Nov 10 92 16:17:21 0

IHS: Set alarm--For sensor # 333, Van Bibber @ Hwy 93 Water Level FT,
the following alarm values are defined:

Absolute Max.	Absolute Min.	Positive Rate of Change Rate/Time	Positive Rate of Change Threshold	Negative Rate of Change Rate/Time	Negative Rate of Change Threshold
4.00 ft	undefined	1.00 ft/ 30min	2.00 ft	undefined	undefined
enabled	disabled	enabled		disabled	

Maximum acceptable time between reports = 168.0 hours , alarm is enabled
Alarms set to flash on terminals : 0

Strike <RETURN> to continue, <ESC> to stop :

Rev 11/10/92

Jun 26 91 16:39:43

IHS: Set_alarm--For sensor # 333, Van Bibber @ Hwy 93 Water Level PT,
the following alarm values are defined:

Absolute Max.	Absolute Min.	Positive Rate of Change Rate/Time	Positive Rate of Change Threshold	Negative Rate of Change Rate/Time	Negative Rate of Change Threshold
~~3.2 ft~~ 4.0	undefined	1.0 ft/ 30min	~~3.0 ft~~ 2.0	undefined	undefined
enabled	disabled	enabled		disabled	

Maximum acceptable time between reports = 168.0 hours , alarm is enabled
Alarms set to flash on terminals : 0

Change list of terminals to receive alarm warnings (y/n) ? y
You may assign alarm warnings to the following terminals:
0 $con Master Console Terminal
Enter the terminal numbers that you wish to send alarm warnings to (a for all).
Separate the numbers with blank spaces : 0
Strike any key to continue :

Sensor Elev. = ~~2.8'~~ 2.3' (7/20/92)

Note: 3.2' ≈ 500 cfs

(6-1-91) Q_p = 530 cfs @ 3.4' {2-5yr event}

0.4' rise in 30 min above PT Elev,

~~½" rain in 20 min~~

1.5 inches < 60 min

#: 5720

Site ID: 330

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

SYSTEM MAINTENANCE RECORD

DIAD INC.

Service Log

Site Name: **Van Bibber @ 93** *Date:* **26-Mar-97** *Time:* **11:27**

Service Type: **Start Up** *Technician:* **RJB** *Status:* **OK**

Configuration Changes

Part #	*Location*
BY H 9771	330
TX H 842	330
TB H 564	330

Transducer Calibration 0.0141 per DIAD 7-9-01

Port	*A*	(B)	*Std Error*
333	0.0905	0.01	0.006

Settings and Performance

Switches: 0330-0012-1112-11011
Jumpers: W4,W10
Eprom: B
Fwd Power 5.0
Rev Power: 0.1
Frequency: 169.525
Deviation:

Test Transmissions

Port	*Time*	*Count*	*Pressure*	*Predicted*
333	11:46	28	1.10	27
333	11:47	79	3.11	78
333	11:47	130	5.10	129
333	11:48	179	7.03	179
333	11:48	232	9.10	232
330	11:49	0		0
330	11:51	1		0
330	11:53	2		0
330	11:54	3		0

Battery Tests

Battery #	*Volts -O*	*Volts-T*
BY H 9771	12.99	12.83

07-May-97

Problem:

Action Taken:

Site Notes:

Follow-Up:

```
Device: 747  Rcvd: 1409  08/16/1996-10:43:07                Aug 16 96 10:43:59   2
  NS: NovaStar  Help    Options    Utilities    Setup    Quit

 Z Device Definitions DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD NovaLynx Systems, Inc. \
 3                                                                              [
 3 Device            ID          Tag          Name                              [
 3 Identification  : 333         333          Van Bibber @ Hwy 93               [
 3                                                                              [
 3 Device            Type name                                                  [
 3 Type            : Water Level PT                                             [
 3                   Z Setup device calibration DDDDDDD NovaLynx Systems, Inc. \
 3 Data              3                                                          [
 3 Calibration     :3 Divisor     Base value  Data type   Calibration time      [
 3                   3 11.1359    2.45        Signed      05/21/1996-11:56:18   [
 3 Data              3 11.1359    2           Signed      03/22/1996-11:51:49   [
 3 Checking        :3 11.0534    2.3 = SL    Signed      07/07/1992-00:00:01   [
 3                   3 11.0534    2.8         Signed      10/29/1990-00:00:01   [
 3 Data              3                                                          [
 3 Storage         :3                                                           [
 3                   3                                                          [
 3 Save changes   <:3                                                           [
 3                   3                                                          [
```

SL = 2.3

B = 0.15 DIAD 5-21

BV = 2.45

Press [F1] for Help

New Housing 7-7-92

0' Datum = RCB E ℄ Elev. ? }

3-26-97 11.05 2.31

KG5

Jul 20 92 14:26:53 E

Change the increment size (y/n) ? n

Enter sensor # to calibrate (<ESC> to exit) 333
Sensor # 333 is Van Bibber @ Hwy 93 Water Level PT

The present base value is 2.800000 feet -0.5 = 2.3'
The present increment size is 0.090470 feet per increment

Change the base value (y/n) ? y

Enter new base value in feet 2.3

The new base value is 2.300000 feet ✓
Is this value O.K. (y/n) ? y
Primary record 128 updated

per DIAD fax of 7/20/92

Change the increment size (y/n) ? n
Data file updated

@ 7/7/92 Field Report

Enter sensor # to calibrate (<ESC> to exit)

