

**AMENDMENT NO. 1
to Pine Creek Drainage Basin Planning Study
as approved by City Council 12/18/88, &
as approved by El Paso County
Commissioner 8/25/88
July 17, 1992
Revised July 29, 1992**

Project No. 20-276

OBERING, WURTH & ASSOCIATES
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Professional Land Surveyors

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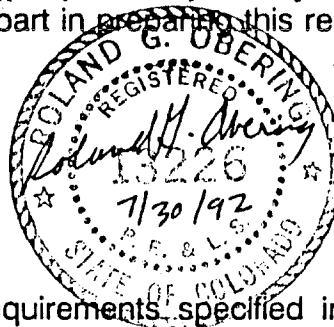
July 1992
Amendment No. 1 to Pine Creek
Drainage Basin Planning Study
Approved by City Council 12/18/88,
Approved by El Paso County
Commissioner 8/25/88
Project No. 20-276

ENGINEER'S STATEMENT

The attached amendment to the approved Drainage Basin Planning Study was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said amendment has been prepared to the criteria established by the City for drainage reports and said amendment does not change adopted policy, approved concepts or engineering requirements of the Basin Master Plan. I accept responsibility for any liability caused by the negligent acts, errors, or omissions on my part in preparing this report.

Roland G. Obering

Roland G. Obering, P.E. & P.L.S. Colorado 13226



DEVELOPER'S STATEMENT

The developer has read and will comply with all the requirements specified in this drainage report and plan.

VINTAGE COMMUNITIES, INC.
Business Name

[Signature]
By
DEVELOPMENT MANAGER
Title

7110 N. UNION BLVD.
Address
COLORADO SPRINGS, CO. 80920

CITY OF COLORADO SPRINGS

Filed in accordance with Section 15-3-906 of the Code of the City of Colorado Springs, 1980, as amended.

[Signature]
City Engineer

8/6/92
Date

Conditions:

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July 17, 1992
Revised July 29, 1992

City of Colorado Springs
Department of Planning & Development
Engineering Division
30 S. Nevada Avenue
P.O. Box 1575, Mail Code 435
Colorado Springs, CO 80901

Re: AMENDMENT NO. 1
to Pine Creek Drainage Basin
Planning Study as
approved by City Council
12/18/88, & as approved
by El Paso County
Commissioner 8/25/88

Attn: Mr. Gary Haynes
City Engineer

Project No. 20-276

Gentlemen:

This letter summarizes several design issues with respect to the Pine Creek Drainage Basin Planning Study (DBPS) specifically as they relate to the approved study and impact or are affected by the design of the Briargate Parkway Embankment for Detention Facility No. 1. This letter accompanies design plans for the embankment that illustrate storage configuration, water surface elevations, outlet structure and other elements of the facility. The letter is intended to take the form of an administrative amendment to the approved Drainage Basin Planning Study (DBPS). This is a technical amendment only, there are no changes to the DBPS in adopted policy, approved Concepts, or engineering requirements above Design Point 6 or below Design Point 9. The contents of this amendment will not affect approval or jurisdictional agencies, other than the City of Colorado Springs.

The study has been amended in two areas above Detention Facility No. 1 but the discharge will be at or less than the rate indicated in the study. The Developer of the Briargate project is in the process of preparing a new Land Use Master Plan for portions of the project lying within the Pine Creek basin. As a result of this replanning there will be a significant reduction in densities over much of the project. This will have a direct impact on Basin hydrology and hydraulics. Upon completion of the replanning, the basin will likely require an additional restudy in order to quantify impacts. Since this process

of replanning is a relatively lengthy one and the need to proceed with the Briargate Embankment is imminent, this amendment letter process is being pursued.

The amendment to the basin study relates to the functioning of the Briargate Embankment facility (Detention Facility No. 1). The master plan identified a required release rate as part of the overall basin stormwater management scheme. Final design of the facility has revealed that it would be extremely difficult to accommodate this release rate and provide adequate storage volume for several reasons, primarily topographic, geologic, and the existing grade on State Highway 83. These factors combined with the clogging factor and freeboard requirements necessitate the addition of a second upstream detention facility. Safety criteria, overflow, and discharge remain as indicated in the approved study.

