Technical Support Data Notebook
Gowan/Bradley
Flood Insurance Study

PREPARED FOR
Clark County
Regional Flood Control District
500 S. Grand Central Parkway
Las Vegas, NV 89155

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT



BY
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LB

May 23, 2001

Section 1

General Documentation

TECHNICAL SUPPORT DATA NOTEBOOK

For

City of Las Vegas
Gowan/Bradley Area

FLOOD INSURANCE STUDY

SUBMITTED BY: The Louis Berger Group, Inc.
Study Contractor

DATE SUBMITTED: May 23, 2001

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FLOOD INSURANCE STUDY SPR INDEX

City of Las Vegas
Gowan/Bradley Area

FLOOD INSURANCE STUDY

SPR DATE	SPR TITLE	EXHIBIT NO.
January 31, 2001	Height of Block Walls	Exhibit 2
November 15, 2000	Hydrology	Exhibit 4
October 10, 2000	Block Walls	Exhibit 1
September 10, 2000	Urban Flow Splits	Exhibit 3

Exhibit 1

SPECIAL PROBLEM REPORT
FLOOD INSURANCE STUDIES

Date: March 28, 2001

Contract Number: CB-849

Name of Community: City of Las Vegas, Gowan/Bradley Area

Study Contractor: The Louis Berger Group, Inc.

PROBLEM AREA	x
TECHNICAL COORDINATION	
UNRESOLVED	
DISCREPANCIES	
UNREALISTIC SCHEDULE	
OTHER	

DETAILED EXPLANATION

The effect of the undocumented privately owned concrete block walls on the special hazard flood areas is unknown.

PROPOSED SOLUTION

Two models will be generated, one with walls and one without walls. These two models will then be used to generate two proposed special hazard flood areas, which will then be overlaid. The union of the two areas will then be the proposed special hazard flood area. Walls will be assessed for the hazards they create rather than hazards they mitigate.

SPECIAL PROBLEM REPORT
FLOOD INSURANCE STUDIES

Date: March 28, 2001

Contract Number: CB-849

Name of Community: City of Las Vegas, Gowan/Bradley Area

Study Contractor: The Louis Berger Group, Inc.

PROBLEM AREA	x
TECHNICAL COORDINATION	
UNRESOLVED	
DISCREPANCIES	
UNREALISTIC SCHEDULE	
OTHER	

DETAILED EXPLANATION

The effective height of the concrete block walls to input into the "with walls" model is unknown.

PROPOSED SOLUTION

An effective wall height of two feet will be used (see Appendix A), regardless of whether the wall is technically a flood wall or not. The effective flood zone will be analyzed for two separate cases, both with and without the walls in place and the most conservative (i.e. the largest zone A) will be the proposed special hazard flood zone. If it is determined that the depth of water against a wall is greater than two feet, then the assumption is that this portion of the wall will fail.

SPECIAL PROBLEM REPORT
FLOOD INSURANCE STUDIES

Date: March 28, 2001

Contract Number: CB-849

Name of Community: City of Las Vegas, Gowan/Bradley Area

Study Contractor: The Louis Berger Group, Inc.

PROBLEM AREA	x
TECHNICAL COORDINATION	
UNRESOLVED	
DISCREPANCIES	
UNREALISTIC SCHEDULE	
OTHER	

DETAILED EXPLANATION

There is no prescribed method for dealing with flow splits in urban areas.

PROPOSED SOLUTION

For the majority of the flow splits, an energy balance at the downstream cross sections will be used. The data will be entered into HEC-RAS and different downstream flows will be entered that equal the inflow total. This will be done manually until an energy balanced flow split is found. This should provide a reasonable estimate of the flow split at urban intersections

Exhibit 4

SPECIAL PROBLEM REPORT
FLOOD INSURANCE STUDIES

Date: March 28, 2001

Contract Number: CB-849

Name of Community: City of Las Vegas, Gowan/Bradley Area

Study Contractor: The Louis Berger Group, Inc.

PROBLEM AREA	x
TECHNICAL COORDINATION	
UNRESOLVED	
DISCREPANCIES	
UNREALISTIC SCHEDULE	
OTHER	

DETAILED EXPLANATION

As part of the GBFIS, the effect of additional small onsite basins east of Rancho Drive was investigated by adding them to the US 95 FISR HEC-1 computer code. The runoff coefficients were taken from the Clark County Regional Flood Control District GIS data. Lag times were calculated using the time of concentration method. The impact of these additional basins on flooding was minimal since their area is about 0.6-percent of the offsite basin area and their time of peak concentration is approximately 4 hours shorter.

PROPOSED SOLUTION

Since the impact of the onsite hydrology is minimal, it was decided not to include these additional basins to the hydrologic model to avoid unnecessarily complicating the analysis.

CONTACT (TELEPHONE CONVERSATION) REPORTS INDEX

City of Las Vegas
Gowan/Bradley Area

FLOOD INSURANCE STUDY

CONTACT REPORT DATE	FIRM/AGENCY CONTACTED
February 26, 2001	Bill Avery, Wesco Surveying

Exhibit 4

FLOOD INSURANCE ADMINISTRATION

Flood Insurance Study
Contact Report

Study Contractor

DATE:

February 26, 2001

COMMUNITY NAME:
City of Las Vegas, Gowan/Bradley Area

CONTACT REPORT BY:

Fred Retzlaff
(Name and Office of Person Reporting)

METHOD OF CONTACT:

____ correspondence

__x__ telephone

____ visit

OTHER INDIVIDUALS INVOLVED:
Title, Address and Telephone Number

Bill Avery
Wesco Surveying
367-0588

SUBJECT:

Survey Coordinate System

SUMMARY OF CONTACT:

He said he would check on it and get back to me. He later called back Syndi Dudley and faxed the formula to convert the coordinates to the state plane coordinate system.

MEETING MINUTES/REPORTS INDEX

City of Las Vegas
Gowan/Bradley Area

FLOOD INSURANCE STUDY

MINUTES/REPORT DATE	MEETING DATE	MEETING TYPE
March 26, 2001	February 27, 2001	Results, Community Meeting
March 26, 2001	February 26, 2001	Results, Study Principals
March 26, 2001	February 8, 2001	Progress, Community Meeting
March 26, 2001	February 8, 2001	Progress, Study Principals
January 10, 2001	January 9, 2001	Progress, Study Principals
November 15, 2001	November 14, 2001	Progress, Study Principals
October 11, 2000	October 10, 2000	Progress, Study Principals
September 13, 2000	September 12, 2000	Progress, Study Principals
August 16, 2000	August, 15, 2000	Kickoff, Study Principals

GOWAN/BRADLEY AREA FIS
MEETING MINUTES

Location: Parsons Elementary School

Subject: Gowan/Bradley Flood Insurance Study Results

Date: February 27, 2001

Time: 7:00 PM

Attendees: Clark County Regional Flood Control District (CCRFCD)
Kevin Eubanks

Louis Berger Group (LBG)
Syndi Dudley
Fred Retzlaff

City of Las Vegas (CLV)
Randy Fultz

Northwest Area Residents Association (NARA)
Linda Young, President
Numerous Other Members

Distribution: LBG

A. Introductions

Representatives from LBG, CCRFCD, and CLV were introduced, along with some others.

B. Flood Study Results Presentations

The results of the recent Gowan/Bradley Flood Insurance Study were presented. The revision of the special hazard flood zone will remove many structures. Future construction possibly removing other structures were discussed.

GOWAN/BRADLEY AREA FIS
MEETING MINUTES

Location: Clark County Regional Flood Control District Offices

Subject: Progress Report

Date: February 26, 2001

Time: 4:00 PM

Attendees: Clark County Regional Flood Control District (CCRFCD)
Kevin Eubanks

Louis Berger Group (LBG)
Syndi Dudley
Fred Retzlaff

City of Las Vegas (CLV)
Randy Fultz

Distribution: LBG

A. Model Results

The special hazard flood zone resulting from the "with walls" model was discussed.

