maximum Conditions - ALT3-25Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.91	11.43	-1.04	13.91	25.23	13.44	25.13
AZALEAS	BASE	12.45	15.08	-9.03	13.44	25.13	13.64	25.14
CRANECC	BASE	13.86	12.85	-0.69	13.64	25.14	13.30	24.88
CRANED	BASE	13.10	15.62	0.23	13.30	24.88	13.29	23.99
OUTC	BASE	12.46	17.87	14.91	13.29	23.99	13.00	22.80
PLATTW	BASE	12.33	13.10	-3.12	13.25	25.29	13.91	25.23
WILDC	BASE	15.23	2.85	-0.23	13.78	25.30	13.54	25.26
WWILDW	BASE	14.75	4.06	-3.12	13.54	25.26	13.91	25.23

100-Year Event
Maintained/Cleaned Pipes and Ditch, High spot
Remove, and New Culvert Across Crane Road

********** Link Maximum Conditions - ALT3-100 **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.86	15.20	-4.54	13.86	25.54	13.87	25.46
AZALEAS	BASE	14.29	38.29	48.08	13.87	25.46	13.86	25.47
CRANECC	BASE	13.86	15.17	0.77	13.86	25.47	13.41	25.16
CRANED	BASE	12.99	19.34	0.37	13.41	25.16	13.35	24.49
OUTC	BASE	12.46	20.53	14.91	13.35	24.49	13.00	22.80
PLATTW	BASE	12.33	16.34	-3.89	13.47	25.58	13.86	25.54
WILDC	BASE	16.55	3.47	-0.21	14.02	25.59	13.71	25.55
WWILDW	BASE	15.46	9.06	3.47	13.71	25.55	13.86	25.54

Platt Circle ICPR Modeling Reports

Alternative 4

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [1]

Alternative 4 - Inlet in Platt Circle
Input Report

********** Input Report **********
--------Class: Node--------
Name: C1 Base Flow(cfs): 0 Init Stage(ft): 22.32
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
22.32	0.01
25	0.1

--------Class: Node--------
Name: CRANENW Base Flow(cfs): 0 Init Stage(ft): 22.77
Group: BASE Warn Stage(ft): 25.5
Comment:

Stage(ft)	Area(ac)
22.77	0
23.5	0.05
24	0.1
25	0.3
25.5	0.9

--------Class: Node--------
Name: CRANES Base Flow(cfs): 0 Init Stage(ft): 22.8
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
22.8	0
23.5	0.1
25	0.5

--------Class: Node--------
Name: EWILD Base Flow(cfs): 0 Init Stage(ft): 23.66
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.66	0
25	0.7
26	2.22

--------Class: Node--------
Name: GHOST Base Flow(cfs): 0 Init Stage(ft): 23.94
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
23.94	0.01
25	0.1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [2]

Alternative 4 - Inlet in Platt Circle

********** Input Report **********
--------Class: Node----------
Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 16
Group: BASE Warn Stage(ft): 26
Comment:

Time(hrs)	Stage(ft)
0	16
12	17.7
13	22.8
24	16

--------Class: Node----------
Name: PARK Base Flow(cfs): 0 Init Stage(ft): 23.19
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.19	0
23.3	0.1
25	0.59

--------Class: Node----------
Name: PLATT Base Flow(cfs): 0 Init Stage(ft): 23.17
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.17	0
24	0.15
25.11	0.27
25.5	0.7
26.5	5

--------Class: Node----------
Name: WWILD Base Flow(cfs): 0 Init Stage(ft): 23.29
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.29	0
23.66	0.1
24	0.25
25	0.4
26	1.7

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [3]

Alternative 4 - Inlet in Platt Circle

********** Input Report **********

--------Class: Basin--------

Basin: CRANENE Node: CRANENW Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.25 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: CRANENW Node: CRANENW Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.9 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: CRANES Node: CRANES Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.84 Concentration Time(min): 26
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: EWILD Node: EWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.22 Concentration Time(min): 26
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [4]

Alternative 4 - Inlet in Platt Circle

********** Input Report **********

--------Class: Basin--------

Basin: PARK Node: PARK Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.59 Concentration Time(min): 20
Curve #: 74 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: PLATT Node: PLATT Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 5 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: WWILD Node: WWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.7 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [5]

Alternative 4 - Inlet in Platt Circle

********** Input Report **********
--------Class: Pipe----------

Name:	CRANECC	From Node:	CRANENW	Length(ft): 90
Group:	BASE	To Node:	CRANES	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	30	30	Flow:	Both
Rise(in):	30	30	Entrance Loss Coef:	0.4
Invert(ft):	22.77	22.8	Exit Loss Coef:	1
Manning's N:	0.013	0.013	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

--------Class: Pipe----------

Name:	OUTC	From Node:	C1	Length(ft): 20
Group:	BASE	To Node:	OUTFALL	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	29	29	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.7
Invert(ft):	20.05	18.56	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [6]

Alternative 4 - Inlet in Platt Circle

********** Input Report **********

--------Class: Pipe----------

Name:	PLATTC	From Node:	PLATT	Length(ft):	280
Group:	BASE	To Node:	PARK	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.7
Invert(ft):	23.17	23.2	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

--------Class: Pipe----------

Name:	WILDC	From Node:	EWILD	Length(ft):	25
Group:	BASE	To Node:	WWILD	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.4
Invert(ft):	23.66	23.64	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Culvert more than half full of sediment

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [7]
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Alternative 4 - Inlet in Platt Circle

********** Input Report **********

--------Class: Channel----------

Name: AZALEAN From Node: GHOST Length(ft): 220
Group: BASE To Node: PARK Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.5	23.29	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.83	1.667		
LSdSlp(h/v):	1.5	1.5		
RSdSlp(h/v):	1.5	1.5		

--------Class: Channel----------

Name: AZALEAS From Node: PARK Length(ft): 175
Group: BASE To Node: CRANENW Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.29	22.77	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	1.667	3.5		
LSdSlp(h/v):	1.5	2		
RSdSlp(h/v):	1.5	2		

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [8]

Alternative 4 - Inlet in Platt Circle

********** Input Report **********

--------Class: Channel----------

Name: CRANED From Node: CRANES Length(ft): 270
Group: BASE To Node: C1 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	22.8	22.32	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.5	2.5		
LSdSlp(h/v):	0.25	0.25		
RSdSlp(h/v):	0.25	0.25		

--------Class: Weir----------

Name: PLATTW From Node: PLATT
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft):	5
Left Side Slope(h/v):	1
Right Side Slope(h/v):	1
Invert(ft):	23.94
Control Elev(ft):	23.94
StructOpeningDim(ft):	9999 TABLE
Bottom Clip(ft):	0
Top Clip(ft):	0
Weir Discharge Coef:	2
Orifice Discharge Coef:	0

Alternative 4 - Inlet in Platt Circle

********** Input Report **********

--------Class: Weir----------

Name: WWILDW From Node: WWILD
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft): 5
Left Side Slope(h/v): 1
Right Side Slope(h/v): 1
Invert(ft): 23.94
Control Elev(ft): 23.94
StructOpeningDim(ft): 9999 TABLE
Bottom Clip(ft): 0
Top Clip(ft): 0
Weir Discharge Coef: 2
Orifice Discharge Coef: 0

--------Class: Simulation----------

C:\ICPR2\MVILL\ALT4\ALT4-MA
Execution: Both
Header: Mean Annual Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle, and New Culvert Across Crane Road

---------HYDRAULICS----------HYDROLOGY----------

Max Delta Z (ft): 1
Delta Z Factor: 0.05 Override Defaults: No
Time Step Optimizer: 0
Drop Structure Optimizer: 0
Sim Start Time(hrs): 0
Sim End Time(hrs): 30
Min Calc Time(sec): 15
Max Calc Time(sec): 300

To Hour:	PInc(min):	To Hour:	PInc(min):
0	60	30	5
10	15		
12	5		
13	15		
15	60		

---------GROUP SELECTIONS----------

+ BASE [11/20/02]

```
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    Alternative 4 - Inlet in Platt Circle


    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 C:\ICPR2\MVILL\ALT4\ALT4-10Y
 Execution: Both
    Header: 10-Year Event
            Maintained/Cleaned Pipes and Ditch, Inlet in
            Platt Circle, and New Culvert Across Crane Road
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05           Override Defaults: Yes
     Time Step Optimizer: 0                 Storm Dur(hrs): 24
Drop Structure Optimizer: 0               Rain Amount(in): 7.5
     Sim Start Time(hrs): 0                 Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                  To Hour:   PInc(min):
        0          60                          30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [11/20/02]
    --------Class: Simulation-----------------------------------------------------------
 C:\ICPR2\MVILL\ALT4\ALT4-25Y
 Execution: Both
    Header: 25-Year Event
            Maintained/Cleaned Pipes and Ditch, Inlet in
            Platt Circle, and New Culvert Across Crane Road
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05           Override Defaults: Yes
     Time Step Optimizer: 0                 Storm Dur(hrs): 24
Drop Structure Optimizer: 0               Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                 Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                  To Hour:   PInc(min):
        0          60                          30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [11/20/02]
```

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [11]
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Alternative 4 - Inlet in Platt Circle

********** Input Report **********
--------Class: Simulation--------
C:\ICPR2\MVILL\ALT4\ALT4-100
Execution: Both
Header: 100-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle, and New Culvert Across Crane Road

---------HYDRAULICS----------HYDROLOGY----------

Max Delta Z (ft):	1		
Delta Z Factor:	0.05	Override Defaults:	Yes
Time Step Optimizer:	0	Storm Dur(hrs):	24
Drop Structure Optimizer:	0	Rain Amount(in):	12.25
Sim Start Time(hrs):	0	Rainfall File:	SCSII-24
Sim End Time(hrs):	30		
Min Calc Time(sec):	15		
Max Calc Time(sec):	300		

To Hour:	PInc(min):	To Hour:	PInc(min):
0	60	30	5
10	15		
12	5		
13	15		
15	60		

---------GROUP SELECTIONS----------
+ BASE [11/20/02]

Mean Annual Event - Node Maximum Conditions Report
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle, and New Culvert Across Crane Road