The planned new detention facility located some 1.2 miles upstream near the confluence of the North and South forks of Pine Creek would reduce the design flow reaching Detention Facility No. 1 and allow the final design of the embankment to be accomplished within the constraints of the previously mentioned factors. The location of this facility has been considered based on 1"=100', 2' C.I. topographic mapping and it appears the required volume can be achieved by grading on the golf course driving range without creating a jurisdictional facility. This amendment to the Master Plan can be summarized as an adjustment of Detention Facility No. 1 based on final design considerations and the addition of a second Detention Facility (1A) to create a more manageable flow entering at the embankment facility.

Included in this amendment to the basin study is the re-routing of several subbasins in the Business Campus area and in the Penrose Area. This re-routing is occurring as a part of the Briargate Business Campus Filing No. 10 Drainage Report & Plan. The re-routing consists of having the "Temporary Re-Route 48" RCP" in the Business Campus be a permanent pipe routing for both the 10 year the 100 year overflow system. This routing had been assumed to follow the existing utility corridor in the approved Master Plan. Approximately 210 acres of the basin are proposed to be permanently diverted into the storage area above the Embankment. In addition, a portion of the Penrose area lying East of Chapel Hills Drive consisting of about 113 acres is proposed to be permanently routed to Pine Creek at Chapel Hills rather than along the Briargate Parkway alignment as indicated in the approved Master Plan.

The re-routing of these two systems impacts the lower basin hydraulics to some extent by requiring some additional storage volume in the lower Detention Facility No. 1. This additional volume requirement has been accommodated by increasing the volume of the new Detention Facility No. 1A. The net result, as previously indicated, is in adjustment to upstream facilities and subbasins but no impact to systems or flows below Facility No. 1, (Design Point No. 9).

A copy of a portion of the Basin Map for the Pine Creek DBPS accompanies this submittal. The new Detention Facility No. 1A has been shown in an approximate location. The revised subbasin boundaries are also shown along with the re-routed underground systems. Other elements of the original Basin Map remain unchanged on the plan although they will be affected by this amendment. It is proposed that the Pine Creek DBPS be updated when the replanning of the Basin is complete and this will include the amendments contained in this letter.

Hydrology and new hydraulic computations have been completed for this amendment. This consists of HEC-1 computer modeling results for the entire Basin. We also have re-modeled Detention Facility No. 1 using Haestad Methods Pond Pac software for the new pond configuration. A preliminary grading plan for Facility No. 1A has also been prepared based on the required volume necessary to assure that both facilities working together will attenuate stormwater flows to the previously incidated release rate from Facility No. 1. This support information is attached to this letter. Results of the new modeling for inflow/outflow, storage volume and staging elevations are summarized in the following table and on the partial Basin Plan.

FACILITY	Q₁₀₀ INFLOW (CFS)	Q₁₀₀ OUTFLOW (CFS)	STORAGE (Ac. Ft.)
No. 1 (Approved)	3269	2028	81
No. 2 (Amended)	2710	2028 (Max)	76
No. 1A (Amended)	2727	1323	69

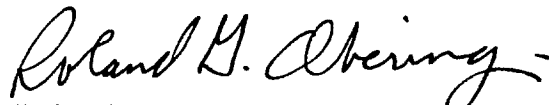
This amendment letter is intended to provide revised information relative to the Briargate Embankment Detention Facility No. 1 so the facility can be designed and approved in a configuration that varies from the approved DBPS. This is proposed to be

accomplished by addition of a second detention facility in a location upstream that will compensate for final design considerations for the Embankment facility and proposed upstream basin re-routing. All other aspects of the previously approved DBPS remain unchanged. There will be no impact to the ultimate downstream release. The outlet facility is proposed to be restricted during the first stage of construction to reduce discharge to historic in accordance with conditions of approval of the Master Plan.

On behalf of the Developer, Vintage Companies, we are requesting acceptance of this amendment to the DBPS so final design of the Embankment facility may be completed and approval received. Since Vintage controls the land associated with all elements of this amendment and a formal revision to the DBPS will follow the Land Planning revisions, this is a logical approach to allow the Embankment project to proceed.

If there are any questions regarding this request, please contact the undersigned.

Very truly yours,
OBERING, WURTH & ASSOCIATES


Roland G. Obering, P.E. & P.L.S.