B. Model Results

It was decided to present the results of the "with walls" model at the Meeting with Nara on February 27, 2001, since it is more conservative than the "without walls" model. The model results assuming that the Gowan North System is in place did not differ significantly from the "with walls" model and further work on this model was abandoned.

GOWAN/BRADLEY AREA FIS
MEETING MINUTES

Location: Rancho Business Park

Subject: Progress Report

Date: February 8, 2001

Time: 6:00 PM

Attendees: Clark County Regional Flood Control District (CCRFCD)
Kevin Eubanks

Louis Berger Group (LBG)
Syndi Dudley
Fred Retzlaff

City of Las Vegas (CLV)
Randy Fultz

Northwest Area Resident Association (NARA)
Linda Young, President
Other Concerned Citizens

Distribution: LBG

A. Next Meeting

At the next meeting on February 27, 2001, the results of the Gowan/Bradley Flood Insurance Study (FIS) will be presented.

B. The proposed new flood zone reduces the flood zone by about 75%, but the exact proposed boundary has not been finalized at this time. After the construction of additional flood control facilities during the next five years, this may be reduced even further.

GOWAN/BRADLEY AREA FIS
MEETING MINUTES

Location: Clark County Regional Flood Control District Offices

Subject: Progress Report

Date: February 8, 2001

Time: 4:00 PM

Attendees: Clark County Regional Flood Control District (CCRFCD)
Kevin Eubanks

Louis Berger Group (LBG)
Syndi Dudley
Fred Retzlaff

City of Las Vegas (CLV)
Randy Fultz

Distribution: LBG

A. Model Progress

A structural engineer analyzed the ability of concrete block walls to withstand water pressure. The breakout flow between the two buildings separating the Rancho Business Park reach from the Rancho Business Park, East reach should be analyzed.

B. Flood Zones

Both current and proposed flood zones should be presented at the meeting with the Northwest Area Residents Association on February 27, 2001.

GOWAN/BRADLEY AREA FIS
MEETING MINUTES

Location: Clark County Regional Flood Control District Offices

Subject: Progress Report

Date: January 2, 2001

Time: 10:00 AM

Attendees: Clark County Regional Flood Control District (CCRFCD)
Kevin Eubanks

Louis Berger Group (LBG)
Syndi Dudley
Fred Retzlaff

City of Las Vegas (CLV)
Randy Fultz

Distribution: Attendees

A. Hydraulic Model

Work continues on the hydraulic model.

B. Procedures

Storm runoff will be routed through the Rancho Business Park using the flows from the US 95/Rancho Flood Insurance Study.

GOWAN/BRADLEY AREA FIS
MEETING MINUTES

Location: Clark County Regional Flood Control District Offices

Subject: Progress Report

Date: December 12, 2000

Time: 8:30 PM

Attendees: Clark County Regional Flood Control District (CCRFCD)
Kevin Eubanks

Louis Berger Group (LBG)
Syndi Dudley
Fred Retzlaff

City of Las Vegas (CLV)
Randy Fultz

Distribution: Attendees

A. Effect of Building Gowan North System and Buffalo Channel on HEC-1 Model

LBG will evaluate the effect on the HEC-1 model of building the Gowan North System and the Buffalo Channel.

B. Hydraulic Model Procedures

The walls have been modeled using the ineffective flow option of HEC-RAS.

C. Meeting with FEMA

Meeting with FEMA should take place at the end of February, possibly with a conference call.

GOWAN/BRADLEY AREA FIS
MEETING MINUTES

Location: Clark County Regional Flood Control District Offices

Subject: Progress Report

Date: January 9, 2001

Time: 8:30 AM

Attendees: Clark County Regional Flood Control District (CCRFCD)
Kevin Eubanks

Louis Berger Group (LBG)
Syndi Dudley
Fred Retzlaff

City of Las Vegas (CLV)
Randy Fultz

Distribution: Attendees

A. Hydraulic Model

Due to a last minute change in the flow split at Rancho Drive and Gowan Road the completion of the hydraulic model has been delayed until January 22, 2001.

B. Procedures

Storm runoff will be routed through the Rancho Business Park using the flows from the US 95/Rancho Flood Insurance Study.

GOWAN/BRADLEY AREA FIS
MEETING MINUTES

Location: Clark County Regional Flood Control District Offices

Subject: Progress Report

Date: November 14, 2000

Time: 4:00 PM

Attendees: Clark County Regional Flood Control District (CCRFCD)
Kevin Eubanks

Louis Berger Group (LBG)
Syndi Dudley
Fred Retzlaff

City of Las Vegas (CLV)
Randy Fultz

Distribution: Attendees

A. Aerial Topography

Three copies of the final map depicting the aerial topography were be sent the the CCRFCD and one copy was mounted and given to Linda Young of the Northwest Area Residents Association.

B. Current Progress on Data Collection Summary

The data collection summary was completed and one copy forwarded to the CCRFCD.

C. Procedures

Procedures for analyzing the flow splits were discussed.

GOWAN/BRADLEY AREA FIS
MEETING MINUTES

Location: Clark County Regional Flood Control District Offices

Subject: Progress Report

Date: October 10, 2000

Time: 8:30 AM

Attendees: Clark County Regional Flood Control District (CCRFCD)
Kevin Eubanks

Louis Berger Group (LBG)
Syndi Dudley
Fred Retzlaff

Distribution: Attendees
Randy Fultz, City of Las Vegas

A. Aerial Topography

LBG has obtained aerial topography for the project area on 1-foot contour intervals. This will be used as a basis for the hydraulic analysis. Four copies of the final map depicting the aerial topography will be sent the the CCRFCD.

B. Current Progress on Reviewing Previous Flood Insurance Studies

Copies of previous drainage studies for the project area were obtained from CCRFCD, the City of Las Vegas, and Lazell Preator and a preliminary review has been done. As expected, they contain a wide range of opinions concerning flood conditions in the project area. A summary report will be completed before the next meeting on November 14, 2000.

C. Procedures

Due to the prevalence of CME block walls in the project area, FEMA will be contacted to obtain a procedure for incorporating them into the hydraulic model and flood zone calculations. The proposed method is to include the walls in the hydraulic calculations and then extrapolate the BFEs beyond the wall to the adjoining property.

GOWAN/BRADLEY AREA FIS
MEETING MINUTES

Location: Clark County Regional Flood Control District Offices

Subject: Progress Report

Date: September 12, 2000

Time: 8:30 AM

Attendees: Clark County Regional Flood Control District (CCRFCD)
Kevin Eubanks

City of Las Vegas (CLV)
Randy Fultz

Louis Berger Group (LBG)
Syndi Dudley
Fred Retzlaff

Distribution: Attendees

A. Introduction

1. Contact names for additional attendees and project participants are:

Name/Organization	Tel. voice/fax	e-mail
Randy Fultz/CLV	229-6276	rfultz@ci.las-vegas.nv

B. LBG Review of US 95/Rancho FISR

LBG has reviewed the US 95/Rancho FISR and Northwest Area FIS. Syndi questioned why the diversion for the channel on the True Value property was removed from the HEC-1 analysis for the addendum to the US 95/Rancho Drive FISR. Randy recalled that the FISR determined that the channel diversion would not significantly affect the weir flow over Rancho Drive at Gowan Road.

LBG incorporated a diversion into the US 95/Rancho FISR HEC-1 to model the affects of the future Gowan North Buffalo Branch storm drain. Based on the master plan, the storm drain will be designed to convey 910 cfs to the Gowan North Detention Basin. The diversion of the 910 cfs along Buffalo Drive resulted in a reduction of flow of approximately 500 cfs at the Gowan/Rancho intersection.

It was generally agreed that the reduction in flow that would be achieved by incorporating the True Value channel diversion and Buffalo Drive storm drain into the HEC-1 model would not warrant revision and resubmittal of the hydrology to FEMA.

C. Current Progress on Mapping

Base maps from the aerial photography and topography should be ready at the end of next week.