********** Node Maximum Conditions - ALT4-MA **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.07	23.00	26.00	-0.7910	1823.42	13.10	6.58	0.00	14.91
CRANENW	BASE	13.67	24.28	25.50	0.0459	7600.41	13.14	5.53	13.91	5.60
CRANES	BASE	13.51	24.13	25.00	0.0498	12243.66	13.13	6.85	13.10	6.58
EWILD	BASE	13.51	24.50	26.00	0.0236	19030.47	12.18	3.07	13.84	0.98
GHOST	BASE	13.21	24.40	25.00	0.0487	2723.28	12.70	3.64	12.79	3.51
OUTFALL	BASE	13.00	22.80	26.00	0.0891	1.21	0.00	14.91	0.00	0.00
PARK	BASE	13.51	24.28	26.50	0.0202	17830.22	12.62	5.51	13.49	4.44
PLATT	BASE	12.58	24.48	26.50	0.0499	8956.44	12.25	6.33	12.42	4.99
WWILD	BASE	13.38	24.45	26.00	0.0239	13878.23	12.30	2.93	13.89	1.83

10-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle, and New Culvert Across Crane Road

********** Node Maximum Conditions - ALT4-10Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.21	23.52	26.00	-0.7910	2619.12	13.22	12.24	12.50	15.27
CRANENW	BASE	13.63	24.83	25.50	-0.0474	12611.35	12.50	17.35	13.63	9.97
CRANES	BASE	13.32	24.61	25.00	0.0483	17844.72	13.20	12.28	13.22	12.24
EWILD	BASE	13.63	25.00	26.00	0.0276	30421.48	12.17	6.03	14.76	1.90
GHOST	BASE	13.45	24.92	25.00	0.0490	4799.51	12.50	7.43	12.67	6.91
OUTFALL	BASE	13.01	22.80	26.00	0.1393	1.21	12.50	15.27	0.00	0.00
PARK	BASE	13.39	24.83	26.50	0.0447	24923.34	12.51	9.85	12.50	13.19
PLATT	BASE	13.08	24.98	26.50	0.0487	11144.44	12.24	12.37	12.38	9.75
WWILD	BASE	13.50	24.96	26.00	0.0298	17174.86	12.17	4.97	14.36	3.25

25-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle, and New Culvert Across Crane Road

********** Node Maximum Conditions - ALT4-25Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.29	24.01	26.00	-0.7910	3361.37	13.08	15.78	12.46	17.85
CRANENW	BASE	13.63	25.15	25.50	0.0478	21835.06	13.15	12.38	13.86	12.86
CRANES	BASE	13.02	24.89	25.00	0.0495	21032.44	12.46	16.42	13.08	15.78
EWILD	BASE	13.81	25.29	26.00	0.0251	49689.84	12.16	8.28	15.24	2.80
GHOST	BASE	13.45	25.21	25.00	0.0483	5991.77	12.50	10.08	13.91	9.65
OUTFALL	BASE	13.01	22.80	26.00	0.0891	1.21	12.46	17.85	0.00	0.00
PARK	BASE	13.44	25.14	26.50	0.0376	29005.81	12.46	12.79	13.24	9.55
PLATT	BASE	13.14	25.28	26.50	0.0487	19950.90	12.25	16.99	12.34	13.18
WWILD	BASE	13.58	25.25	26.00	0.0298	31519.74	12.15	6.09	14.78	4.38

100-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle, and New Culvert Across Crane Road

********** Node Maximum Conditions - ALT4-100 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.33	24.50	26.00	-0.7910	4106.04	12.99	19.41	12.46	20.42
CRANENW	BASE	13.63	25.47	25.50	0.0493	38678.24	12.45	25.98	14.39	15.41
CRANES	BASE	13.41	25.16	25.00	0.0378	24215.91	12.25	21.03	12.99	19.41
EWILD	BASE	14.06	25.58	26.00	0.0295	69202.16	12.17	11.40	16.49	3.46
GHOST	BASE	13.88	25.53	25.00	0.0484	7270.79	12.37	12.26	13.88	14.43
OUTFALL	BASE	13.00	22.80	26.00	0.0891	1.21	12.46	20.42	0.00	0.00
PARK	BASE	13.61	25.45	26.50	0.0439	33070.11	13.88	16.04	12.45	17.68
PLATT	BASE	13.39	25.58	26.50	0.0467	45828.72	12.25	23.38	12.35	16.03
WWILD	BASE	13.75	25.54	26.00	0.0333	48123.59	12.17	6.84	16.15	5.28

Mean Annual Event - Link Maximum Conditions Report
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle, and New Culvert Across Crane Road

********** Link Maximum Conditions - ALT4-MA **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.79	3.51	0.98	13.21	24.40	13.51	24.28
AZALEAS	BASE	13.49	4.44	3.68	13.51	24.28	13.67	24.28
CRANECC	BASE	13.91	5.60	0.65	13.67	24.28	13.51	24.13
CRANED	BASE	13.10	6.58	0.23	13.51	24.13	13.07	23.00
OUTC	BASE	0.00	14.91	14.91	13.07	23.00	13.00	22.80
PLATTC	BASE	12.48	1.69	0.08	12.58	24.48	13.51	24.28
PLATTW	BASE	12.42	3.31	0.20	12.58	24.48	13.21	24.40
WILDC	BASE	13.84	0.98	0.04	13.51	24.50	13.38	24.45
WWILDW	BASE	13.89	1.83	0.07	13.38	24.45	13.21	24.40

10-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle, and New Culvert Across Crane Road

********** Link Maximum Conditions - ALT4-10Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.67	6.91	0.98	13.45	24.92	13.39	24.83
AZALEAS	BASE	12.50	13.19	6.29	13.39	24.83	13.63	24.83
CRANECC	BASE	13.63	9.97	-0.69	13.63	24.83	13.32	24.61
CRANED	BASE	13.22	12.24	0.33	13.32	24.61	13.21	23.52
OUTC	BASE	12.50	15.27	14.91	13.21	23.52	13.01	22.80
PLATTC	BASE	12.35	2.22	0.10	13.08	24.98	13.39	24.83
PLATTW	BASE	12.40	7.55	0.45	13.08	24.98	13.45	24.92
WILDC	BASE	14.76	1.90	-0.43	13.63	25.00	13.50	24.96
WWILDW	BASE	14.36	3.25	0.19	13.50	24.96	13.45	24.92

25-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle, and New Culvert Across Crane Road

********** Link Maximum Conditions - ALT4-25Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.91	9.65	0.98	13.45	25.21	13.44	25.14
AZALEAS	BASE	13.24	9.55	7.65	13.44	25.14	13.63	25.15
CRANECC	BASE	13.86	12.86	-0.69	13.63	25.15	13.02	24.89
CRANED	BASE	13.08	15.78	0.32	13.02	24.89	13.29	24.01
OUTC	BASE	12.46	17.85	14.91	13.29	24.01	13.01	22.80
PLATTC	BASE	12.27	2.43	0.10	13.14	25.28	13.44	25.14
PLATTW	BASE	12.37	10.85	0.66	13.14	25.28	13.45	25.21
WILDC	BASE	15.24	2.80	-0.59	13.81	25.29	13.58	25.25
WWILDW	BASE	14.78	4.38	0.54	13.58	25.25	13.45	25.21

100-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle, and New Culvert Across Crane Road

********** Link Maximum Conditions - ALT4-100 **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.88	14.43	-2.48	13.88	25.53	13.61	25.45
AZALEAS	BASE	12.45	17.68	14.22	13.61	25.45	13.63	25.47
CRANECC	BASE	14.39	15.41	-0.69	13.63	25.47	13.41	25.16
CRANED	BASE	12.99	19.41	0.37	13.41	25.16	13.33	24.50
OUTC	BASE	12.46	20.42	14.91	13.33	24.50	13.00	22.80
PLATTC	BASE	12.13	2.44	0.06	13.39	25.58	13.61	25.45
PLATTW	BASE	12.38	13.92	1.80	13.39	25.58	13.88	25.53
WILDC	BASE	16.49	3.46	-0.59	14.06	25.58	13.75	25.54
WWILDW	BASE	16.15	5.28	2.19	13.75	25.54	13.88	25.53

Platt Circle ICPR Modeling Reports

Alternative 5

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [1]

Alternative 5 - Inlet in Platt W/O Crane Reconfig
Input Report

********** Input Report **********

--------Class: Node--------

Name: C1 Base Flow(cfs): 0 Init Stage(ft): 22.32
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
22.32	0.01
25	0.1

--------Class: Node--------

Name: CRANENE Base Flow(cfs): 0 Init Stage(ft): 22.58
Group: BASE Warn Stage(ft): 25.83
Comment:

Stage(ft)	Area(ac)
22.58	0
23.5	0.05
24	0.1
25	0.3
25.83	1.25

--------Class: Node--------

Name: CRANENW Base Flow(cfs): 0 Init Stage(ft): 22.77
Group: BASE Warn Stage(ft): 25.5
Comment:

Stage(ft)	Area(ac)
22.77	0
23.5	0.05
24	0.1
25	0.3
25.5	0.9

--------Class: Node--------

Name: CRANES Base Flow(cfs): 0 Init Stage(ft): 22.8
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
22.8	0
23.5	0.1
25	0.5

--------Class: Node--------

Name: EWILD Base Flow(cfs): 0 Init Stage(ft): 23.66
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.66	0
25	0.7
26	2.22

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [2]

Alternative 5 - Inlet in Platt W/O Crane Reconfig

********** Input Report **********
--------Class: Node--------
Name: GHOST Base Flow(cfs): 0 Init Stage(ft): 23.94
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
23.94	0.01
25	0.1

--------Class: Node--------
Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 16
Group: BASE Warn Stage(ft): 26
Comment:

Time(hrs)	Stage(ft)
0	16
12	17.7
13	22.8
24	16

--------Class: Node--------
Name: PARK Base Flow(cfs): 0 Init Stage(ft): 23.19
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.19	0
23.3	0.1
25	0.59

--------Class: Node--------
Name: PLATT Base Flow(cfs): 0 Init Stage(ft): 23.17
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.17	0
24	0.15
25.11	0.27
25.5	0.7
26.5	5

--------Class: Node--------
Name: WWILD Base Flow(cfs): 0 Init Stage(ft): 23.29
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.29	0
23.66	0.1
24	0.25
25	0.4
26	1.7

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [3]