Rev. 7/20/92

Jun 27 91 8:56:32
IHS: Baseset - Sensor Calibration Program Wind 0.5 mph 350 deg

```
Enter sensor # to calibrate ( <ESC> to exit ) 333
Sensor # 333 is Van Bibber @ Hwy 93 Water Level PT


    The present base value is 2.800000 feet
    The present increment size is 0.100000 feet per increment

    Change the base value (y/n) ? n

    Change the increment size (y/n) ? y

        Enter new increment size in feet per increment .09047

        The new increment size is 0.090470 feet per increment
        Is this value O.K. (y/n) ? y
Primary record  128 updated
Data file updated


Enter sensor # to calibrate ( <ESC> to exit )
```

Device: 137 Rcvd: 239 06/24/91 12:19:40 Jun 24 91 12:22:17

BK & KS

IHS: define_rating
Rating table 53 Van Bibber @ Hwy 93
Sensor 333 Van Bibber @ Hwy 93
 SENSOR TYPE USING TABLE: 7 Water Level PT
      RATING TABLE UNITS: cu.ft./sec.
      UNITS ABBREVIATION: cfs
      INTERPOLATION TYPE: linear interpolation
   EXTRAPOLATION ALLOWED: YES
TABLE VALUES:

ft	cfs	ft	cfs	ft	cfs	ft	cfs
0	0						
3.6	560						
5.2	800						
6	1260						
7.2	1440						
8.4	2016						
9.6	2460						
10.8	2940						
12	3360						
13.8	3920						

Enter the measured value (F1 to INSERT, F3 to DELETE, RETURN for no change)
Enter F9 for a list of the EDIT keys

Jun 24 91 12:22:50

IHS: Baseset - Sensor Calibration Program

Enter sensor # to calibrate (<ESC> to exit) 333
Sensor # 333 is Van Bibber @ Hwy 93 Water Level PT

The present base value is 0.000000 feet
The present increment size is 0.100000 feet per increment

Change the base value (y/n) ? y

No / Drwdk .0904)

Enter new base value in feet 2.8

The new base value is 2.800000 feet
Is this value O.K. (y/n) ? y
Primary record 128 updated

Change the increment size (y/n) ? n
Data file updated

Enter sensor # to calibrate (<ESC> to exit)

Kiowa Engineering Corporation

CLIENT JDFCD | JOB NO. 90.12.30 | PAGE
PROJECT FLD WRNNG | DATE CHECKED | DATE 4/91
DETAIL VBC | CHECKED BY | COMPUTED BY TE

VAN BIBBER @ Highway 93

2- 14'x12' CBC

INV. = ~~5867.82~~ 5866.46
Overtopping El. = 5880.21
PT EL. = 5869.22 (-6")

Baseset = 2.76' Say 2.8'

CBC INLET Control
(Nomographs)

HW/D	Q (cfs)	D @ PT (FT.)	d_{RCB}
0.3	560	0.84	3.6
0.5	1,260	3.24	6.0
0.7	2,016	5.64	8.4
0.9	2440	8.04	10.8
1.0	3,360	9.24	12.0
1.15	3,920	11.04	13.8 overtopping

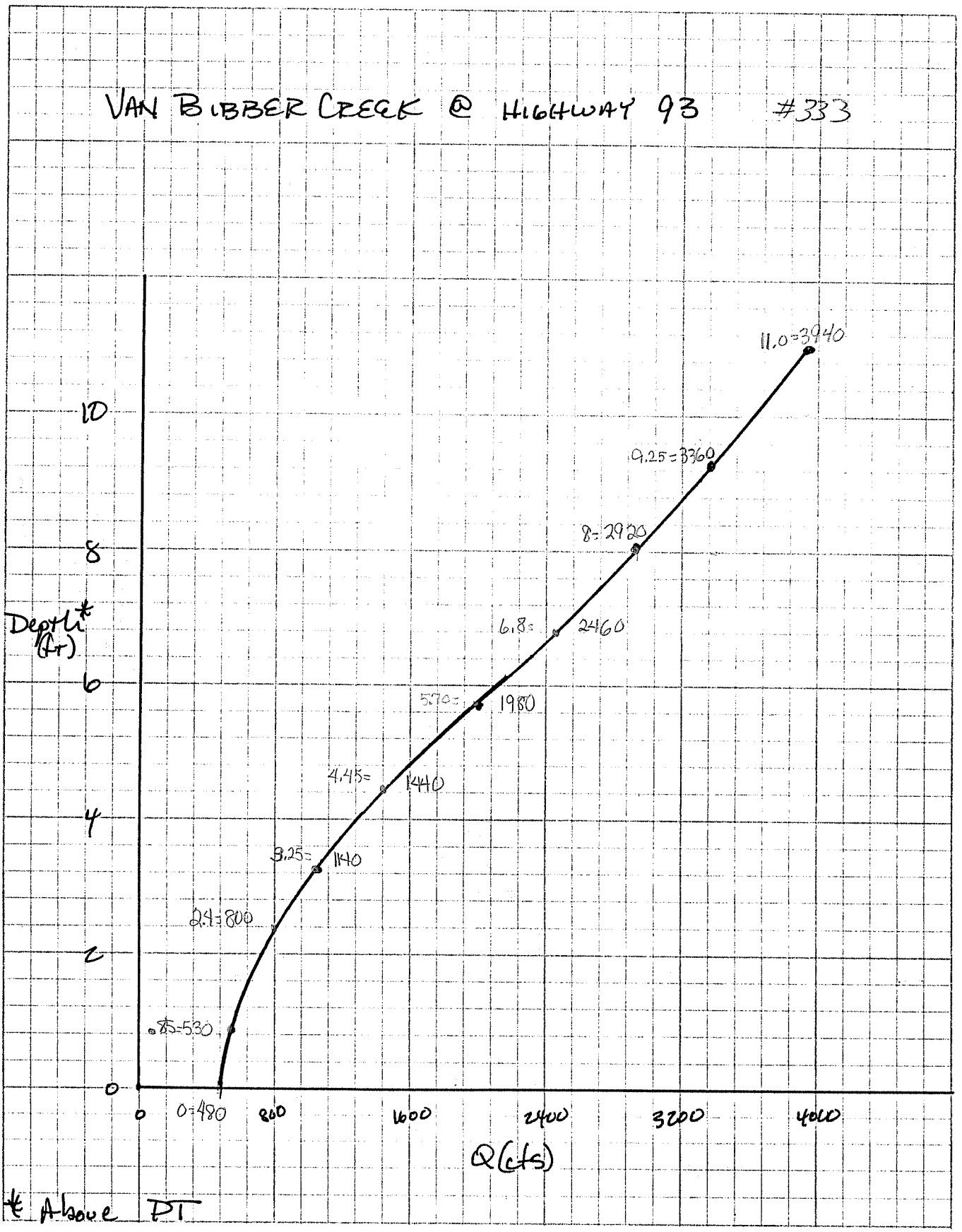
Use BW for low flow rating.
Low flows ~~are~~ not necessary