PROJECT MEETING MINUTES

Project: Gowan/Bradley Area FIS
Project Number CB849

Location: Clark County Regional Flood Control District Offices

Subject: Kickoff Meeting

Date: August 15, 2000

Attendees: Clark County Regional Flood Control District (CCRFCD)
Kevin Eubanks

Louis Berger Group (LBG)
Syndi Dudley
Fred Retzlaff

Distribution: Attendees
Randy Fultz, City of Las Vegas
Linda Young, Northwest Area Residents Association (NARA)

A. Introduction

Contact names for the attendees and project participants are:

Name/Organization	Tel. voice/fax	e-mail
Kevin Eubanks/CCRFCD	455-3139/455-3870	kevinfc@co.clark.nv.us
Syndi Dudley/LBG	736-6632/736-0704	sdudley@louisberger.com
Fred Retzlaff/LBG	736-6632/736-0704	fretzlaff@louisberger.com

B. Project Scope

1. The project scope was discussed while examining the effective Flood Insurance Rate Map (FIRM) and Digital Workmaps prepared for the US95/Rancho FISR. The study area is bounded by Gowan Road on the south, Craig Road on the north, Decatur Boulevard on the east, and Rancho Drive on the west.

   Resolution on topography will be 1-ft contours. Both the aerial photographs and topography will be made available to FEMA.

   A LBG representative will attend four meetings of NARA, the meeting dates and topics being:

September 12 - Introductions
November 14 - Progress
February 13, 2000 - Final Draft
April 10, 2000 - FEMA Review

C. Project Schedule

1. Attached is the proposed project time schedule.

D. Procedures

1. Meetings will take place on the second Tuesday of each month at 8:30 AM at the CCRFCD offices for the duration of the project. The first meeting is scheduled for September 12, 2000.

E. Current Progress

1. Data collection has commenced. The contractor for the aerial photography and topography has been given notice to proceed.

F. Information Provided

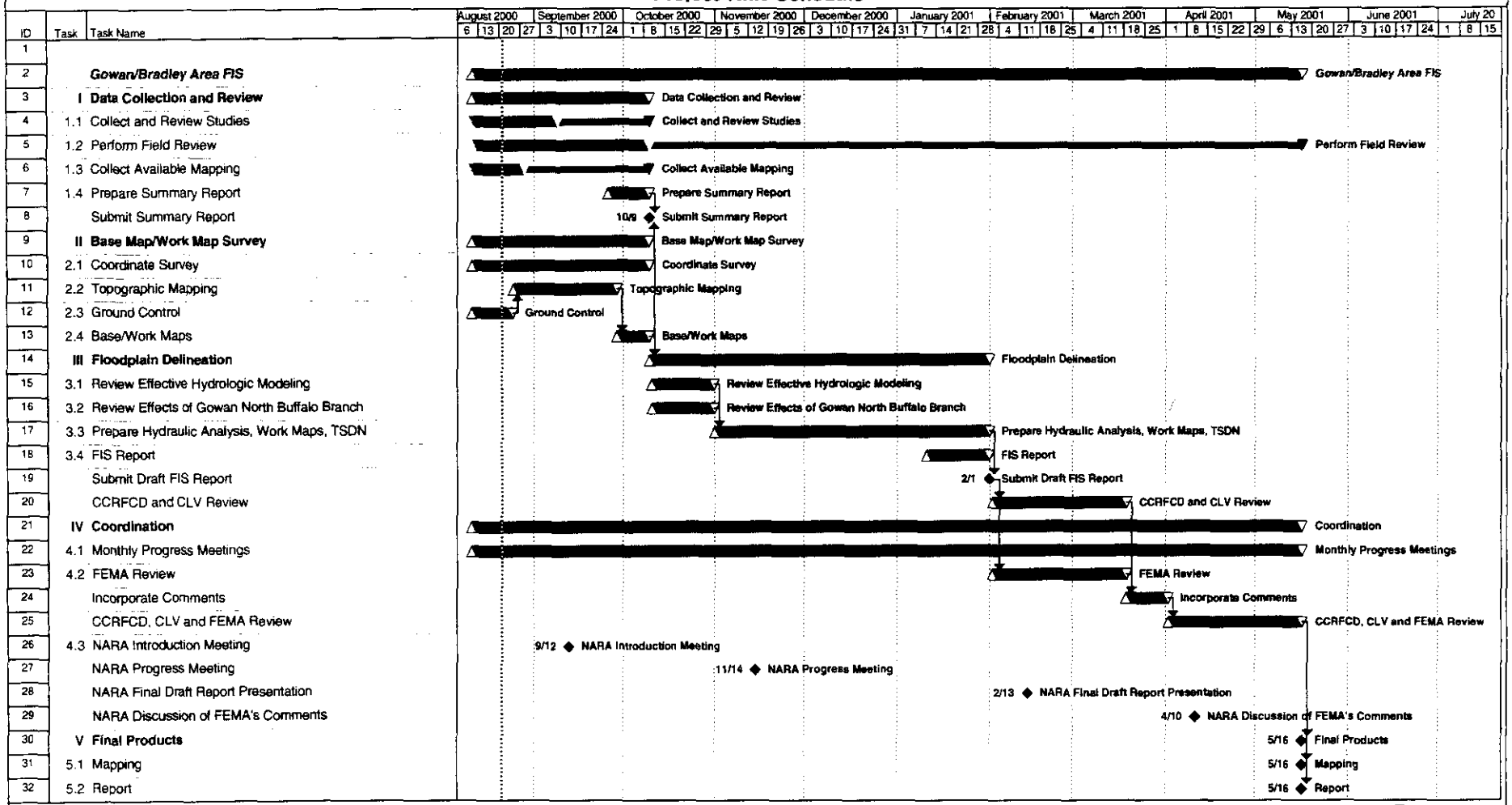
1. Copies of LOMR's were obtained from Kevin for the project area.

   ACTION: LBG will check with the City of Las Vegas for additional LOMR's.

2. A copy of the Northwest Las Vegas Flood Insurance Study Restudy was obtained from Kevin.

   ACTION: LBG will copy the study and return it to the CCRFCD next week.

GOWAN/BRADLEY
FLOOD INSURANCE STUDY
Project Time Schedule



REGIONAL FLOOD CONTROL DISTRICT

L B The Louis Berger Group

CITY OF LAS VEGAS NEVADA

Critical Task		Milestone		Early Start Point	Early End Point
Early Bar		Total Slack Bar		Critical Start Point △	Critical End Point ▽

Section 2

Engineering Analysis

Study Contractor: The Louis Berger Group, Inc.

HYDRAULIC ANALYSES INDEX

City of Las Vegas
Gowan/Bradley Area

FLOOD INSURANCE STUDY

HYDRAULIC ANALYSES INDEX

FLOODING SOURCE/ STREAM NAME	HYDROLOGIC METHOD/ MODEL USED	METHOD/MODEL ANALYSIS DATE	EXHIBIT NO. PAPER COPY	EXHIBIT NO. FLOPPY DISKETTES
G. below Rancho	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed
G. below Bradley	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed
G. b. Waterhole	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed
G.B. Thom	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed
Bradley below Go	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed
RBPE	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed
Thom	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed
G.B. Malner	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed
Malner	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed
Waterhole	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed
Chloe	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed
Bradley b. Chloe	HEC-RAS, WW	March 28, 2001	Model 1	Enclosed

WW – With Walls in the Model

Study Contractor: The Louis Berger Group, Inc.

HYDRAULIC ANALYSES INDEX

City of Las Vegas
Gowan/Bradley Area

FLOOD INSURANCE STUDY

HYDRAULIC ANALYSES INDEX

FLOODING SOURCE/ STREAM NAME	HYDROLOGIC METHOD/ MODEL USED	METHOD/MODEL ANALYSIS DATE	EXHIBIT NO. PAPER COPY	EXHIBIT NO. FLOPPY DISKETTES
T.B. Gilmore	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
Thom below Leo	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
Gilmore b. Thom	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
Sweetwater South	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
Sweetwater North	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
Dole	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
Cutty	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
Leo below Thom	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
Judy	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
Thom below Judy	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
RBP	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
Gilmore	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
B.B. Gilmore	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed
W. of Sweetwater	HEC-RAS, WW	March 28, 2001	Model 2	Enclosed

WW – With Walls in the Model

Study Contractor: The Louis Berger Group, Inc.