Alternative 5 - Inlet in Platt W/O Crane Reconfig

********** Input Report **********

--------Class: Basin--------

Basin: CRANENE Node: CRANENE Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.25 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: CRANENW Node: CRANENW Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.9 Concentration Time(min): 25
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: CRANES Node: CRANES Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.84 Concentration Time(min): 26
Curve #: 77 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: EWILD Node: EWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 2.22 Concentration Time(min): 26
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [4]

Alternative 5 - Inlet in Platt W/O Crane Reconfig

********** Input Report **********

--------Class: Basin--------

Basin: PARK Node: PARK Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.59 Concentration Time(min): 20
Curve #: 74 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: PLATT Node: PLATT Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 5 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: WWILD Node: WWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.7 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [5]

Alternative 5 - Inlet in Platt W/O Crane Reconfig

********** Input Report **********

--------Class: Pipe----------

Name:	CRANC	From Node:	CRANENE	Length(ft): 25
Group:	BASE	To Node:	CRANES	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	22	22	Flow:	Both
Rise(in):	22	22	Entrance Loss Coef:	0.4
Invert(ft):	22.58	22.8	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0.7
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Half full of sediment

--------Class: Pipe----------

Name:	NCRANEC	From Node:	CRANENW	Length(ft): 60
Group:	BASE	To Node:	CRANENE	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	22	22	Flow:	Both
Rise(in):	22	22	Entrance Loss Coef:	0.4
Invert(ft):	22.77	22.58	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0.7
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [6]

Alternative 5 - Inlet in Platt W/O Crane Reconfig

********** Input Report **********

--------Class: Pipe----------

Name:	OUTC	From Node:	C1	Length(ft):	20
Group:	BASE	To Node:	OUTFALL	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	29	29	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.7
Invert(ft):	20.05	18.56	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting 2 3

--------Class: Pipe----------

Name:	PLATTC	From Node:	PLATT	Length(ft):	280
Group:	BASE	To Node:	PARK	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.7
Invert(ft):	23.17	23.2	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope 2 2

Downstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope 2 2

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [7]

Alternative 5 - Inlet in Platt W/O Crane Reconfig

********** Input Report **********

--------Class: Pipe--------

Name:	WILDC	From Node:	EWILD	Length(ft):	25
Group:	BASE	To Node:	WWILD	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.4
Invert(ft):	23.66	23.64	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Culvert more than half full of sediment

--------Class: Channel--------

Name:	AZALEAN	From Node:	GHOST	Length(ft):	220
Group:	BASE	To Node:	PARK	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.5	23.29	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.83	1.667		
LSdSlp(h/v):	1.5	1.5		
RSdSlp(h/v):	1.5	1.5		

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [8]
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Alternative 5 - Inlet in Platt W/O Crane Reconfig

********** Input Report **********

--------Class: Channel----------

Name: AZALEAS From Node: PARK Length(ft): 175
Group: BASE To Node: CRANENW Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.29	22.77	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	1.667	3.5		
LSdSlp(h/v):	1.5	2		
RSdSlp(h/v):	1.5	2		

--------Class: Channel----------

Name: CRANED From Node: CRANES Length(ft): 270
Group: BASE To Node: C1 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	22.8	22.32	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.5	2.5		
LSdSlp(h/v):	0.25	0.25		
RSdSlp(h/v):	0.25	0.25		

Alternative 5 - Inlet in Platt W/O Crane Reconfig

********** Input Report **********

--------Class: Weir----------

Name: PLATTW From Node: PLATT
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft): 5
Left Side Slope(h/v): 1
Right Side Slope(h/v): 1
Invert(ft): 23.94
Control Elev(ft): 23.94
StructOpeningDim(ft): 9999 TABLE
Bottom Clip(ft): 0
Top Clip(ft): 0
Weir Discharge Coef: 2
Orifice Discharge Coef: 0

--------Class: Weir----------

Name: WWILDW From Node: WWILD
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft): 5
Left Side Slope(h/v): 1
Right Side Slope(h/v): 1
Invert(ft): 23.94
Control Elev(ft): 23.94
StructOpeningDim(ft): 9999 TABLE
Bottom Clip(ft): 0
Top Clip(ft): 0
Weir Discharge Coef: 2
Orifice Discharge Coef: 0

Alternative 5 - Inlet in Platt W/O Crane Reconfig

********** Input Report **********
--------Class: Simulation----------
C:\ICPR2\MVILL\ALT5\ALT5-MA
Execution: Both
Header: Mean Annual Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle
---------HYDRAULICS----------HYDROLOGY----------
Max Delta Z (ft): 1
Delta Z Factor: 0.05 Override Defaults: No
Time Step Optimizer: 0
Drop Structure Optimizer: 0
Sim Start Time(hrs): 0
Sim End Time(hrs): 30
Min Calc Time(sec): 15
Max Calc Time(sec): 300

To Hour:	PInc(min):	To Hour:	PInc(min):
0	60	30	5
10	15		
12	5		
13	15		
15	60		

---------GROUP SELECTIONS----------
+ BASE [11/20/02]
--------Class: Simulation----------
C:\ICPR2\MVILL\ALT5\ALT5-10Y
Execution: Both
Header: 10-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle
---------HYDRAULICS----------HYDROLOGY----------
Max Delta Z (ft): 1
Delta Z Factor: 0.05 Override Defaults: Yes
Time Step Optimizer: 0 Storm Dur(hrs): 24
Drop Structure Optimizer: 0 Rain Amount(in): 7.5
Sim Start Time(hrs): 0 Rainfall File: SCSII-24
Sim End Time(hrs): 30
Min Calc Time(sec): 15
Max Calc Time(sec): 300

To Hour:	PInc(min):	To Hour:	PInc(min):
0	60	30	5
10	15		
12	5		
13	15		
15	60		

---------GROUP SELECTIONS----------
+ BASE [11/20/02]

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [11]
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Alternative 5 - Inlet in Platt W/O Crane Reconfig

********** Input Report **********
--------Class: Simulation--------
C:\ICPR2\MVILL\ALT5\ALT5-25Y
Execution: Both
Header: 25-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle
---------HYDRAULICS----------HYDROLOGY----------
Max Delta Z (ft): 1
Delta Z Factor: 0.05
Override Defaults: Yes
Time Step Optimizer: 0
Storm Dur(hrs): 24
Drop Structure Optimizer: 0
Rain Amount(in): 9.5
Sim Start Time(hrs): 0
Rainfall File: SCSII-24
Sim End Time(hrs): 30
Min Calc Time(sec): 15
Max Calc Time(sec): 300

To Hour:	PInc(min):	To Hour:	PInc(min):
0	60	30	5
10	15		
12	5		
13	15		
15	60		

---------GROUP SELECTIONS----------
+ BASE [11/20/02]
--------Class: Simulation--------
C:\ICPR2\MVILL\ALT5\ALT5-100
Execution: Both
Header: 100-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle
---------HYDRAULICS----------HYDROLOGY----------
Max Delta Z (ft): 1
Delta Z Factor: 0.05
Override Defaults: Yes
Time Step Optimizer: 0
Storm Dur(hrs): 24
Drop Structure Optimizer: 0
Rain Amount(in): 12.25
Sim Start Time(hrs): 0
Rainfall File: SCSII-24
Sim End Time(hrs): 30
Min Calc Time(sec): 15
Max Calc Time(sec): 300

To Hour:	PInc(min):	To Hour:	PInc(min):
0	60	30	5
10	15		
12	5		
13	15		
15	60		

---------GROUP SELECTIONS----------
+ BASE [11/20/02]

Mean Annual Event - Node Maximum Conditions Report
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle with Crane Road Reconfigured

********** Node Maximum Conditions - ALT5-MA **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.06	22.94	26.00	-0.7910	1727.22	13.06	5.48	0.00	14.91
CRANENE	BASE	13.73	24.21	25.83	0.0432	6198.70	13.85	4.66	13.98	4.36
CRANENW	BASE	13.85	24.37	25.50	-0.0437	8408.14	12.63	7.30	14.01	4.30
CRANES	BASE	13.58	24.00	25.00	0.0476	10611.21	13.18	5.61	13.06	5.48
EWILD	BASE	13.65	24.50	26.00	0.0221	19177.60	12.18	3.07	12.37	0.87
GHOST	BASE	13.65	24.43	25.00	0.0487	2838.84	12.66	3.66	12.73	3.51
OUTFALL	BASE	13.00	22.80	26.00	0.0891	1.21	0.00	14.91	0.00	0.00
PARK	BASE	13.82	24.35	26.50	0.0202	18789.00	12.64	5.55	12.63	6.53
PLATT	BASE	12.56	24.48	26.50	0.0489	8955.74	12.25	6.33	12.42	5.01
WWILD	BASE	13.67	24.47	26.00	0.0244	13981.50	12.30	2.93	13.30	1.54

10-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle with Crane Road Reconfigured

********** Node Maximum Conditions - ALT5-10Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.12	23.22	26.00	-0.7910	2166.99	13.10	9.40	0.00	14.91
CRANENE	BASE	13.65	24.65	25.83	0.0461	10043.38	13.92	6.86	13.93	6.65
CRANENW	BASE	13.92	25.01	25.50	0.0437	14767.15	14.59	19.92	13.92	6.23
CRANES	BASE	13.01	24.39	25.00	0.0471	15125.46	12.25	10.12	13.10	9.40
EWILD	BASE	14.04	25.05	26.00	0.0276	33694.85	12.17	6.03	15.34	1.46
GHOST	BASE	13.92	25.06	25.00	0.0491	5393.42	12.59	7.55	13.92	8.99
OUTFALL	BASE	13.01	22.80	26.00	0.1393	1.21	0.00	14.91	0.00	0.00
PARK	BASE	14.03	24.97	26.50	0.0405	26848.69	13.92	10.20	14.59	19.67
PLATT	BASE	13.93	25.04	26.50	0.0487	11445.97	12.25	12.38	12.39	9.80
WWILD	BASE	13.93	25.03	26.00	0.0298	19395.25	12.17	4.98	15.05	3.96

25-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle with Crane Road Reconfigured