Kiowa Engineering Corporation

CLIENT VDECD
PROJECT Flood Warning
DETAIL VBC

JOB NO. 90.12.30
DATE CHECKED
CHECKED BY

PAGE
DATE 4/91
COMPUTED BY JE



Device: 141 Rcvd: 50 06/17/91 08:47:01 Jun 17 8:47:45 am }
IHS: define_rating Rel. Humidity 38.9 %
ting table 53 Van Bibber @ Hwy 93

SENSOR TYPE USING TABLE: 7 Water Level PT
RATING TABLE UNITS: cu.ft./sec.
UNITS ABBREVIATION: cfs
INTERPOLATION TYPE: linear interpolation
EXTRAPOLATION ALLOWED: YES +2.8'

TABLE VALUES:

ft	cfs	ft	cfs	ft	cfs	ft	cfs
0	480						
0.85	530		5.2				
2.4	800						
3.25	1140		7.2				
4.45	1440						
5.7	1980		9.6				
6.8	2460						
8	2920						
9.25	3360						
11	3940						

Enter the measured value (F1 to INSERT, F3 to DELETE, RETURN for no change)
Enter F9 for a list of the EDIT keys

LENA GULCH LFWS
SYSTEM PERFORMANCE DOCUMENTATION
FIELD REPORT

SITE : 230 VAN RIBBER @ 93
DATE : 10/29/90 TIME: 0930
TECH : DH / RM

TYPE : ___Mech. Insp. ___Complete PM _1_Other

Electronics Pkg: Mfgr:_____
SN:_____
SS:_____

Sensor(s): Mfgr:_____
SN:_____

General Site Condition:_____

TEST RESULTS

Rain Only
8-14-90

Battery Voltage (Q):_____VDC
Battery Voltage (T):_____VDC

Transmit Power (FWD):_____Watts
Transmit Power (REV):_____Watts

Transmit Frequency:_____mHz
Transmit Deviation:_____kHz

Rcvr. Sensitivity (20 dBq):_____microV
Rcvr. Sensitivity (SQ):_____microV

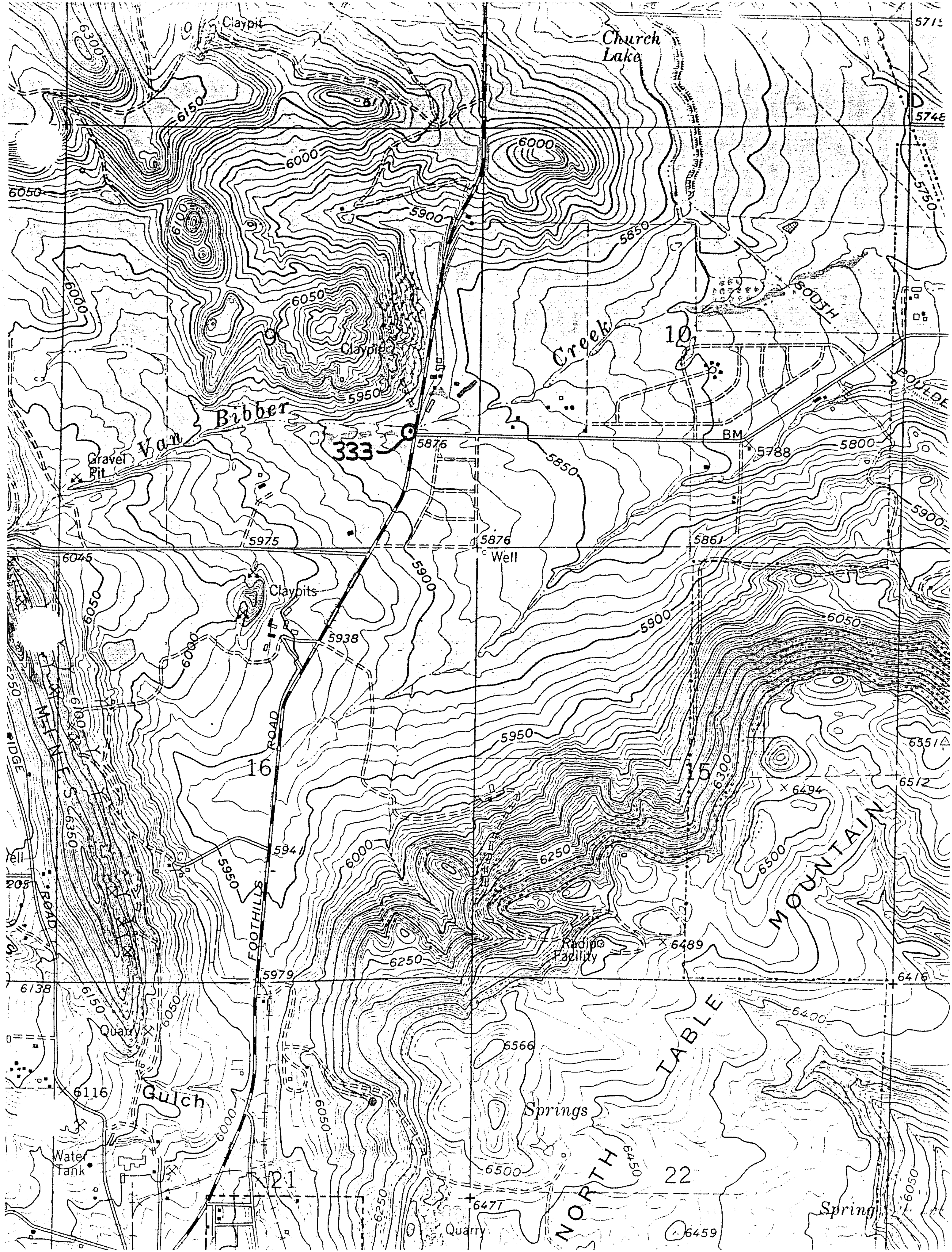
H20(1):_____mL
H20(2):_____mL

Transmissions: 196 PT 2

Repairs/adjustments:_____

Comments: INSTALLED DRUCK PT SN 342602 50' CABLE

SCC/Boulder CO USA IFR S/N: 1000S/1089 cal:_____



Claypit
Church Lake
6300
6150
6000
6050
6100
5900
5850
5750
5748
Claypit
Van Bibber
Creek
9
10
SOUTH
BOULDER
Gravel Pit
333
5876
BM
5788
5800
5975
5876
Well
5861
5900
6045
Claybits
5938
6050
16
15
FOOTHILLS ROAD
5950
6351
6512
6494
6300
6500
5941
6250
MOUNTAIN
TABLE
NORTH
Radio Facility
6489
5979
6138
6416
Quarry
6400
6566
6116
Gulch
Springs
6450
6500
Water Tank
21
22
6471
Quarry
6459
Spring
6050

Table 1. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs) 10-Year	50-Year	100-Year	500-Year
SJCD 6200					