HYDRAULIC ANALYSES INDEX

City of Las Vegas
Gowan/Bradley Area

FLOOD INSURANCE STUDY

HYDRAULIC ANALYSES INDEX

FLOODING SOURCE/ STREAM NAME	HYDROLOGIC METHOD/ MODEL USED	METHOD/MODEL ANALYSIS DATE	EXHIBIT NO. PAPER COPY	EXHIBIT NO. FLOPPY DISKETTES
G. below Rancho	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed
G. below Bradley	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed
Bradley below Go	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed
RBP	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed
G.b. Waterhole	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed
Bradley b. Chloe	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed
Chloe	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed
Waterhole	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed
RBPE	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed
North of Gowan	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed
Gilmore	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed
Br. b. Gilmore	HEC-RAS, WOW	March 28, 2001	Model 3	Enclosed

WOW – Without Walls in the Model

Study Contractor: The Louis Berger Group, Inc.

HYDRAULIC ANALYSES INDEX

City of Las Vegas
Gowan/Bradley Area

FLOOD INSURANCE STUDY

HYDRAULIC ANALYSES INDEX

FLOODING SOURCE/ STREAM NAME	HYDROLOGIC METHOD/ MODEL USED	METHOD/MODEL ANALYSIS DATE	EXHIBIT NO. PAPER COPY	EXHIBIT NO. FLOPPY DISKETTES
Sweetwater North	HEC-RAS, WOW	March 28, 2001	Model 4	Enclosed
Sweetwater South	HEC-RAS, WOW	March 28, 2001	Model 4	Enclosed
Cutty	HEC-RAS, WOW	March 28, 2001	Model 4	Enclosed
Dole	HEC-RAS, WOW	March 28, 2001	Model 4	Enclosed
Gilmore	HEC-RAS, WOW	March 28, 2001	Model 4	Enclosed

WOW – Without Walls in the Model

Model 1
With Walls, Southwest Portion

HEC-RAS Plan: GB1

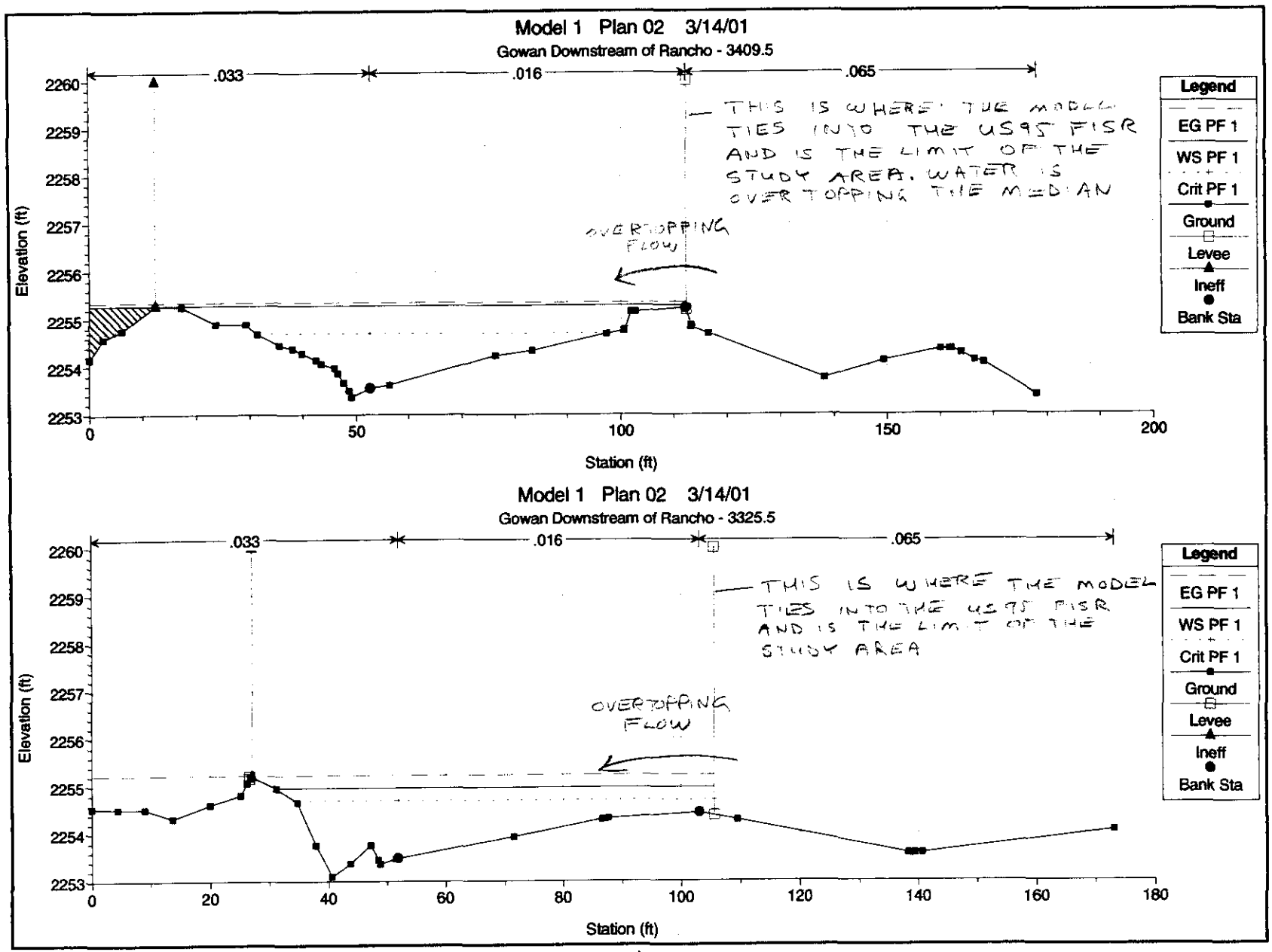
Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Max Chl Dpth	Hydr Depth
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	(ft)	(ft)
G. below Rancho	3409.5	150.00	2253.55	2255.29	2254.70	2255.36	0.000631	2.21	85.39	112.29	1.93	0.85
G. below Rancho	3325.5	270.00	2253.48	2254.96	2254.69	2255.22	0.002571	4.46	72.99	74.50	1.66	0.98
G. below Rancho	3304	380.00	2253.26	2254.85	2254.66	2255.17	0.002560	4.80	88.30	84.76	1.66	1.05
G. below Rancho	3278	380.00	2253.25	2254.71	2254.71	2255.09	0.004337	5.22	81.68	100.13	1.45	0.82
G. below Rancho	3226	380.00	2252.38	2253.73	2254.01	2254.64	0.014914	7.86	51.96	105.32	1.35	0.58
G. below Rancho	3141	380.00	2251.17	2252.67	2252.93	2253.50	0.011739	7.56	59.48	109.78	1.50	0.54
G. below Rancho	3041	380.00	2250.60	2251.76	2251.96	2252.49	0.008251	6.98	66.42	105.90	1.32	0.62
G. below Rancho	2985	380.00	2249.81	2250.80	2251.09	2251.78	0.017857	8.27	56.91	108.43	0.99	0.50
G. below Rancho	2935	380.00	2249.16	2250.26	2250.50	2251.06	0.010460	7.13	55.02	88.96	1.12	0.62
G. below Rancho	2851	380.00	2247.86	2248.96	2249.20	2249.79	0.014182	7.72	60.99	125.53	1.10	0.55
G. below Rancho	2778	380.00	2247.25	2248.47	2248.68	2249.17	0.009025	6.95	66.51	107.95	1.22	0.62
G. below Bradley	2660	275.00	2246.55	2247.81	2247.87	2248.24	0.005540	5.30	52.47	83.55	1.26	0.63
G. below Bradley	2582	275.00	2246.42	2247.46	2247.52	2247.91	0.004889	5.32	55.09	88.33	1.06	0.62
G. below Bradley	2482	275.00	2245.95	2246.86	2246.97	2247.38	0.006022	5.70	50.83	79.48	0.93	0.64
G. below Bradley	2382	275.00	2245.37	2246.33	2246.40	2246.81	0.005651	5.57	50.67	74.80	0.96	0.68
G. below Bradley	2307	275.00	2244.63	2245.87	2245.97	2246.36	0.006606	5.77	52.31	87.06	1.24	0.60
G. b. Waterhole	2183	231.00	2244.49	2245.31	2245.51	2246.00	0.013334	6.66	35.56	75.66	0.82	0.47
G. b. Waterhole	2107	231.00	2244.06	2245.05	2245.17	2245.53	0.007476	5.61	43.01	78.48	0.99	0.55
G. b. Waterhole	2007	231.00	2243.23	2244.31	2244.43	2244.80	0.007843	5.67	45.35	87.78	1.08	0.52
G. b. Waterhole	1907	231.00	2242.41	2243.39	2243.53	2243.95	0.009576	6.03	40.26	79.36	0.98	0.51
G. b. Waterhole	1855	231.00	2242.24	2243.16	2243.20	2243.54	0.005429	4.96	48.60	75.32	0.92	0.62
G. b. Waterhole	1755	231.00	2241.32	2242.58	2242.45	2242.82	0.002382	3.95	65.05	88.62	1.27	0.73
G. b. Waterhole	1655	231.00	2240.83	2242.16	2242.16	2242.50	0.004256	4.75	51.25	78.60	1.33	0.67
G. b. Waterhole	1555	231.00	2240.42	2241.81	2241.75	2242.10	0.003193	4.34	58.12	98.19	1.39	0.74
G. b. Waterhole	1455	231.00	2240.02	2241.40	2241.40	2241.73	0.004139	4.68	54.33	84.38	1.38	0.68
G. b. Waterhole	1355	231.00	2239.32	2240.73	2240.84	2241.19	0.008791	5.86	52.40	83.96	1.41	0.62
G.B. Thorn	1252	184.00	2238.78	2240.47	2239.97	2240.48	0.000897	1.99	204.09	228.07	1.68	0.89
G.B. Thorn	1152	184.00	2238.51	2240.00	2240.00	2240.29	0.005198	4.51	48.67	239.63	1.49	0.58
G.B. Thorn	1052	184.00	2238.12	2239.00	2239.13	2239.48	0.011087	5.72	34.52	179.38	1.03	0.44
G.B. Thorn	981	184.00	2237.62	2238.39	2238.49	2238.78	0.008237	5.13	40.31	124.72	0.77	0.40
Bradley below Go	4237	105.00	2247.36	2248.08	2247.88	2248.22	0.002367	3.09	38.65	88.06	0.72	0.44
Bradley below Go	4159	105.00	2247.12	2247.94	2247.62	2248.02	0.002300	2.56	52.81	97.83	2.75	0.54
Bradley below Go	4088	105.00	2246.66	2247.66	2247.50	2247.80	0.004201	3.87	48.38	107.60	1.02	0.45
Bradley below Go	4033	105.00	2246.49	2247.49	2247.36	2247.59	0.003282	3.35	39.85	89.07	1.07	0.45
Bradley below Go	3977	105.00	2246.30	2247.14	2247.14	2247.37	0.004917	3.86	29.89	74.15	1.00	0.40
Bradley below Go	3918	105.00	2246.11	2246.95	2246.80	2247.11	0.003911	3.52	43.53	109.51	0.84	0.40
Bradley below Go	3818	105.00	2245.56	2246.49	2246.48	2246.71	0.004841	3.80	33.37	83.36	0.93	0.40
RBPE	4178	80.00	2252.42	2253.46	2253.23	2253.58	0.006369	2.85	30.98	46.92	1.85	0.66
RBPE	4078	80.00	2251.61	2252.18	2252.18	2252.28	0.039709	2.49	32.06	196.75	1.86	0.18
RBPE	3978	80.00	2249.98	2250.44	2250.31	2250.48	0.007266	1.55	52.14	176.51	0.48	0.30