********** Node Maximum Conditions - ALT5-25Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.18	23.50	26.00	-0.7910	2596.18	13.09	12.06	12.46	17.14
CRANENE	BASE	13.25	24.90	25.83	0.0454	12169.54	13.59	7.67	14.29	7.80
CRANENW	BASE	13.88	25.30	25.50	0.0416	29945.42	14.27	24.11	14.96	7.02
CRANES	BASE	12.95	24.62	25.00	0.0480	17793.07	12.25	13.61	13.09	12.06
EWILD	BASE	14.31	25.35	26.00	0.0251	53788.01	12.17	8.29	16.91	1.89
GHOST	BASE	13.92	25.35	25.00	0.0482	6560.58	12.45	10.35	13.92	10.84
OUTFALL	BASE	13.00	22.80	26.00	0.0891	1.21	12.46	17.14	0.00	0.00
PARK	BASE	14.27	25.30	26.50	0.0336	31084.98	12.46	12.91	14.27	23.69
PLATT	BASE	13.93	25.35	26.50	0.0487	23407.11	12.25	16.99	12.34	13.29
WWILD	BASE	14.29	25.34	26.00	0.0244	36452.94	12.15	6.15	15.35	5.11

100-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle with Crane Road Reconfigured

********** Node Maximum Conditions - ALT5-100 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.21	23.87	26.00	-0.7910	3156.81	13.04	15.05	12.46	18.74
CRANENE	BASE	13.20	25.18	25.83	0.0332	21948.01	15.29	8.44	14.47	8.91
CRANENW	BASE	13.92	25.60	25.50	0.0488	45650.55	13.62	30.91	15.64	7.98
CRANES	BASE	12.76	24.87	25.00	0.0333	20726.42	12.17	18.13	13.04	15.05
EWILD	BASE	14.58	25.65	26.00	0.0293	73554.26	12.17	11.39	18.92	2.07
GHOST	BASE	13.92	25.64	25.00	0.0483	7714.86	12.37	13.00	13.92	13.07
OUTFALL	BASE	13.00	22.80	26.00	0.0891	1.21	12.46	18.74	0.00	0.00
PARK	BASE	14.28	25.61	26.50	0.0330	35158.67	12.33	15.84	13.62	29.80
PLATT	BASE	14.14	25.65	26.50	0.0462	59213.98	12.24	23.35	12.35	16.28
WWILD	BASE	14.31	25.64	26.00	0.0324	53416.24	12.17	6.91	19.15	5.36

Mean Annual Event - Link Maximum Conditions Report
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle With Crane Road Reconfigured

********** Link Maximum Conditions - ALT5-MA **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.73	3.51	0.98	13.65	24.43	13.82	24.35
AZALEAS	BASE	12.63	6.53	-3.81	13.82	24.35	13.85	24.37
CRANC	BASE	13.98	4.36	0.17	13.73	24.21	13.58	24.00
CRANED	BASE	13.06	5.48	0.18	13.58	24.00	13.06	22.94
NCRANEC	BASE	14.01	4.30	0.66	13.85	24.37	13.73	24.21
OUTC	BASE	0.00	14.91	14.91	13.06	22.94	13.00	22.80
PLATTC	BASE	12.49	1.70	0.08	12.56	24.48	13.82	24.35
PLATTW	BASE	12.40	3.33	0.17	12.56	24.48	13.65	24.43
WILDC	BASE	12.37	0.87	0.03	13.65	24.50	13.67	24.47
WWILDW	BASE	13.30	1.54	0.08	13.67	24.47	13.65	24.43

10-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle With Crane Road Reconfigured

********** Link Maximum Conditions - ALT5-10Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.92	8.99	5.57	13.92	25.06	14.03	24.97
AZALEAS	BASE	14.59	19.67	16.89	14.03	24.97	13.92	25.01
CRANC	BASE	13.93	6.65	0.13	13.65	24.65	13.01	24.39
CRANED	BASE	13.10	9.40	0.31	13.01	24.39	13.12	23.22
NCRANEC	BASE	13.92	6.23	-0.78	13.92	25.01	13.65	24.65
OUTC	BASE	0.00	14.91	14.91	13.12	23.22	13.01	22.80
PLATTC	BASE	12.36	2.26	0.11	13.93	25.04	14.03	24.97
PLATTW	BASE	12.39	7.55	4.17	13.93	25.04	13.92	25.06
WILDC	BASE	15.34	1.46	-0.39	14.04	25.05	13.93	25.03
WWILDW	BASE	15.05	3.96	3.99	13.93	25.03	13.92	25.06

25-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle With Crane Road Reconfigured

********** Link Maximum Conditions - ALT5-25Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.92	10.84	9.86	13.92	25.35	14.27	25.30
AZALEAS	BASE	14.27	23.69	31.47	14.27	25.30	13.88	25.30
CRANC	BASE	14.29	7.80	0.12	13.25	24.90	12.95	24.62
CRANED	BASE	13.09	12.06	0.30	12.95	24.62	13.18	23.50
NCRANEC	BASE	14.96	7.02	0.27	13.88	25.30	13.25	24.90
OUTC	BASE	12.46	17.14	14.91	13.18	23.50	13.00	22.80
PLATTC	BASE	12.28	2.50	-0.14	13.93	25.35	14.27	25.30
PLATTW	BASE	12.36	10.87	4.09	13.93	25.35	13.92	25.35
WILDC	BASE	16.91	1.89	-0.48	14.31	25.35	14.29	25.34
WWILDW	BASE	15.35	5.11	4.31	14.29	25.34	13.92	25.35

100-Year Event
Maintained/Cleaned Pipes and Ditch, Inlet in
Platt Circle With Crane Road Reconfigured

********** Link Maximum Conditions - ALT5-100 **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.92	13.07	12.12	13.92	25.64	14.28	25.61
AZALEAS	BASE	13.62	29.80	41.21	14.28	25.61	13.92	25.60
CRANC	BASE	14.47	8.91	0.12	13.20	25.18	12.76	24.87
CRANED	BASE	13.04	15.05	0.33	12.76	24.87	13.21	23.87
NCRANEC	BASE	15.64	7.98	0.63	13.92	25.60	13.20	25.18
OUTC	BASE	12.46	18.74	14.91	13.21	23.87	13.00	22.80
PLATTC	BASE	12.16	2.54	-0.15	14.14	25.65	14.28	25.61
PLATTW	BASE	12.38	14.08	3.22	14.14	25.65	13.92	25.64
WILDC	BASE	18.92	2.07	-0.57	14.58	25.65	14.31	25.64
WWILDW	BASE	19.15	5.36	3.76	14.31	25.64	13.92	25.64

Platt Circle ICPR Modeling Reports

Alternative 6

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [10]
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Alternative 6 - Crane Road Ditch Stabilized

********** Input Report **********
--------Class: Simulation--------
C:\ICPR2\MVILL\ALT6\ALT6-25Y
Execution: Both
Header: 25-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Stabilized
---------HYDRAULICS----------HYDROLOGY----------
Max Delta Z (ft): 1
Delta Z Factor: 0.05
Time Step Optimizer: 0
Drop Structure Optimizer: 0
Sim Start Time(hrs): 0
Sim End Time(hrs): 30
Min Calc Time(sec): 15
Max Calc Time(sec): 300
Override Defaults: Yes
Storm Dur(hrs): 24
Rain Amount(in): 9.5
Rainfall File: SCSII-24

To Hour:	PInc(min):	To Hour:	PInc(min):
0	60	30	5
10	15		
12	5		
13	15		
15	60		

---------GROUP SELECTIONS----------
+ BASE [11/20/02]
--------Class: Simulation--------
C:\ICPR2\MVILL\ALT6\ALT6-100
Execution: Both
Header: 100-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Stabilized
---------HYDRAULICS----------HYDROLOGY----------
Max Delta Z (ft): 1
Delta Z Factor: 0.05
Time Step Optimizer: 0
Drop Structure Optimizer: 0
Sim Start Time(hrs): 0
Sim End Time(hrs): 30
Min Calc Time(sec): 15
Max Calc Time(sec): 300
Override Defaults: Yes
Storm Dur(hrs): 24
Rain Amount(in): 12.25
Rainfall File: SCSII-24

To Hour:	PInc(min):	To Hour:	PInc(min):
0	60	30	5
10	15		
12	5		
13	15		
15	60		

---------GROUP SELECTIONS----------
+ BASE [11/20/02]

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [9]
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    Alternative 6 - Crane Road Ditch Stabilized