At Platte Canyon Road	3.04	1,590	2,150	2,440	3,000
At Wadsworth Boulevard	2.02	1,245	1,675	1,895	2,400
SJCD 6200 North Tributary					
At Nevada Ditch Crossing	0.88	600	830	940	1,190
At South Newland Street	0.43	430	620	700	900
South Platte River					
At Downstream Limit of Detailed Study	2,018	2,950	4,600	5,450	7,700
At Upstream Limit of Detailed Study	1,805	2,900	4,500	5,300	7,500
Swede Gulch					
At Mouth	1.45	250	620	845	1,600
Switzers Gulch	1.57	405	850	1,050	1,810
At Mouth					
0.8 Mile Upstream of Mouth	0.59	215	460	565	940
Troublesome Creek					
At Mouth	9.06	1,280	3,330	4,240	7,000
Above Confluence with Bergen Creek	3.05	470	1,195	1,525	2,400
Turkey Creek					
At USGS Gage near Morrison	50.1	1,040	3,870	6,420	19,000
Above Confluence with Parmalee Gulch	44.1	960	3,570	5,920	17,500
Van Bibber Creek					
At Mouth	17.52	1,620	2,800	3,430	5,000
Below South Van Bibber Creek Tributary	13.63	1,260	2,200	2,750	4,000
At the Hogback	8.29	880	1,350	1,570	2,100

Table I

Van Bibber Creek

Structure Inventory

Main Channel

Location	Structure Size and Type	Area (sq. ft.)	Capacity*
Entrance to Ice Arena	6' x 4.7' Bridge	28	240 cfs
Arvada Plaza	5'4" x 5'4" CBC	150	300 cfs
Independence Avenue	72" CMP	28.3	230 cfs
County Maintenance Shops	60" RCP	19.6	100 cfs
Between Miller Street and Lee Street on West 58th Avenue	60" RCP	19.6	100 cfs
Miller Street	72" CMP	28.3	120 cfs
Newcomb Court	4' x 8' CMP Arch		100 cfs
Nelson Court	4' x 6' CMP Arch		90 cfs
West 58th Avenue near Newcomb Court	54" CMP	15.9	110 cfs
Ward Road	11'-14'-11'x7' CBC	252	2,140 cfs
Indiana Street	66" CMP	22.3	110 cfs
Croke Canal	24" RCP		10 cfs
McIntyre Street	60" CMP	19.6	100 cfs
Farmers Highline Canal	Siphon	---	---
Church Ditch	Flume Bridge	90	1,020 cfs
Easely Road	10' x 6'	60	310 cfs
West 60th Avenue	3-36" CMP	21	190 cfs
Boulder Canal	Flume Bridge	46	390 cfs
Crestone Street	35' x 6' Bridge	210	1,670 cfs
North Dunraven Street	35' x 6' Bridge	210	1,670 cfs
Foothills Road	18' x 5.5' Bridge	99	940 cfs
	South Tributary		
Church Ditch	No structure	---	---
Easley Road	5' x 3' CBC	15	80 cfs
Boulder Canal	Flume Bridge	130	1,150 cfs