RGO/p

Attachment:
Basin Map - Partial
Statements
Hydrologic Computations
Revised Basin Map - Partial

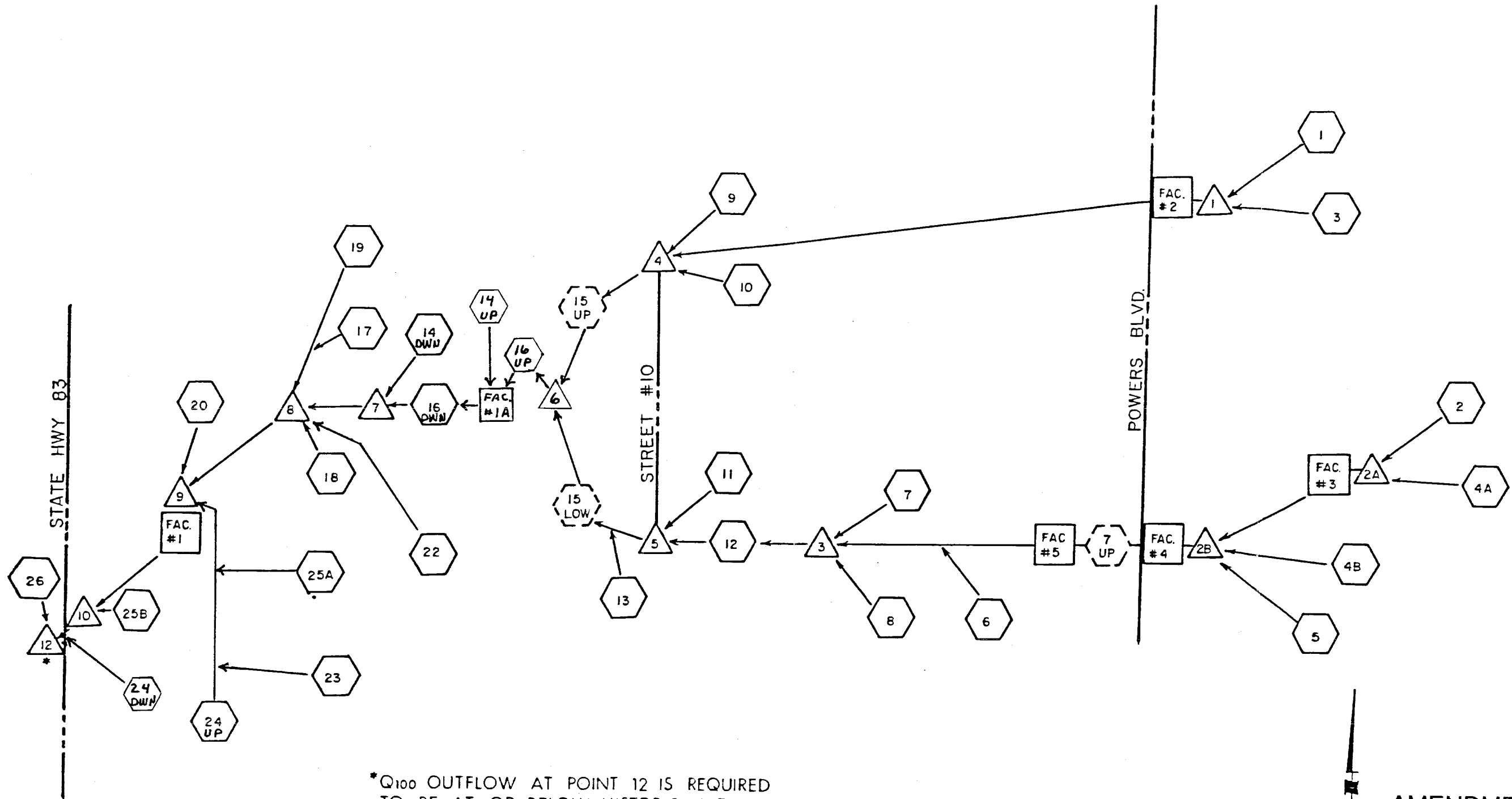
cc: Vintage Companies
Attn: Mr. Mike DeGrant