    ********** Input Report ************************************************
    --------Class: Simulation-------------------------------------------------
 C:\ICPR2\MVILL\ALT6\ALT6-MA
 Execution: Both
    Header: Mean Annual Event
            Maintained/Cleaned Pipes and Ditch, New Culvert
            Across Crane Road, and Crane Ditch Stabilized
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: No
     Time Step Optimizer: 0
Drop Structure Optimizer: 0
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                  To Hour:   PInc(min):
        0          60                          30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE     [11/20/02]
    --------Class: Simulation-------------------------------------------------
 C:\ICPR2\MVILL\ALT6\ALT6-10Y
 Execution: Both
    Header: 10-Year Event
            Maintained/Cleaned Pipes and Ditch, New Culvert
            Across Crane Road, and Crane Ditch Stabilized
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: Yes
     Time Step Optimizer: 0                Storm Dur(hrs): 24
Drop Structure Optimizer: 0               Rain Amount(in): 7.5
     Sim Start Time(hrs): 0                 Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                  To Hour:   PInc(min):
        0          60                          30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE     [11/20/02]
```

Alternative 6 - Crane Road Ditch Stabilized

********** Input Report **********
--------Class: Weir--------
Name: PLATTW From Node: PLATT
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft): 5
Left Side Slope(h/v): 1
Right Side Slope(h/v): 1
Invert(ft): 23.5
Control Elev(ft): 23.5
StructOpeningDim(ft): 9999 TABLE
Bottom Clip(ft): 0
Top Clip(ft): 0
Weir Discharge Coef: 2
Orifice Discharge Coef: 0

--------Class: Weir--------
Name: WWILDW From Node: WWILD
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft): 5
Left Side Slope(h/v): 1
Right Side Slope(h/v): 1
Invert(ft): 23.5
Control Elev(ft): 23.5
StructOpeningDim(ft): 9999 TABLE
Bottom Clip(ft): 0
Top Clip(ft): 0
Weir Discharge Coef: 2
Orifice Discharge Coef: 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [7]
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Alternative 6 - Crane Road Ditch Stabilized

********** Input Report **********

--------Class: Channel----------

Name: AZALEAS	From Node: PARK		Length(ft): 175	
Group: BASE	To Node: CRANENW		Count: 1	
	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.29	22.77	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	1.667	3.5		
LSdSlp(h/v):	1.5	2		
RSdSlp(h/v):	1.5	2		

--------Class: Channel----------

Name: CRANED	From Node: CRANES		Length(ft): 270	
Group: BASE	To Node: C1		Count: 1	
	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	22.7	20.05	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	3	3		
LSdSlp(h/v):	2	2		
RSdSlp(h/v):	2	2		

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [6]

Alternative 6 - Crane Road Ditch Stabilized

********** Input Report **********

--------Class: Pipe----------

Name:	WILDC	From Node:	EWILD	Length(ft): 25
Group:	BASE	To Node:	WWILD	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.4
Invert(ft):	23.66	23.64	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Culvert more than half full of sediment

--------Class: Channel----------

Name:	AZALEAN	From Node:	GHOST	Length(ft): 220
Group:	BASE	To Node:	PARK	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.5	23.29	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.83	1.667		
LSdSlp(h/v):	1.5	1.5		
RSdSlp(h/v):	1.5	1.5		

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [5]

Alternative 6 - Crane Road Ditch Stabilized

********** Input Report **********

--------Class: Pipe----------

Name:	CRANECC	From Node:	CRANENW	Length(ft): 90
Group:	BASE	To Node:	CRANES	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	30	30	Flow:	Both
Rise(in):	30	30	Entrance Loss Coef:	0.4
Invert(ft):	22.77	22.7	Exit Loss Coef:	1
Manning's N:	0.013	0.013	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

--------Class: Pipe----------

Name:	OUTC	From Node:	C1	Length(ft): 20
Group:	BASE	To Node:	OUTFALL	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	36	36	Flow:	Both
Rise(in):	36	36	Entrance Loss Coef:	0.7
Invert(ft):	20.05	18.56	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope 2 2

Downstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope 2 2

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [4]

Alternative 6 - Crane Road Ditch Stabilized

********** Input Report **********

--------Class: Basin--------

Basin: PARK Node: PARK Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 0.59 Concentration Time(min): 20
Curve #: 74 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: PLATT Node: PLATT Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 5 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin--------

Basin: WWILD Node: WWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.7 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [3]

Alternative 6 - Crane Road Ditch Stabilized

********** Input Report **********

--------Class: Basin--------

Basin: CRANENE Node: CRANENW Status: On Site Type: SCS Unit Hydr
Group: BASE
  Unit Hydrograph: UH256 Peak Factor: 256
  Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
  Area(ac): 1.25 Concentration Time(min): 25
  Curve #: 77 Time Shift(hrs): 0
  DCIA(%): 0

--------Class: Basin--------

Basin: CRANENW Node: CRANENW Status: On Site Type: SCS Unit Hydr
Group: BASE
  Unit Hydrograph: UH256 Peak Factor: 256
  Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
  Area(ac): 0.9 Concentration Time(min): 25
  Curve #: 77 Time Shift(hrs): 0
  DCIA(%): 0

--------Class: Basin--------

Basin: CRANES Node: CRANES Status: On Site Type: SCS Unit Hydr
Group: BASE
  Unit Hydrograph: UH256 Peak Factor: 256
  Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
  Area(ac): 2.84 Concentration Time(min): 26
  Curve #: 77 Time Shift(hrs): 0
  DCIA(%): 0

--------Class: Basin--------

Basin: EWILD Node: EWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
  Unit Hydrograph: UH256 Peak Factor: 256
  Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
  Area(ac): 2.22 Concentration Time(min): 26
  Curve #: 78 Time Shift(hrs): 0
  DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [2]

Alternative 6 - Crane Road Ditch Stabilized

********** Input Report **********

--------Class: Node----------

Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 16
Group: BASE Warn Stage(ft): 26
Comment:

Time(hrs)	Stage(ft)
0	16
12	17.7
13	22.8
24	16

--------Class: Node----------

Name: PARK Base Flow(cfs): 0 Init Stage(ft): 23.19
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.19	0
23.3	0.1
25	0.59

--------Class: Node----------

Name: PLATT Base Flow(cfs): 0 Init Stage(ft): 23.17
Group: BASE Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.17	0
24	0.15
25.11	0.27
25.5	0.7
26.5	5

--------Class: Node----------

Name: WWILD Base Flow(cfs): 0 Init Stage(ft): 23.29
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.29	0
23.66	0.1
24	0.25
25	0.4
26	1.7

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [1]

Alternative 6 - Crane Road Ditch Stabilized
Input Report

********** Input Report **********

--------Class: Node----------

Name: C1 Base Flow(cfs): 0 Init Stage(ft): 22.32
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
22.32	0.01
25	0.1

--------Class: Node----------

Name: CRANENW Base Flow(cfs): 0 Init Stage(ft): 22.77
Group: BASE Warn Stage(ft): 25.5
Comment:

Stage(ft)	Area(ac)
22.77	0
23.5	0.05
24	0.1
25	0.3
25.5	0.9

--------Class: Node----------

Name: CRANES Base Flow(cfs): 0 Init Stage(ft): 22.8
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
22.8	0
23.5	0.1
25	0.5

--------Class: Node----------

Name: EWILD Base Flow(cfs): 0 Init Stage(ft): 23.66
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.66	0
25	0.7
26	2.22

--------Class: Node----------

Name: GHOST Base Flow(cfs): 0 Init Stage(ft): 23.94
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
23.94	0.01
25	0.1

Mean Annual Event - Node Maximum Conditions Report
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Stabilized

********** Node Maximum Conditions - ALT6-MA **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.01	22.82	26.00	-0.3641	2781.23	13.24	9.39	0.00	20.00
CRANENW	BASE	13.51	24.12	25.50	0.0438	6228.00	12.69	9.78	13.51	5.65
CRANES	BASE	13.22	23.36	25.00	-0.0177	4642.12	13.14	7.02	13.24	9.39
EWILD	BASE	13.40	24.53	26.00	0.0098	19890.53	12.17	3.08	13.89	1.13
GHOST	BASE	13.09	24.47	25.00	-0.1436	2970.93	12.94	4.89	13.02	4.86
OUTFALL	BASE	13.00	22.80	26.00	0.1114	5.21	0.00	20.00	0.00	0.00
PARK	BASE	13.53	24.13	26.50	0.0173	15772.44	12.95	5.18	12.69	8.05
PLATT	BASE	12.97	24.52	26.50	0.0478	8973.69	12.25	6.34	12.41	4.38
WWILD	BASE	13.16	24.49	26.00	0.0372	14133.32	12.25	2.74	17.18	2.39

10-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Stabilized

********** Node Maximum Conditions - ALT6-10Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.03	22.87	26.00	-0.3641	2916.12	13.42	16.44	0.00	20.00
CRANENW	BASE	13.47	24.67	25.50	0.0352	11185.90	13.03	10.72	13.47	10.45
CRANES	BASE	13.23	23.64	25.00	0.0243	7294.87	12.79	13.29	13.42	16.44
EWILD	BASE	13.42	24.98	26.00	0.0198	30070.13	12.17	6.04	14.28	2.13
GHOST	BASE	13.13	24.89	25.00	-0.1436	4690.30	12.73	9.64	12.81	9.41
OUTFALL	BASE	13.00	22.80	26.00	0.0891	4.97	0.00	20.00	0.00	0.00
PARK	BASE	13.47	24.68	26.50	0.0236	23006.56	12.73	10.16	13.63	8.78
PLATT	BASE	12.93	24.97	26.50	0.0478	11085.11	12.25	12.39	12.36	9.46
WWILD	BASE	13.19	24.93	26.00	0.0372	16974.25	12.12	4.14	14.04	3.81

25-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Stabilized

********** Node Maximum Conditions - ALT6-25Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.06	22.93	26.00	-0.3641	3056.31	13.51	23.56	0.00	20.00
CRANENW	BASE	13.44	25.00	25.50	-0.0425	14098.69	12.86	14.90	13.44	13.61
CRANES	BASE	13.22	23.80	25.00	0.0270	9179.88	12.35	18.03	13.51	23.56
EWILD	BASE	13.60	25.25	26.00	0.0195	47089.16	12.17	8.29	14.80	2.99
GHOST	BASE	13.23	25.15	25.00	-0.1436	5735.26	12.60	12.92	12.72	12.50
OUTFALL	BASE	13.01	22.80	26.00	0.1013	4.41	0.00	20.00	0.00	0.00
PARK	BASE	13.49	25.00	26.50	0.0220	27149.10	12.60	13.65	13.49	11.47