Legend

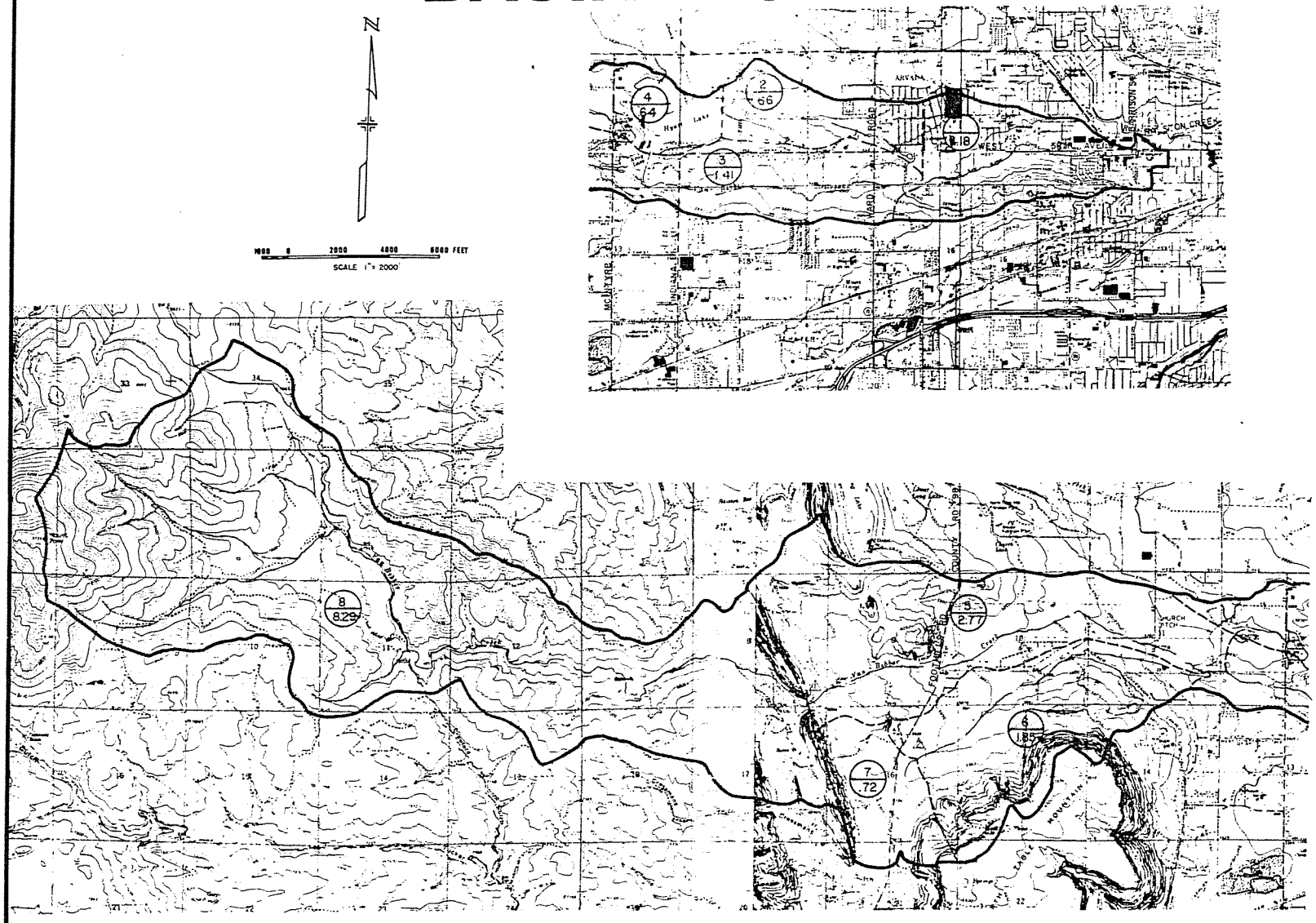
CBC - Concrete Box Culvert

CMP - Corrugated Metal Pipe

RCP - Reinforced Concrete Pipe

*Capacity defined to be the discharge at which the facility becomes inadequate and the structure is overtopped. (Hydraulic grade line above road or ground surface).

BASIN BOUNDARY



NOTE:
INFORMATION PORTRAYED ON THE FOLLOWING DRAWINGS IS FOR PLANNING PURPOSES ONLY AND IS INTENDED TO PROVIDE THE CAPABILITY FOR STAGED DEVELOPMENT OF A TOTAL, COMPATIBLE DRAINAGE SYSTEM. THE DRAWINGS ARE NOT TO BE CONSTRUED AS FINAL DESIGN DRAWINGS NOR ARE THEY TO BE USED FOR CONSTRUCTION PURPOSES.

CROSS-SECTIONS SHOWN ON THE FOLLOWING SHEETS TAKEN LOOKING DOWNSTREAM.