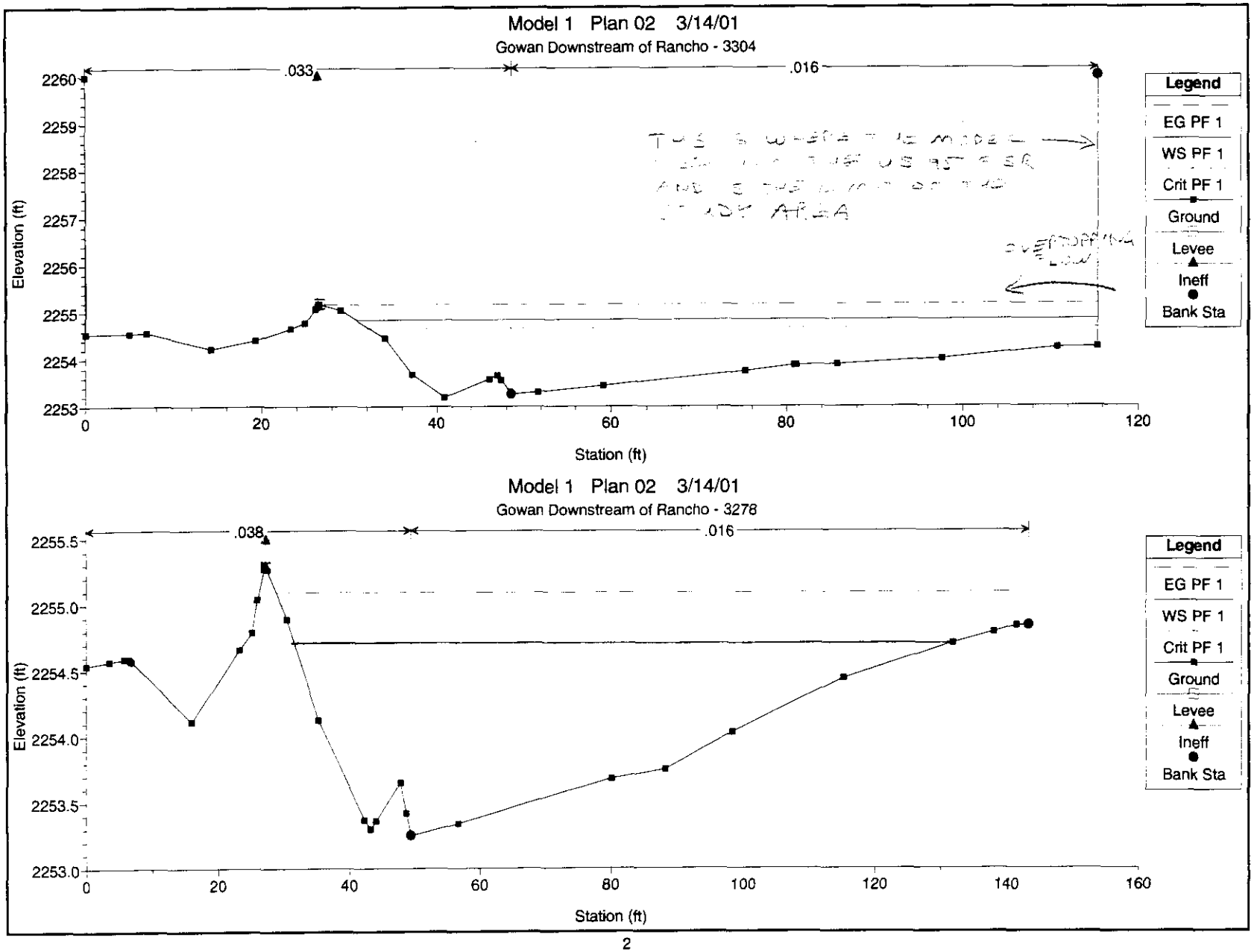
HEC-RAS Plan: GB1 (Continued)