PLATT	BASE	12.94	25.23	26.50	0.0478	17720.69	12.25	17.00	12.34	13.24
WWILD	BASE	13.32	25.19	26.00	0.0372	28067.64	12.17	4.92	14.41	4.99

100-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Stabilized

********** Node Maximum Conditions - ALT6-100 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C1	BASE	13.09	23.03	26.00	-0.3641	3262.73	13.64	29.57	12.41	24.32
CRANENW	BASE	13.55	25.32	25.50	0.0450	30996.21	12.90	23.84	13.55	16.63
CRANES	BASE	13.21	23.95	25.00	0.0280	10979.61	12.32	24.59	13.64	29.57
EWILD	BASE	13.84	25.53	26.00	0.0187	65704.29	12.17	11.41	15.77	3.79
GHOST	BASE	13.55	25.43	25.00	-0.1436	6871.02	12.45	15.92	12.89	15.60
OUTFALL	BASE	13.00	22.80	26.00	0.1267	3.71	12.41	24.32	0.00	0.00
PARK	BASE	13.65	25.31	26.50	0.0212	31311.67	12.46	17.26	12.90	18.85
PLATT	BASE	13.04	25.52	26.50	0.0478	33492.47	12.25	23.37	12.35	16.75
WWILD	BASE	13.51	25.46	26.00	0.0372	43723.40	12.17	6.47	15.03	5.78

Mean Annual Event - Link Maximum Conditions Report
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Stabilized

********** Link Maximum Conditions - ALT6-MA **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	13.02	4.86	0.98	13.09	24.47	13.53	24.13
AZALEAS	BASE	12.69	8.05	5.21	13.53	24.13	13.51	24.12
CRANECC	BASE	13.51	5.65	0.31	13.51	24.12	13.51	23.48
CRANED	BASE	13.24	9.39	2.57	13.22	23.36	13.01	22.82
OUTC	BASE	0.00	20.00	20.00	13.01	22.82	13.00	22.80
PLATTW	BASE	12.41	4.38	-3.12	12.97	24.52	13.09	24.47
WILDC	BASE	13.89	1.13	-0.09	13.40	24.53	13.16	24.49
WWILDW	BASE	17.18	2.39	-3.12	13.16	24.49	13.09	24.47

10-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Stabilized

********** Link Maximum Conditions - ALT6-10Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.81	9.41	0.98	13.13	24.89	13.47	24.68
AZALEAS	BASE	13.63	8.78	-5.44	13.47	24.68	13.47	24.67
CRANECC	BASE	13.47	10.45	0.26	13.47	24.67	13.47	23.78
CRANED	BASE	13.42	16.44	4.55	13.23	23.64	13.03	22.87
OUTC	BASE	0.00	20.00	20.00	13.03	22.87	13.00	22.80
PLATTW	BASE	12.36	9.46	-3.12	12.93	24.97	13.13	24.89
WILDC	BASE	14.28	2.13	0.27	13.42	24.98	13.19	24.93
WWILDW	BASE	14.04	3.81	-3.12	13.19	24.93	13.13	24.89

25-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Stabilized

********** Link Maximum Conditions - ALT6-25Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.72	12.50	0.98	13.23	25.15	13.49	25.00
AZALEAS	BASE	13.49	11.47	14.47	13.49	25.00	13.44	25.00
CRANECC	BASE	13.44	13.61	-0.32	13.44	25.00	13.44	23.94
CRANED	BASE	13.51	23.56	-7.41	13.22	23.80	13.06	22.93
OUTC	BASE	0.00	20.00	20.00	13.06	22.93	13.01	22.80
PLATTW	BASE	12.34	13.24	-3.12	12.94	25.23	13.23	25.15
WILDC	BASE	14.80	2.99	0.44	13.60	25.25	13.32	25.19
WWILDW	BASE	14.41	4.99	-3.12	13.32	25.19	13.23	25.15

100-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Stabilized

********** Link Maximum Conditions - ALT6-100 **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.89	15.60	-1.18	13.55	25.43	13.65	25.31
AZALEAS	BASE	12.90	18.85	27.82	13.65	25.31	13.55	25.32
CRANECC	BASE	13.55	16.63	-0.27	13.55	25.32	13.55	24.08
CRANED	BASE	13.64	29.57	-9.47	13.21	23.95	13.09	23.03
OUTC	BASE	12.41	24.32	20.00	13.09	23.03	13.00	22.80
PLATTW	BASE	12.35	16.75	-3.12	13.04	25.52	13.55	25.43
WILDC	BASE	15.77	3.79	0.44	13.84	25.53	13.51	25.46
WWILDW	BASE	15.03	5.78	-3.12	13.51	25.46	13.55	25.43

Platt Circle ICPR Modeling Reports

Alternative 7

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [1]

Alternative 7 - Crane Ditch Pipe System
Input Report

********** Input Report **********
--------Class: Node----------
Name: CRANENW Base Flow(cfs): 0 Init Stage(ft): 22.77
Group: BASE Warn Stage(ft): 25.5
Comment:

Stage(ft)	Area(ac)
22.77	0
23.5	0.05
24	0.1
25	0.3
25.5	0.9

--------Class: Node----------
Name: CRANES Base Flow(cfs): 0 Init Stage(ft): 22.8
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
22.8	0
23.5	0.1
25	0.5

--------Class: Node----------
Name: EWILD Base Flow(cfs): 0 Init Stage(ft): 23.66
Group: BASE Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.66	0
25	0.7
26	2.22

--------Class: Node----------
Name: GHOST Base Flow(cfs): 0 Init Stage(ft): 23.94
Group: BASE Warn Stage(ft): 25
Comment:

Stage(ft)	Area(ac)
23.94	0.01
25	0.1

--------Class: Node----------
Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 16
Group: BASE Warn Stage(ft): 26
Comment:

Time(hrs)	Stage(ft)
0	16
12	17.7
13	22.8
24	16

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [2]

Alternative 7 - Crane Ditch Pipe System

********** Input Report **
--------Class: Node--
   Name: PARK   Base Flow(cfs): 0   Init Stage(ft): 23.19
  Group: BASE   Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.19	0
23.3	0.1
25	0.59

--------Class: Node--
   Name: PLATT   Base Flow(cfs): 0   Init Stage(ft): 23.17
  Group: BASE   Warn Stage(ft): 26.5
Comment:

Stage(ft)	Area(ac)
23.17	0
24	0.15
25.11	0.27
25.5	0.7
26.5	5

--------Class: Node--
   Name: WWILD   Base Flow(cfs): 0   Init Stage(ft): 23.29
  Group: BASE   Warn Stage(ft): 26
Comment:

Stage(ft)	Area(ac)
23.29	0
23.66	0.1
24	0.25
25	0.4
26	1.7

--------Class: Basin---
Basin: CRANENE   Node: CRANENW   Status: On Site   Type: SCS Unit Hydr
Group: BASE
    Unit Hydrograph: UH256   Peak Factor: 256
      Rainfall File: SCSII-24   Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
           Area(ac): 1.25   Concentration Time(min): 25
            Curve #: 77   Time Shift(hrs): 0
            DCIA(%): 0

Alternative 7 - Crane Ditch Pipe System

********** Input Report **
--------Class: Basin--
Basin: CRANENW Node: CRANENW Status: On Site Type: SCS Unit Hydr
Group: BASE
  Unit Hydrograph: UH256 Peak Factor: 256
  Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
  Area(ac): 0.9 Concentration Time(min): 25
  Curve #: 77 Time Shift(hrs): 0
  DCIA(%): 0

--------Class: Basin--
Basin: CRANES Node: CRANES Status: On Site Type: SCS Unit Hydr
Group: BASE
  Unit Hydrograph: UH256 Peak Factor: 256
  Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
  Area(ac): 2.84 Concentration Time(min): 26
  Curve #: 77 Time Shift(hrs): 0
  DCIA(%): 0

--------Class: Basin--
Basin: EWILD Node: EWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
  Unit Hydrograph: UH256 Peak Factor: 256
  Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
  Area(ac): 2.22 Concentration Time(min): 26
  Curve #: 78 Time Shift(hrs): 0
  DCIA(%): 0

--------Class: Basin--
Basin: PARK Node: PARK Status: On Site Type: SCS Unit Hydr
Group: BASE
  Unit Hydrograph: UH256 Peak Factor: 256
  Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
  Area(ac): 0.59 Concentration Time(min): 20
  Curve #: 74 Time Shift(hrs): 0
  DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [4]

Alternative 7 - Crane Ditch Pipe System

********** Input Report **********

--------Class: Basin----------

Basin: PLATT Node: PLATT Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 5 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin----------

Basin: WWILD Node: WWILD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH256 Peak Factor: 256
Rainfall File: SCSII-24 Storm Duration(hrs): 24
Rainfall Amount(in): 4.8
Area(ac): 1.7 Concentration Time(min): 30
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Pipe----------

Name: CRANECC From Node: CRANENW Length(ft): 90
Group: BASE To Node: CRANES Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	30	30	Flow:	Both
Rise(in):	30	30	Entrance Loss Coef:	0.4
Invert(ft):	22.77	22.8	Exit Loss Coef:	1
Manning's N:	0.013	0.013	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.21) [5]

Alternative 7 - Crane Ditch Pipe System

********** Input Report **********
--------Class: Pipe----------

Name:	CRANEDC	From Node:	CRANES	Length(ft): 290
Group:	BASE	To Node:	OUTFALL	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	30	30	Flow:	Both
Rise(in):	30	30	Entrance Loss Coef:	0.4
Invert(ft):	22.7	20.05	Exit Loss Coef:	1
Manning's N:	0.012	0.012	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular: Smooth tapered inlet throat 54 1

Downstream FHWA Inlet Edge Description:
Circular: Smooth tapered inlet throat 54 1

--------Class: Pipe----------

Name:	WILDC	From Node:	EWILD	Length(ft): 25
Group:	BASE	To Node:	WWILD	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	0.4
Invert(ft):	23.66	23.64	Exit Loss Coef:	1
Manning's N:	0.024	0.024	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Downstream FHWA Inlet Edge Description:
Circular CMP: Headwall 2 1

Culvert more than half full of sediment

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Alternative 7 - Crane Ditch Pipe System

********** Input Report **

--------Class: Channel----------

Name: AZALEAN	From Node: GHOST		Length(ft): 220	
Group: BASE	To Node: PARK		Count: 1	
	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.5	23.29	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	2.83	1.667		
LSdSlp(h/v):	1.5	1.5		
RSdSlp(h/v):	1.5	1.5		

--------Class: Channel----------

Name: AZALEAS	From Node: PARK		Length(ft): 175	
Group: BASE	To Node: CRANENW		Count: 1	
	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Equation:	Aver Conveyance
Invert(ft):	23.29	22.77	Flow:	Both
TclpInitZ(ft):	9999	9999	Eddy Contrac Coef:	0
Manning's N:	0.027	0.027	Eddy Expans Coef:	0
TClip(ft):	0	0	Entrance Loss Coef:	0
BClip(ft):	0	0	Exit Loss Coef:	0
Main Xsec:			Outlet Cntrl Spec:	Use dc or tw
AxEl1(ft):			Inlet Cntrl Spec:	Use dn
Aux Xsec1:			Stabilizer Option:	None
AxEl2(ft):				
Aux Xsec2:				
TWidth(ft):				
Depth(ft):				
BWidth(ft):	1.667	3.5		
LSdSlp(h/v):	1.5	2		
RSdSlp(h/v):	1.5	2		

Alternative 7 - Crane Ditch Pipe System

********** Input Report **********

--------Class: Weir----------

Name: PLATTW From Node: PLATT
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft): 5
Left Side Slope(h/v): 1
Right Side Slope(h/v): 1
Invert(ft): 23.5
Control Elev(ft): 23.5
StructOpeningDim(ft): 9999 TABLE
Bottom Clip(ft): 0
Top Clip(ft): 0
Weir Discharge Coef: 2
Orifice Discharge Coef: 0

--------Class: Weir----------

Name: WWILDW From Node: WWILD
Group: BASE To Node: GHOST
Count: 1

Type: Mavis Flow: Both Geometry: Trapezoidal

Bottom Width(ft): 5
Left Side Slope(h/v): 1
Right Side Slope(h/v): 1
Invert(ft): 23.5
Control Elev(ft): 23.5
StructOpeningDim(ft): 9999 TABLE
Bottom Clip(ft): 0
Top Clip(ft): 0
Weir Discharge Coef: 2
Orifice Discharge Coef: 0