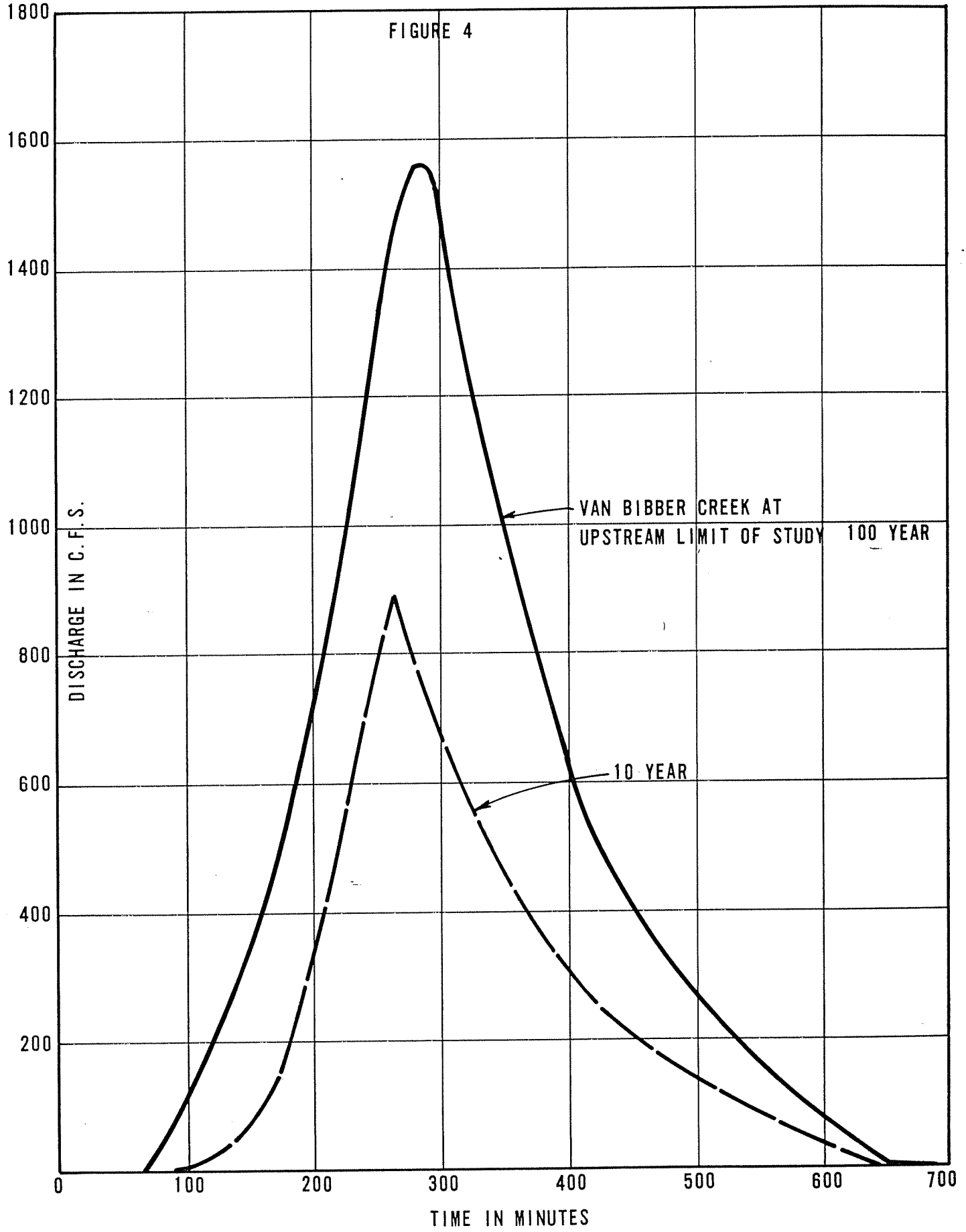
LEGEND

- 5 / 2.77 — BASIN NUMBER / AREA IN SQUARE MILES
- SUB BASIN BOUNDARY
- MAJOR BASIN BOUNDARY
- STREAM
- DESIGN POINT

	DESIGNED CGS DATE 6/76 DRAWN SWE DATE 6/76 CHECKED [illegible] DATE 12/17 REVISED ___ DATE ___	URBAN DRAINAGE AND FLOOD CONTROL DISTRICT CITY OF ARVADA JEFFERSON COUNTY	MAJOR DRAINAGEWAY PLANNING VAN BIBBER CREEK	VAN BIBBER CREEK MAJOR DRAINAGEWAY PLANNING BASIN MAP	SHEET 1 OF 24 GAI NO. 730

10-100 YR. FLOOD HYDROGRAPHS

FIGURE 4



January 6, 1976, on file with the UD&FCD. Included in the appendix is a summary of the C_p and C_t coefficients, a summary of basin parameters, land use data and other miscellaneous hydrologic information. The rainfall information used in the study was obtained from the Rainfall/Runoff Information Report (Ref. 5), and is representative of Township 3 South, Ranges 69, 70 and 71 West. A summary of the design rainfall data and rainfall abstractions used in the analysis is provided in Table II.

Table II
Design Rainfall and Abstractions

	Rainfall, inches*			Abstractions
	2-yr.	10-yr.	100-yr.	
Arvada, (below Ward Rd.)	1.05	1.81	2.57	
Jefferson Co. (above Ward Rd.)	1.03	1.86	2.56	
Jefferson Co. (above Hogback)	0.80	1.58	2.19	
Impervious area storage				0.10 in.
Pervious area storage				0.30 in.
Impervious loss				0.05 in.
Infiltration				0.50 in./hr.

*storm duration - 2 hrs.

Assumptions made and parameters developed for the hydrologic computations are based on planned, future basin development. Future land use planning information for Van Bibber Creek basin was taken from the Jefferson County Land Use Map approved by the Jefferson County Commissioners on April 2, 1974 and revised on September 16, 1974. The basis of interpretation of the land use maps for the purposes of the hydrology study is also provided in the Hydrology Technical Addendum.

Typical flood hydrographs which were computed and used as a part of this study are shown in Figures 1, 2, 3, and 4. Discharge-Probability Profile Charts, showing the 10-year and 100-year flood peaks for the main stream and south tributary, are provided in Figures 5 and 6. Table III lists the estimated peak discharges for the 10-year and 100-year storm events at selected reference points.