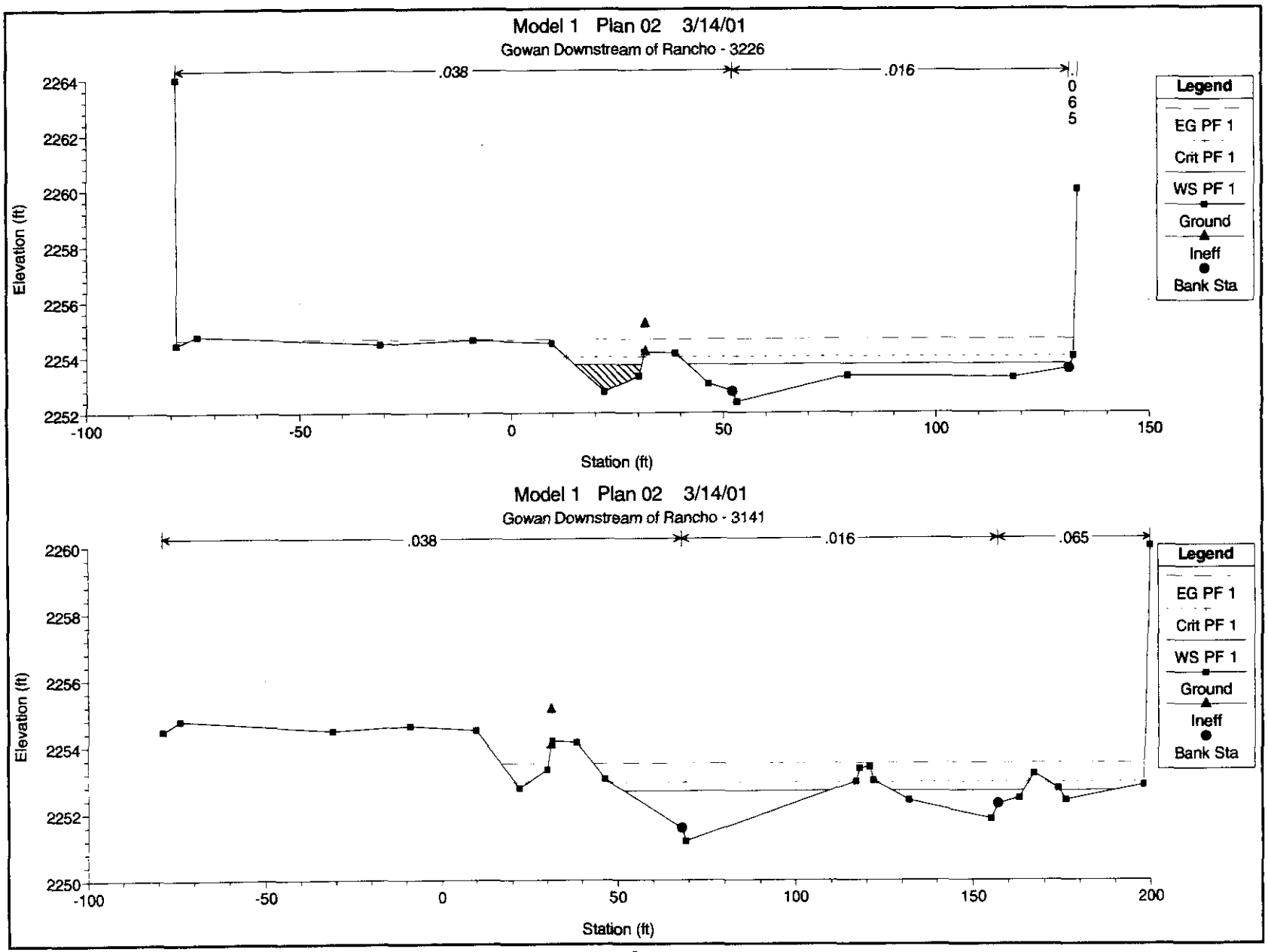
Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Max Chl Dpth	Hydr Depth
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	(ft)	(ft)
RBPE	3918	80.00	2246.66	2249.72	2249.66	2249.85	0.018822	2.67	27.85	68.05	1.53	0.43
RBPE	3818	80.00	2247.36	2247.75	2247.75	2247.93	0.020833	2.13	24.69	62.07	2.19	0.40
RBPE	3661	80.00	2246.00	2247.54	2246.80	2247.64	0.000605	0.87	116.83	174.91	2.20	0.68
RBPE	3561	191.00	2245.78	2247.03	2247.03	2247.29	0.029299	4.05	32.33	67.26	1.90	0.48
RBPE	3461	191.00	2245.20	2246.82	2246.35	2246.94	0.001356	1.09	120.17	180.52	1.88	0.66
RBPE	3339	191.00	2244.87	2245.10	2245.10	2246.35	0.027315	4.01	32.70	65.52	1.67	0.50
Thorn	3217	47.00	2239.39	2240.47	2239.87	2240.49	0.000180	0.99	54.30	119.33	1.08	0.50
Thorn	3117	47.00	2239.33	2240.44	2240.00	2240.47	0.000292	1.31	42.69	148.48	1.38	0.58
Thorn	3017	47.00	2238.31	2240.25	2240.21	2240.38	0.005075	3.12	20.93	81.02	1.58	0.34
Thorn	2917	47.00	2238.78	2239.98	2239.83	2240.04	0.002181	2.14	28.88	73.01	1.34	0.39
Thorn	2817	47.00	2238.85	2239.71	2239.82	2239.78	0.003582	2.15	28.71	92.18	2.14	0.29
Thorn	2717	47.00	2238.20	2239.15	2239.15	2239.27	0.008028	3.16	21.64	70.17	1.07	0.31
Thorn	2617	47.00	2237.80	2238.49	2238.50	2238.61	0.005536	2.89	22.02	111.05	1.09	0.20
G.B. Malner	909	114.00	2237.02	2237.75	2237.84	2238.11	0.010968	4.82	24.37	72.82	0.73	0.33
G.B. Malner	809	114.00	2236.15	2236.94	2236.99	2237.20	0.007392	4.18	29.75	88.78	0.78	0.34
G.B. Malner	709	114.00	2234.65	2235.54	2235.70	2236.07	0.019884	6.01	23.91	86.83	0.89	0.29
G.B. Malner	609	114.00	2233.43	2234.10	2234.21	2234.60	0.013105	5.08	28.41	74.96	0.67	0.31
G.B. Malner	509	114.00	2231.66	2232.36	2232.56	2232.95	0.020176	6.10	20.26	72.13	0.72	0.25
G.B. Malner	409	114.00	2230.03	2230.78	2230.94	2231.25	0.014087	5.44	21.22	83.81	0.76	0.23
G.B. Malner	309	114.00	2228.78	2229.50	2229.59	2229.84	0.013424	4.98	32.87	109.13	0.74	0.30
G.B. Malner	209	114.00	2227.49	2228.33	2228.42	2228.66	0.010339	4.63	25.62	77.98	0.84	0.32
G.B. Malner	109	114.00	2225.73	2226.38	2226.55	2227.02	0.028020	6.53	17.77	66.96	0.63	0.25
Malner	1238	70.00	2237.16	2237.94	2237.83	2238.11	0.022416	3.42	25.95	46.25	0.78	0.56
Malner	1026	70.00	2236.66	2236.83		2236.95	0.017895	1.22	57.38	668.90	0.27	0.14
Malner	942	70.00	2235.87	2235.88	2235.75	2235.88	0.010256	1.06	65.87	392.60	0.29	0.17
Malner	711	70.00	2231.72	2232.11		2232.13	0.004423	1.33	52.55	328.39	0.39	0.17
Malner	611	70.00	2230.71	2231.07	2230.89	2231.08	0.005005	0.96	111.55	519.00	0.36	0.21
Waterhole	3245	44.00	2246.34	2246.80	2246.80	2246.96	0.002185	2.30	20.64	81.18	0.56	0.34
Waterhole	3145	44.00	2244.99	2246.53	2246.52	2246.67	0.004581	3.01	15.28	56.59	0.76	0.27
Waterhole	3045	44.00	2244.43	2246.05	2246.05	2246.19	0.005154	3.13	17.07	58.23	0.62	0.29
Waterhole	2945	44.00	2244.02	2244.52	2244.55	2244.93	0.029117	5.11	8.72	41.79	0.50	0.21
Waterhole	2845	44.00	2245.82	2244.38	2244.38	2244.52	0.003906	3.03	17.24	58.42	0.56	0.29
Chloe	415	84.00	2245.05	2245.75	2245.74	2245.99	0.004308	3.95	22.66	59.72	0.70	0.42
Chloe	315	84.00	2244.67	2245.32	2245.31	2245.54	0.004580	3.74	22.53	49.15	0.75	0.48
Chloe	215	84.00	2244.25	2244.88	2244.87	2245.07	0.004899	3.80	25.02	79.84	0.68	0.31
Chloe	115	84.00	2243.80	2244.66		2244.78	0.001913	2.85	31.67	64.77	0.85	0.49
Chloe	65	84.00	2243.68	2244.42	2244.39	2244.63	0.003803	3.66	28.30	98.31	0.74	0.29
Bradley b. Chloe	3661	21.00	2245.84	2245.96	2245.83	2245.99	0.001457	1.48	15.09	59.98	0.81	0.25
Bradley b. Chloe	3561	21.00	2245.13	2245.91	2245.82	2245.92	0.000826	0.90	28.08	85.30	0.78	0.32
Bradley b. Chloe	3461	21.00	2244.66	2245.80	2245.40	2245.80	0.000080	0.63	49.87	138.04	0.94	0.46