```
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     Alternative 7 - Crane Ditch Pipe System


     ********** Input Report ************************************************
     --------Class: Simulation-----------------------------------------------
  C:\ICPR2\MVILL\ALT7\ALT7-MA
  Execution: Both
     Header: Mean Annual Event
             Maintained/Cleaned Pipes and Ditch, New Culvert
             Across Crane Road, and Crane Ditch Piped
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
         Max Delta Z (ft): 1
           Delta Z Factor: 0.05          Override Defaults: No
      Time Step Optimizer: 0
Drop Structure Optimizer: 0
      Sim Start Time(hrs): 0
        Sim End Time(hrs): 30
       Min Calc Time(sec): 15
       Max Calc Time(sec): 300
         To Hour:   PInc(min):                To Hour:   PInc(min):
         0          60                        30         5
         10         15
         12         5
         13         15
         15         60
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE      [11/19/02]
     --------Class: Simulation-----------------------------------------------
  C:\ICPR2\MVILL\ALT7\ALT7-10Y
  Execution: Both
     Header: 10-Year Event
             Maintained/Cleaned Pipes and Ditch, New Culvert
             Across Crane Road, and Crane Ditch Piped
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
         Max Delta Z (ft): 1
           Delta Z Factor: 0.05          Override Defaults: Yes
      Time Step Optimizer: 0               Storm Dur(hrs): 24
Drop Structure Optimizer: 0              Rain Amount(in): 7.5
      Sim Start Time(hrs): 0                Rainfall File: SCSII-24
        Sim End Time(hrs): 30
       Min Calc Time(sec): 15
       Max Calc Time(sec): 300
         To Hour:   PInc(min):                To Hour:   PInc(min):
         0          60                        30         5
         10         15
         12         5
         13         15
         15         60
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE      [11/19/02]
```

Alternative 7 - Crane Ditch Pipe System