Table III
Flood Frequency and Discharge**

Location	Design Point*	10-Year (cfs)	100-Year (cfs)
Van Bibber Creek			
Confluence	6	1650	3450
Tabor St. (extended)	5	1550	3300
So. Tributary	3	1280	2750
Hogback	1	880	1570
So. Tributary			
Confluence	3	780	1400
Ramstetter Reservoir	2		
Inflow		290	590
Outflow		260	540
No. Tributary			
Confluence	5	425	615
Hyatt Lake	4		
Inflow		360	570
Outflow		30	40

*See Sheet 1, Drainage Basin Boundaries
**Existing Channel Conditions, Future Basin Conditions

Hydraulics, Flood Plain and Floodway Delineation

Hydraulic analyses were completed to determine the water surface elevations for the 100-year storm event. The elevations were

FLOODING SOURCE				FLOOD PLAIN DATA			FLOODWAY DATA			
IDENTIFICATION	CROSS SECTION	STATION[1]	100yr DISCHARGE (CFS)	THALWEG 3 ELEV (MSL)	100yr FLOOD 3 ELEV. (MSL)	100yr FLOOD PLAIN WIDTH (FEET)	FLOODWAY WIDTH[2] LEFT (FT)	RIGHT (FT)	TOTAL (FT)	FLOODWAY 3 ELEV. (MSL)
	91	258+80	1770	5634.1	5640.8	110	18	32	50	5640.8
	92	262+65	1770	5640.2	5647.9	80	64	16	80	5648.0
	93	265+80	1770	5645.6	5654.2	140	25	30	55	5654.4
CHURCH DITCH	95	266+11	1770	5645.9	5657.0	206	121	30	151	5657.0
	96	269+80	1770	5651.0	5658.8	320	185	16	201	5658.8
	97	276+33	1770	5667.4	5673.1	428	30	228	258	5673.1
	98	283+15	1770	5682.9	5687.3	800	12	488	500	5687.8
EASLEY ROAD	100	283+64	1770	5683.5	5687.5	965	20	344	364	5688.0
	101	285+95	1740	5687.0	5693.3	910	20	852	872	5693.8
	102	289+56	1740	5693.4	5700.8	545	18	527	545	5700.8
	103	293+65	1740	5706.0	5708.9	287	220	67	287	5708.9
WEST 60TH AVE.	105	294+42	1740	5705.2	5711.7	360	135	132	267	5711.7
	106	301+64	1740	5719.0	5722.1	256	93	152	245	5722.2
	107	308+54	1710	5725.7	5733.7	375	123	252	375	5733.7
	108	313+22	1710	5740.0	5742.2	517	25	248	273	5742.4
	109	318+97	1690	5746.4	5750.4	843	10	620	630	5752.4
	110	328+56	1690	5765.8	5768.0	1010	20	636	656	5768.5
BOULDER CANAL	111	329+15	1690	5765.0	5768.1	775	20	477	497	5768.6
	112	335+56	1690	5775.3	5783.9	396	110	286	396	5783.9
	113	340+56	1690	5785.0	5791.6	45	25	20	45	5791.6
	114	341+76	1690	5788.0	5793.0	45	28	17	45	5793.0
CRESTONE STREET	116	342+56	1690	5790.5	5798.0	250	26	44	70	5798.0
	117	347+50	1690	5796.1	5799.5	179	80	99	179	5799.5
	118	351+44	1690	5800.4	5807.6	110	62	48	110	5807.6
	119	353+02	1690	5803.0	5810.6	66	30	19	49	5810.6
N. DUNRAVEN ST.	121	354+12	1690	5810.5	5817.7	140	(23)	(67)	90	5817.7
	122	361+56	1650	5828.1	5829.7	603	550	11	561	5829.7
	123	368+60	1650	5841.7	5846.3	976	102	232	334	5846.3
	125	373+36	1630	5854.1	5857.2	805	375	304	679	5857.2
	126	378+57	1630	5867.7	5873.9	570	70	253	323	5874.2
FOOTHILLS ROAD	128	379+12	1630	5868.8	5877.5	693	86	164	250	5877.8

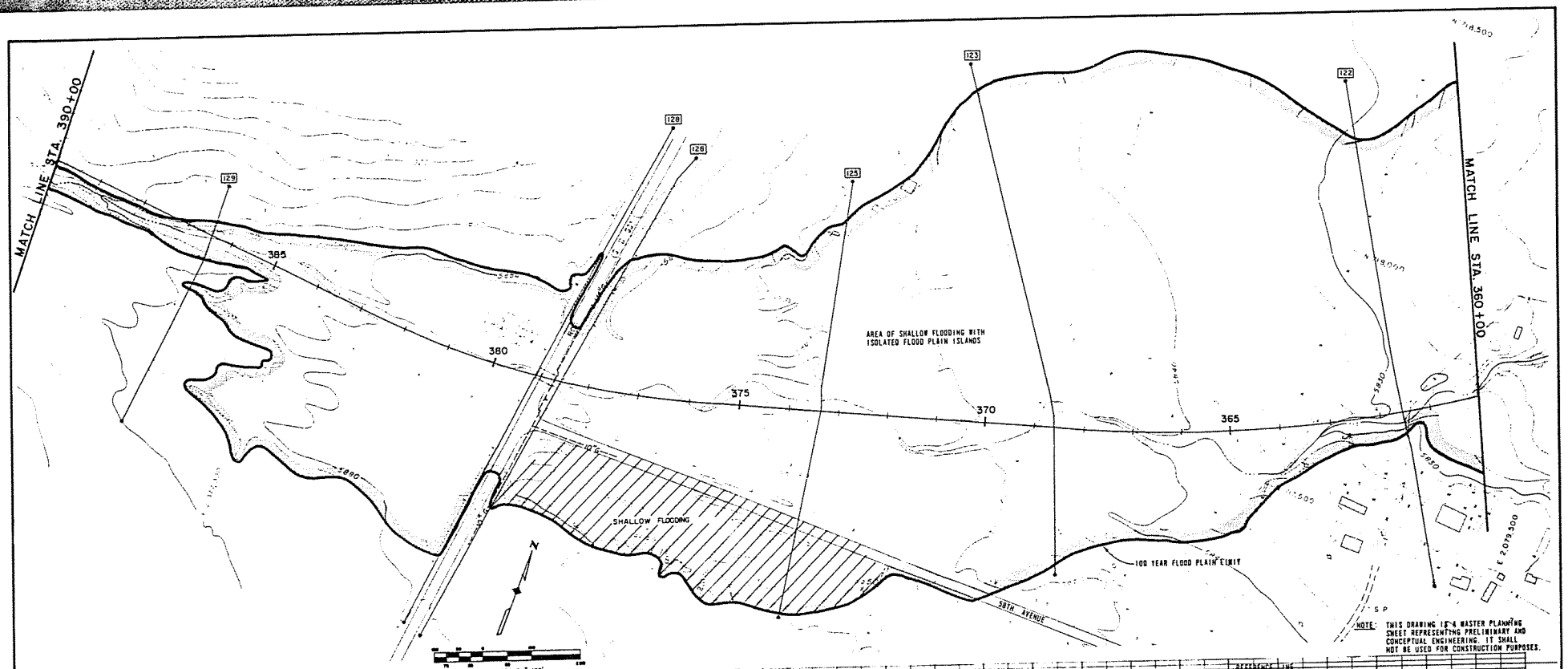
1. DISTANCE IN FEET ABOVE MOUTH
2. FROM CENTER OF CHANNEL LOOKING DOWNSTREAM
3. U.S.G.S. DATUM
4. FLOOD PLAIN AND FLOODWAY WIDTHS MEASURED ALONG CROSS SECTION