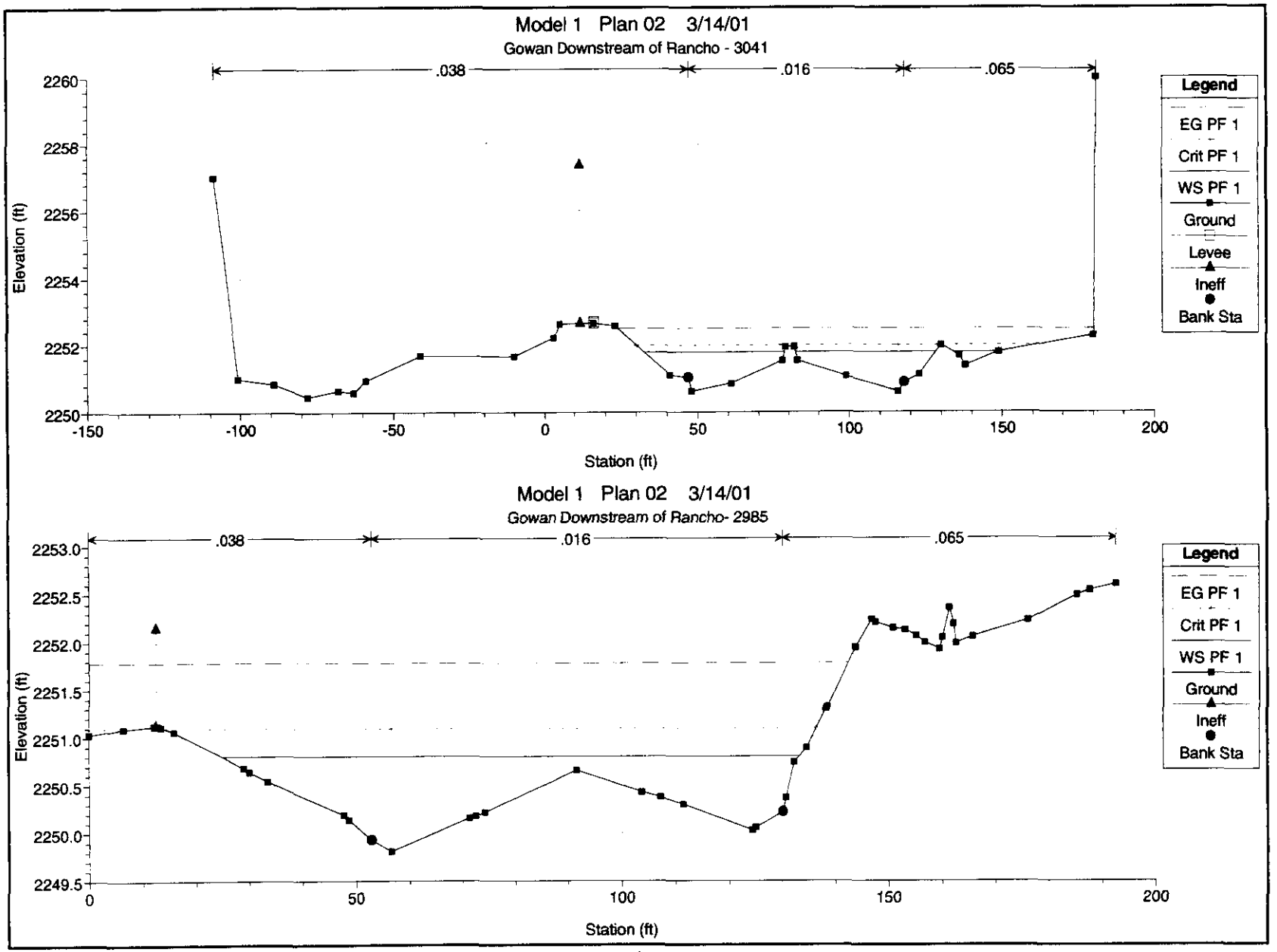
HEC-RAS Plan: GB1 (Continued)