```
    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 C:\ICPR2\MVILL\ALT7\ALT7-25Y
 Execution: Both
    Header: 25-Year Event
            Maintained/Cleaned Pipes and Ditch, New Culvert
            Across Crane Road, and Crane Ditch Piped
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: Yes
     Time Step Optimizer: 0                Storm Dur(hrs): 24
Drop Structure Optimizer: 0               Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                 Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        0          60                         30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [11/19/02]
    --------Class: Simulation-----------------------------------------------------------
 C:\ICPR2\MVILL\ALT7\ALT7-100
 Execution: Both
    Header: 100-Year Event
            Maintained/Cleaned Pipes and Ditch, New Culvert
            Across Crane Road, and Crane Ditch Piped
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: Yes
     Time Step Optimizer: 0                Storm Dur(hrs): 24
Drop Structure Optimizer: 0               Rain Amount(in): 12.25
     Sim Start Time(hrs): 0                 Rainfall File: SCSII-24
       Sim End Time(hrs): 30
      Min Calc Time(sec): 15
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        0          60                         30         5
        10         15
        12         5
        13         15
        15         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [11/19/02]
```

Mean Annual Event - Node Maximum Conditions Report
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Piped

********** Node Maximum Conditions - ALT7-MA **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
CRANENW	BASE	13.44	24.18	25.50	0.0497	6735.83	13.42	10.91	13.44	5.71
CRANES	BASE	13.55	23.94	25.00	0.0212	9942.97	13.44	6.97	13.55	6.80
EWILD	BASE	13.44	24.54	26.00	0.0093	19938.14	12.17	3.08	13.98	1.12
GHOST	BASE	13.11	24.47	25.00	-0.1436	2986.78	13.42	7.83	12.99	4.78
OUTFALL	BASE	13.01	22.79	26.00	0.0891	330.84	13.55	6.80	0.00	0.00
PARK	BASE	13.42	24.20	26.50	0.0182	16635.96	12.92	5.10	13.42	9.96
PLATT	BASE	12.99	24.52	26.50	0.0478	8980.76	12.25	6.33	12.40	4.38
WWILD	BASE	13.22	24.50	26.00	0.0372	14153.44	12.25	2.74	13.42	3.66

10-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Piped

********** Node Maximum Conditions - ALT7-10Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
CRANENW	BASE	13.45	24.76	25.50	0.0406	11998.83	16.32	10.37	13.45	10.64
CRANES	BASE	13.40	24.45	25.00	0.0282	15782.99	12.91	13.35	13.40	12.59
EWILD	BASE	13.49	25.00	26.00	0.0223	30536.62	12.17	6.03	14.46	2.10
GHOST	BASE	13.18	24.93	25.00	-0.1436	4829.67	12.61	9.05	12.91	9.55
OUTFALL	BASE	13.00	22.80	26.00	0.1393	346.14	13.40	12.59	0.00	0.00
PARK	BASE	13.49	24.75	26.50	0.0336	23855.99	12.91	10.21	16.32	10.01
PLATT	BASE	13.02	24.98	26.50	0.0478	11168.85	12.24	12.38	12.35	9.42
WWILD	BASE	13.31	24.95	26.00	0.0372	17133.32	12.12	4.14	16.48	3.62

25-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Piped

********** Node Maximum Conditions - ALT7-25Y **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
CRANENW	BASE	13.34	25.09	25.50	0.0368	18823.13	12.13	11.19	13.61	13.58
CRANES	BASE	13.31	24.73	25.00	0.0325	18974.77	12.78	17.47	13.31	16.44
EWILD	BASE	13.67	25.28	26.00	0.0207	48803.30	12.17	8.28	15.02	3.00
GHOST	BASE	13.34	25.20	25.00	-0.1436	5957.91	12.48	12.23	12.67	11.91
OUTFALL	BASE	13.00	22.80	26.00	0.1114	341.13	13.31	16.44	0.00	0.00
PARK	BASE	13.45	25.06	26.50	0.0292	27961.48	12.59	13.15	17.88	8.72
PLATT	BASE	13.04	25.26	26.50	0.0478	18930.30	12.24	16.98	12.34	13.17
WWILD	BASE	13.43	25.22	26.00	0.0372	30040.12	12.17	4.87	14.41	4.77

100-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Piped

********** Node Maximum Conditions - ALT7-100 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
CRANENW	BASE	13.52	25.37	25.50	0.0489	33595.43	13.14	41.16	13.87	15.75
CRANES	BASE	13.19	24.99	25.00	0.0259	21953.92	12.28	21.92	13.19	20.51
EWILD	BASE	13.92	25.56	26.00	0.0215	67737.75	12.17	11.41	16.04	3.75
GHOST	BASE	13.38	25.47	25.00	-0.1436	7026.73	13.19	18.64	12.47	13.67
OUTFALL	BASE	13.02	22.79	26.00	0.1267	322.53	13.19	20.51	0.00	0.00
PARK	BASE	13.62	25.40	26.50	0.0294	32458.61	12.38	15.96	13.62	38.45
PLATT	BASE	13.19	25.55	26.50	0.0478	39713.70	12.24	23.34	12.34	16.56
WWILD	BASE	13.65	25.51	26.00	0.0372	46146.48	12.17	6.41	15.28	8.71

Mean Annual Event - Link Maximum Conditions Report
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Piped

********** Link Maximum Conditions - ALT7-MA **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.99	4.78	0.98	13.11	24.47	13.42	24.20
AZALEAS	BASE	13.42	9.96	-6.89	13.42	24.20	13.44	24.18
CRANECC	BASE	13.44	5.71	0.60	13.44	24.18	13.55	23.94
CRANEDC	BASE	13.55	6.80	0.12	13.55	23.94	13.55	20.73
PLATTW	BASE	12.40	4.38	-3.12	12.99	24.52	13.11	24.47
WILDC	BASE	13.98	1.12	-0.06	13.44	24.54	13.22	24.50
WWILDW	BASE	13.42	3.66	-3.12	13.22	24.50	13.11	24.47

10-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Piped

********** Link Maximum Conditions - ALT7-10Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.91	9.55	0.98	13.18	24.93	13.49	24.75
AZALEAS	BASE	16.32	10.01	7.44	13.49	24.75	13.45	24.76
CRANECC	BASE	13.45	10.64	0.48	13.45	24.76	13.40	24.45
CRANEDC	BASE	13.40	12.59	0.26	13.40	24.45	13.40	20.98
PLATTW	BASE	12.35	9.42	-3.12	13.02	24.98	13.18	24.93
WILDC	BASE	14.46	2.10	0.41	13.49	25.00	13.31	24.95
WWILDW	BASE	16.48	3.62	-3.12	13.31	24.95	13.18	24.93

25-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Piped

********** Link Maximum Conditions - ALT7-25Y **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.67	11.91	0.98	13.34	25.20	13.45	25.06
AZALEAS	BASE	17.88	8.72	-7.60	13.45	25.06	13.34	25.09
CRANECC	BASE	13.61	13.58	0.40	13.34	25.09	13.31	24.73
CRANEDC	BASE	13.31	16.44	0.29	13.31	24.73	13.31	21.13
PLATTW	BASE	12.34	13.17	-3.12	13.04	25.26	13.34	25.20
WILDC	BASE	15.02	3.00	0.42	13.67	25.28	13.43	25.22
WWILDW	BASE	14.41	4.77	-3.12	13.43	25.22	13.34	25.20

100-Year Event
Maintained/Cleaned Pipes and Ditch, New Culvert
Across Crane Road, and Crane Ditch Piped

********** Link Maximum Conditions - ALT7-100 **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
AZALEAN	BASE	12.47	13.67	2.70	13.38	25.47	13.62	25.40
AZALEAS	BASE	13.62	38.45	-8.86	13.62	25.40	13.52	25.37
CRANECC	BASE	13.87	15.75	0.51	13.52	25.37	13.19	24.99
CRANEDC	BASE	13.19	20.51	0.31	13.19	24.99	13.19	21.27
PLATTW	BASE	12.34	16.56	-3.12	13.19	25.55	13.38	25.47
WILDC	BASE	16.04	3.75	0.27	13.92	25.56	13.65	25.51
WWILDW	BASE	15.28	8.71	-3.12	13.65	25.51	13.38	25.47

APPENDIX C
COST SUMMARY TABLES FOR RECOMMENDED PROJECTS

Capital Cost Summary of Recommended Projects

Project Name	Total Project Cost	
Dayton Boulevard	$	10,218.00
Town Garage Ditch / Savannah Drive	$	5,476.90
Canal Road	$	858.00
Norman Drive	$	11,801.40
Platt Circle	$	123,648.00
Live Oak Avenue	$	747.50
Flamingo Road	$	1,859.00
Wildflower Meadow	$	1,690.00
Acacia Avenue	$	4,471.20
Cajeput Circle	$	676.00
Total Cost	$	161,446.00

Capital Cost Summary for Dayton Boulevard

Item	Unit	Quantity	Length	Unit Cost	Total Cost
Ditch Regrading / Sediment Removal	C.Y.	45		$ 130.00	$ 5,850.00
Ditch Clearing	S.Y.	900		$ 0.90	$ 810.00
Headwalls, Mitered	each	3		$ 400.00	$ 1,200.00
				Subtotal	$ 7,860.00
				Contingency (20%)	$ 1,572.00
				Mobilization (10%)	$ 786.00
				Total Cost	$10,218.00

Capital Cost Summary for Town Garage Ditch / Savannah Drive

Item	Unit	Quantity	Length	Unit Cost	Total Cost
Ditch Regrading / Sediment Removal	C.Y.	22		$ 130.00	$ 2,860.00
Sodding Town Garage Ditch	S.Y	335		$ 3.30	$ 1,105.50
Sodding Along Savannah Drive	S.Y	75		$ 3.30	$ 247.50
				Subtotal	$ 4,213.00
				Contingency (20%)	$ 842.60
				Mobilization (10%)	$ 421.30
				Total Cost	$ 5,476.90

Capital Cost Summary for Canal Road

Item	Unit	Quantity	Length	Unit Cost	Total Cost
Ditch Regrading / Sediment Removal	C.Y.	2		$ 130.00	$ 260.00
Headwalls, Mitered	each	1		$ 400.00	$ 400.00
				Subtotal	$ 660.00
				Contingency (20%)	$ 132.00
				Mobilization (10%)	$ 66.00
				Total Cost	$ 858.00

Capital Cost Summary for Norman Drive

Item	Unit	Quantity	Length	Unit Cost	Total Cost
Ditch Regrading / Sediment Removal	C.Y.	48		$ 130.00	$ 6,240.00
Sodding	S.Y	860		$ 3.30	$ 2,838.00
				Subtotal	$ 9,078.00
				Contingency (20%)	$ 1,815.60
				Mobilization (10%)	$ 907.80
				Total Cost	$11,801.40

Capital Cost Summary for Platt Circle

Item	Unit	Quantity	Length	Unit Cost	Total Cost
Ditch Regrading / Sediment Removal	C.Y.	20		$ 130.00	$ 2,600.00
Type C Drop Inlet	each	2		$ 1,800.00	$ 3,600.00
30 inch RCP Installed*	L.F.	1	90	$ 100.00	$ 9,000.00
30 inch HDPE Installed	L.F.	1	340	$ 37.00	$ 12,580.00
Remove Existing Culvert and Restore	S.Y	150		$ 60.00	$ 9,000.00
Baffle Box Installed	each	1		$28,000.00	$ 28,000.00
				Subtotal	$ 64,780.00
				Contingency (20%)	$ 12,956.00
				Engineering, Permitting, and Administration (30%)	$ 19,434.00
				Mobilization (10%)	$ 6,478.00
				Baffle Box Monitoring	$ 20,000.00
				Total Cost	$123,648.00

* Cost includes restoring Crane Road

Capital Cost Summary for Live Oak Avenue

Item	Unit	Quantity	Length	Unit Cost	Total Cost
Flap Gate Installed	each	1		$ 575.00	$ 575.00
				Subtotal	$ 575.00
				Contingency (20%)	$ 115.00
				Mobilization (10%)	$ 57.50
				Total Cost	$ 747.50

Capital Cost Summary for Flamingo Road

Item	Unit	Quantity	Length	Unit Cost	Total Cost
Ditch Regrading / Sediment Removal	C.Y.	11		$ 130.00	$ 1,430.00
				Subtotal	$ 1,430.00
				Contingency (20%)	$ 286.00
				Mobilization (10%)	$ 143.00
				Total Cost	$ 1,859.00

Capital Cost Summary for Wildflower Meadow

Item	Unit	Quantity	Length	Unit Cost	Total Cost
Ditch Regrading / Sediment Removal	C.Y.	10		$ 130.00	$ 1,300.00
Ditch Clearing	S.Y.	400		$ 0.90	$ 360.00
				Subtotal	$ 1,300.00
				Contingency (20%)	$ 260.00
				Mobilization (10%)	$ 130.00
				Total Cost	$ 1,690.00

Capital Cost Summary for Acacia Avenue

Item	Unit	Quantity	Length	Unit Cost	Total Cost
Ditch Cleaning	S.Y.	115		$ 3.30	$ 379.50
Add Mitered End Section to Outfall Structure	each	1		$ 400.00	$ 400.00
Reinstall 15 inch CMP and restore Road	L.F.	1	31	$ 65.00	$ 2,015.00
				Subtotal	$ 2,794.50
				Contingency (20%)	$ 558.90
				Engineering, Permitting, and Administration (30%)	$ 838.35
				Mobilization (10%)	$ 279.45
				Total Cost	$ 4,471.20

Capital Cost Summary for Cajeput Circle

Item	Unit	Quantity	Length	Unit Cost	Total Cost
Ditch Regrading / Sediment Removal	C.Y.	4		$ 130.00	$ 520.00
Sodding	S.Y	65		$ 3.30	$ 214.50
				Subtotal	$ 520.00
				Contingency (20%)	$ 104.00
				Mobilization (10%)	$ 52.00
				Total Cost	$ 676.00

APPENDIX D

MAINTENANCE INSPECTION FORM

OPEN CHANNEL MAINTENANCE INSPECTION FORM

Facility Number:_____ Date:_____ Time:_____

Subdivision Name:_____ Watershed:_____

Weather:_____ Inspector(s):_____

Date of Last Rainfall:_____ Amount:_____ Inches Streets:_____

Mapbook Location:_____ GPS Coordinates:_____

Property Classification: Residential • • Government • • Commercial • • Other:_____

Type of Practice (as designed): Dry Swale • • Wet Swale • • Grass Channel • •

As-built Plan Available? Yes • • No • •

Is Facility Inspectable? Yes • • No • • Why?_____ Comments Specific Location(s):_____

Scoring Breakdown:

N/A = Not Applicable
N/I = Not Investigated
0 = Not a Problem
1 = Monitor (potential for future problem exists)
2 = Routine Maintenance Required
3 = Immediate Repair Necessary

* **Use open space in each section to further explain scoring as needed**

1. Culverts						
Debris	N/A	N/I	0	1	2	3
Metal corrosion	N/A	N/I	0	1	2	3
Metal protective material	N/A	N/I	0	1	2	3
Metal misalignment or split seams / joints	N/A	N/I	0	1	2	3
Leaks	N/A	N/I	0	1	2	3
Concrete / masonry major spalling (exposed rebar)	N/A	N/I	0	1	2	3
Concrete / masonry minor spalling or parging (< 1")	N/A	N/I	0	1	2	3
Concrete / masonry joint failure	N/A	N/I	0	1	2	3
Concrete / masonry watertight	N/A	N/I	0	1	2	3
2. Soil / Filter Material						
Depth and material of layers	Depth:_____ Material:_____					
Test pit depth	Depth:_____					
Accumulation of debris and sediments	N/A	N/I	0	1	2	3
Accumulation of oil/ chemicals	N/A	N/I	0	1	2	3
Standing water			No		Yes	
Filter fabric	N/A	N/I	0	1	2	3
Other:	N/A	N/I	0	1	2	3
3. Underdrains						
Broken	N/A	N/I	0	1	2	3
Daylighted	N/A	N/I	0	1	2	3
Clogged	N/A	N/I	0	1	2	3
Other:	N/A	N/I	0	1	2	3

4. Check Dams						
Is clear of debris and trash	N/A	N/I	0	1	2	3
Sediment build up > 25% of original WQv	N/A	N/I	0	1	2	3
Undermined / eroded	N/A	N/I	0	1	2	3
Wood condition	N/A	N/I	0	1	2	3
Pea gravel diaphragm at correct level	N/A	N/I	0	1	2	3
5. Vegetation						
Density	N/A	N/I	0	1	2	3
Evidence of die-off	N/A	N/I	0	1	2	3
6. Upland Characteristics						
Accumulation of debris and trash	N/A	N/I	0	1	2	3
Erosion	N/A	N/I	0	1	2	3
7. Special Structures						
Vehicular access	N/A	N/I	0	1	2	3
Accumulation sediment / trash	N/A	N/I	0	1	2	3
8. Miscellaneous						
Complaints from local residents	N/A	N/I	0	1	2	3
Pea gravel diaphragm at correct level	N/A	N/I	0	1	2	3
Public hazards	N/A	N/I	0	1	2	3
Mosquitoes	N/A	N/I	0	1	2	3
Other:	N/A	N/I	0	1	2	3

N/A = Not Applicable
N/I = Not Investigated
0 = Not a Problem
1 = Monitor for Future Repairs
2 = Routine Repairs Needed
3 = Immediate Repair Needed

Overall Condition of Facility

Total number of concerns receiving a: (1)_____ - Need Monitoring
(2)_____ - Routine Repair
(3)_____ - Immediate Repair Needed

Inspector's Summary

Pictures **Clock/Degrees**

1. _____ _____
2. _____ _____
3. _____ _____
4. _____ _____
5. _____ _____
6. _____ _____
7. _____ _____
8. _____ _____
9. _____ _____
10. _____ _____
11. _____ _____
12. _____ _____
13. _____ _____
14. _____ _____
15. _____ _____

N/A = Not Applicable
N/I = Not Investigated
0 = Not a Problem
1 = Monitor for Future Repairs
2 = Routine Repairs Needed
3 = Immediate Repair Needed

Sketches, If Necessary:

N/A = Not Applicable
N/I = Not Investigated
0 = Not a Problem

1 = Monitor for Future Repairs
2 = Routine Repairs Needed
3 = Immediate Repair Needed