POINT	ACCUMULATIVE FLOW - 100 YR.-c.f.s.			COMMENTS
	HISTORIC	DEVELOPED NO DETENTION	DEVELOPED WITH DETENTION	
1	235	1011	in=944 out=289	Pond No. 2 at Powers Boulevard (North Fork)
2A	177	672	in=672 out=265	Pond No. 3 at Street No. 3 (South Fork)
2B	322	1402	in=855 out=671	Pond No. 4 at Powers Blvd. (South Fork)
--	--	--	in=691 out=509	Pond No. 5
3	476	2274	1049	Union Boulevard/Briargate Parkway (South Fork)
4	364	1446	683	Street #10 (North Fork)
5	563	2681	1251	Street #10 (South Fork)
*6	1336	5197	2462	Street #14 (North & South Forks)
*7	1364	5510	1330	At Green #10
*8	1426	6298	1797	Chapel Hills Drive
*9	1515	7162	in=2710 out=2028 (max)	Pond #1 at Briargate Parkway
10	1118	5571	2052	Pond No. 1 Outflow @ Hwy. 83
11	61	633	542	Business Campus Outfall at Highway 83
12	1210	6212	2536	Combination of 10 & 11 at Air Force Academy Property
13	1252	6067	2542	Academy Blvd. Crossing
14	--	5966	2559	Pine Creek at the Chapel Hills Mall Outfall (Not including Chapel Hills Mall Outfall)
15	--	9518	6095	Pine Creek - North Cottonwood Junction
16	--	--	6589	Junction with Monument Creek

SUMMARY OF HYDROLOGIC COMPUTATIONS (HEC 1 COMPUTER RUNS)
PINE CREEK DRAINAGE BASIN

EXHIBIT I-D TABULATION OF ACCUMULATIVE FLOWS (24 HOUR)

*Changed per Amendment No. 1, July 1992



*Q100 OUTFLOW AT POINT 12 IS REQUIRED TO BE AT OR BELOW HISTORIC UNTIL DOWNSTREAM IMPROVEMENTS ARE IN PLACE. THIS NEEDS TO BE DONE BY TEMPORARY DIVERSION AND/OR DETENTION