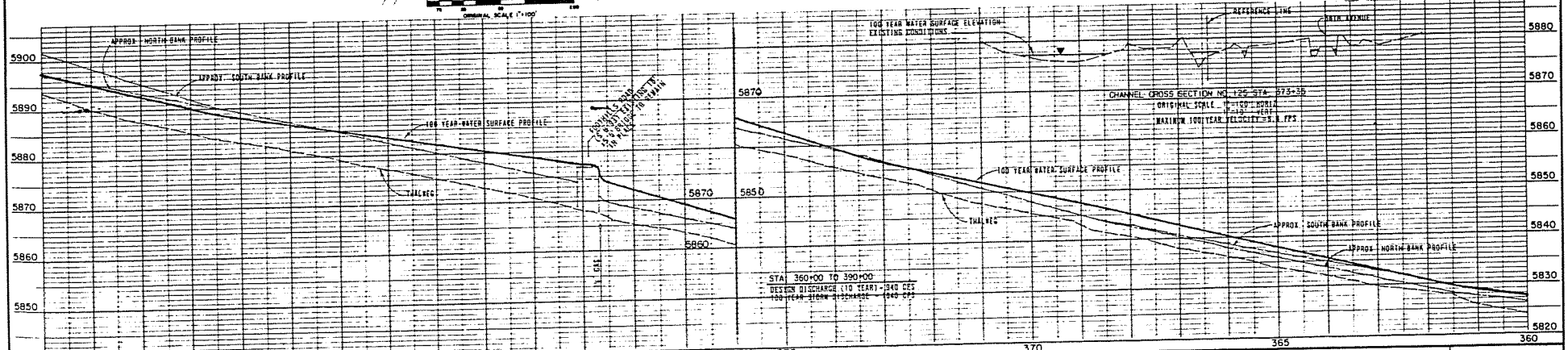
FLOOD PLAIN AND FLOODWAY REFERENCE DATA

VAN BIBBER CREEK

URBAN DRAINAGE & FLOOD CONTROL DISTRICT
FLOOD HAZARD AREA DELINEATION
CITY OF ARVADA — JEFFERSON COUNTY

TABLE IX





GROUND CONTROL SURVEY BY
AERIAL PHOTOGRAPHY BY
TOPOGRAPHIC MAPPING BY
CONTOUR INTERVAL: 2 FEET

BELL MAPPING CO.
DENVER, COLORADO
DATE FLOWN FEB. 1, 1974

Gingery Associates, Inc.

DESIGNED SGS/DCS DATE 6/76
DRAWN SWE DATE 5/76
CHECKED DCS/LAM DATE 3/7/77
REVISED ____ DATE ____

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
JEFFERSON COUNTY - CITY OF ARVADA

MAJOR DRAINAGEWAY PLANNING
VAN BIBBER CREEK

PLAN & PROFILE
360 + 00 to 390 + 00

SHEET 4 OF 24

LENA GULCH LFWS
SYSTEM PERFORMANCE DOCUMENTATION
FIELD REPORT

SITE : 230 VAN RIBBER @ 93
DATE : 10/29/90 TIME: 0930
TECH : DH / RM

TYPE : ___Mech. Insp. ___Complete PM _✓_Other

Electronics Pkg: Mfgr:_____
SN:_____
SS:_____

Sensor(s): Mfgr:_____
SN:_____

General Site Condition:_____

TEST RESULTS

Battery Voltage (Q):_____VDC
Battery Voltage (T):_____VDC

Transmit Power (FWD):_____Watts
Transmit Power (REV):_____Watts

Transmit Frequency:_____mHz
Transmit Deviation:_____kHz

Rcvr. Sensitivity (20 dBq):_____microV
Rcvr. Sensitivity (SQ):_____microV

H20(1):_____mL
H20(2):_____mL

Transmissions: 186 PT 2

Repairs/adjustments:_____

Comments: INSTALLED DRUCK PT SN 342602 SD1 CABLE

SCC/Boulder CO USA IFR S/N: 1000S/1089 cal:_____