AMENDMENT NO. 1
HYDROLOGY
SUB-BASIN SCHEMATIC
STUDY AREA

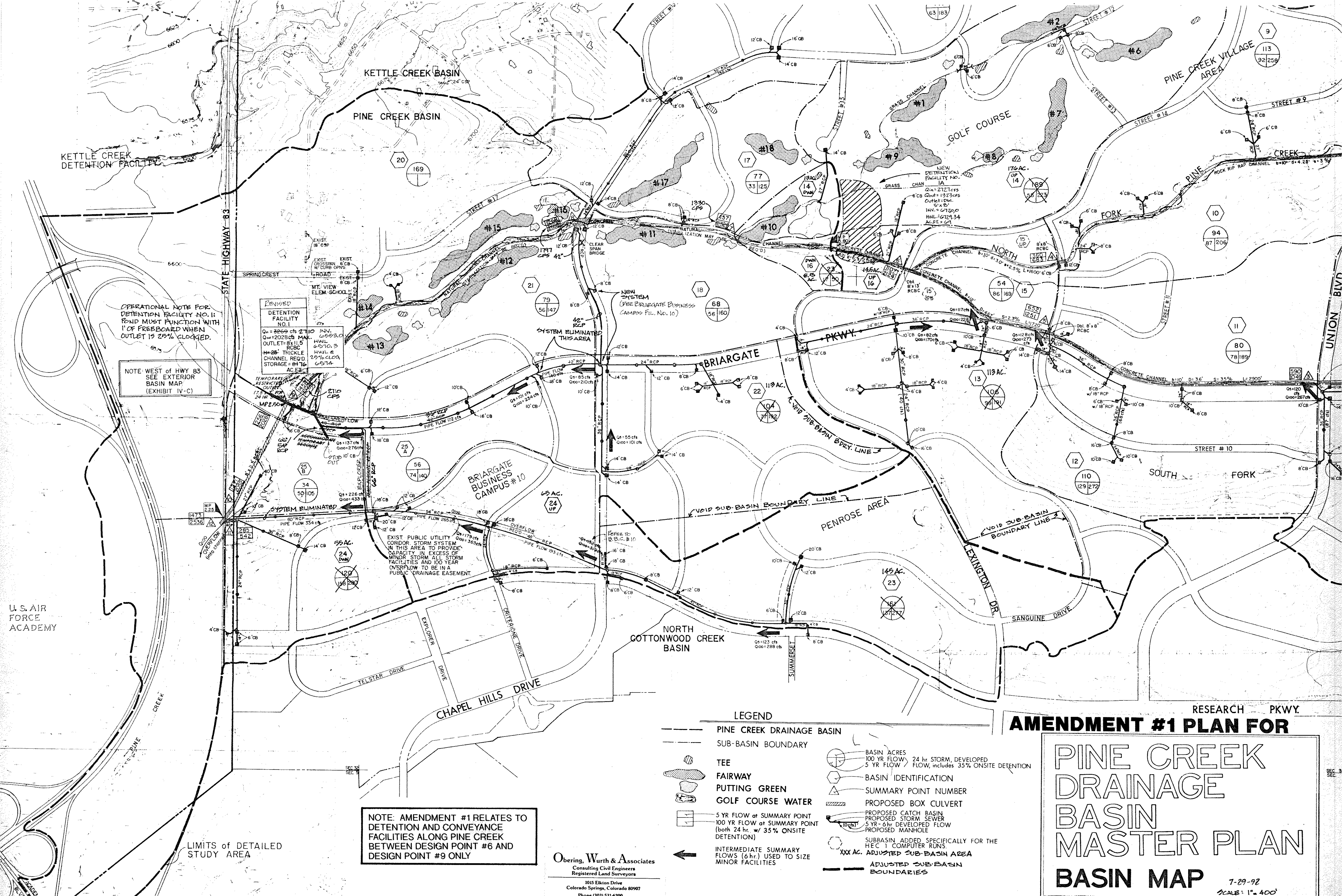
FIGURE III
SHEET 3 of 3
JULY 1992

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Phone (303) 531-6200



KETTLE CREEK DETENTION FACILITY

OPERATIONAL NOTE FOR DETENTION FACILITY NO. 1: POND MUST FUNCTION WITH 1' OF FREEBOARD WHEN OUTLET IS 25% CLOGGED.

NOTE WEST OF HWY 83 SEE EXTERIOR BASIN MAP (EXHIBIT IV-C)

PROPOSED DETENTION FACILITY NO. 1
 Q₁₀₀ = 2028 cfs 2'10" INV. 6-5-10.3
 Q₅ = 2028 cfs MAX. OUTLET = 8'11.5" RCBC
 H = 26' TRICKLE CHANNEL REQ'D STORAGE = 4876 AC FEET

NOTE: AMENDMENT #1 RELATES TO DETENTION AND CONVEYANCE FACILITIES ALONG PINE CREEK BETWEEN DESIGN POINT #6 AND DESIGN POINT #9 ONLY

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RESEARCH - PKWY.
AMENDMENT #1 PLAN FOR

PINE CREEK DRAINAGE BASIN MASTER PLAN
BASIN MAP
 7-29-92
 SCALE: 1" = 400'

- LEGEND**
- PINE CREEK DRAINAGE BASIN
 - - - SUB-BASIN BOUNDARY
 - TEE FAIRWAY
 - PUTTING GREEN
 - GOLF COURSE WATER
 - 5 YR FLOW at SUMMARY POINT
 - 100 YR FLOW at SUMMARY POINT (both 24 hr. w/ 35% ONSITE DETENTION)
 - INTERMEDIATE SUMMARY FLOWS (6 hr.) USED TO SIZE MINOR FACILITIES
 - BASIN ACRES
 - 100 YR FLOW 24 hr. STORM, DEVELOPED 5 YR FLOW FLOW, includes 35% ONSITE DETENTION
 - BASIN IDENTIFICATION
 - SUMMARY POINT NUMBER
 - PROPOSED BOX CULVERT
 - PROPOSED CATCH BASIN
 - PROPOSED STORM SEWER
 - 5 YR - 6 hr. DEVELOPED FLOW
 - PROPOSED MANHOLE
 - SUBBASIN ADDED SPECIFICALLY FOR THE HEC-1 COMPUTER RUNS
 - XXX AC. ADJUSTED SUB-BASIN AREA
 - ADJUSTED SUB-BASIN BOUNDARIES

LIMITS OF DETAILED STUDY AREA