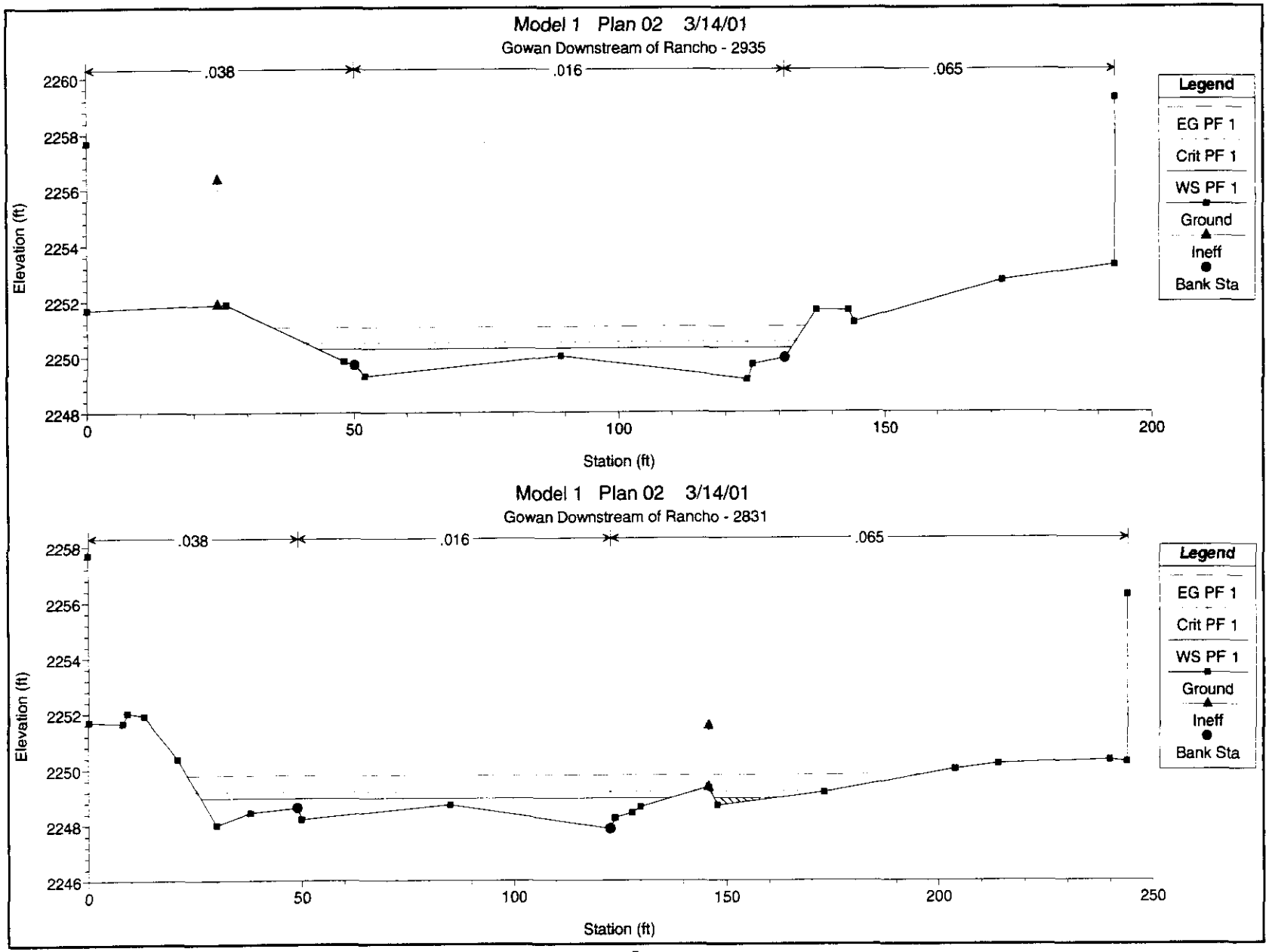
Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Max Chl Depth	Hydr Depth
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	(ft)	(ft)
Bradley to Chloe	3339	21.00	2244.43	2245.90	2244.87	2245.90	0.000008	0.26	110.08	185.08	1.47	0.83
RBP	1213	682.00	2250.30	2251.75	2251.75	2251.98	0.028790	3.86	176.77	398.41	1.45	0.44
RBP	1113	682.00	2248.78	2250.75	2250.01	2250.80	0.001789	1.83	378.67	328.47	1.97	1.15
RBP	1013	682.00	2248.41	2250.45	2250.00	2250.53	0.004509	2.35	289.84	338.04	2.04	0.86
RBP	942	682.00	2248.22	2250.05	2249.59	2250.17	0.005833	2.74	248.63	310.82	1.83	0.80
RBP	874	682.00	2247.89	2249.67	2249.13	2249.91	0.002290	1.60	410.77	491.12	1.96	0.84
RBP	830	681.00	2247.44	2249.73	2248.93	2249.78	0.002057	1.63	354.26	375.95	2.29	0.97
RBP	730	681.00	2247.57	2249.44	2248.93	2249.52	0.003302	2.33	250.12	277.10	1.91	1.01
RBP	636	681.00	2246.99	2248.43	2248.43	2248.82	0.020134	5.15	128.12	156.07	1.75	0.81
RBP	484	783.00	2244.23	2246.23	2246.23	2246.34	0.001046	0.82	379.62	595.05	2.43	0.77
RBP	391	783.00	2245.37	2246.00	2246.00	2246.16	0.001336	0.70	263.03	398.06	2.33	0.99
RBP	316	783.00	2244.74	2245.43	2245.49	2245.86	0.027544	3.53	152.17	222.01	2.44	0.89
RBP	216	783.00	2255.00	2245.58	2245.60	2247.01	0.048406		94.55	82.40	2.65	1.15
RBP	109	783.00	2243.50	2245.50	2244.42	2245.58	0.000458	1.26	422.67	222.29	2.63	1.90

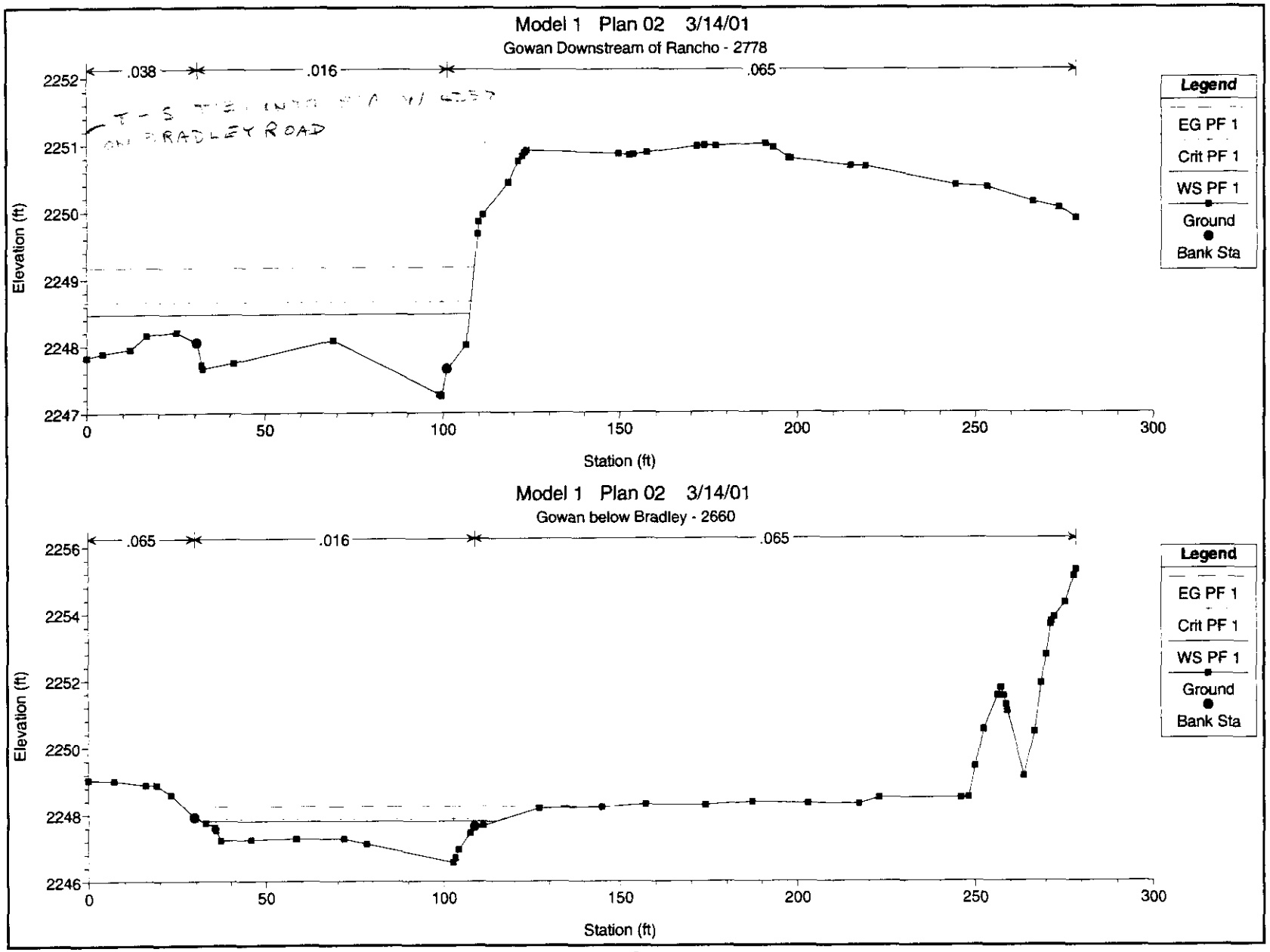

Model 1 Plan 02 3/14/01
Gowan Downstream of Rancho - 3409.5
.033
.016
.065
THIS IS WHERE THE MODEL TIES INTO THE US95 FISR AND IS THE LIMIT OF THE STUDY AREA. WATER IS OVERTOPPING THE MEDIAN
OVERTOPPING FLOW
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
Gowan Downstream of Rancho - 3325.5
.033
.016
.065
THIS IS WHERE THE MODEL TIES INTO THE US95 FISR AND IS THE LIMIT OF THE STUDY AREA
OVERTOPPING FLOW
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)

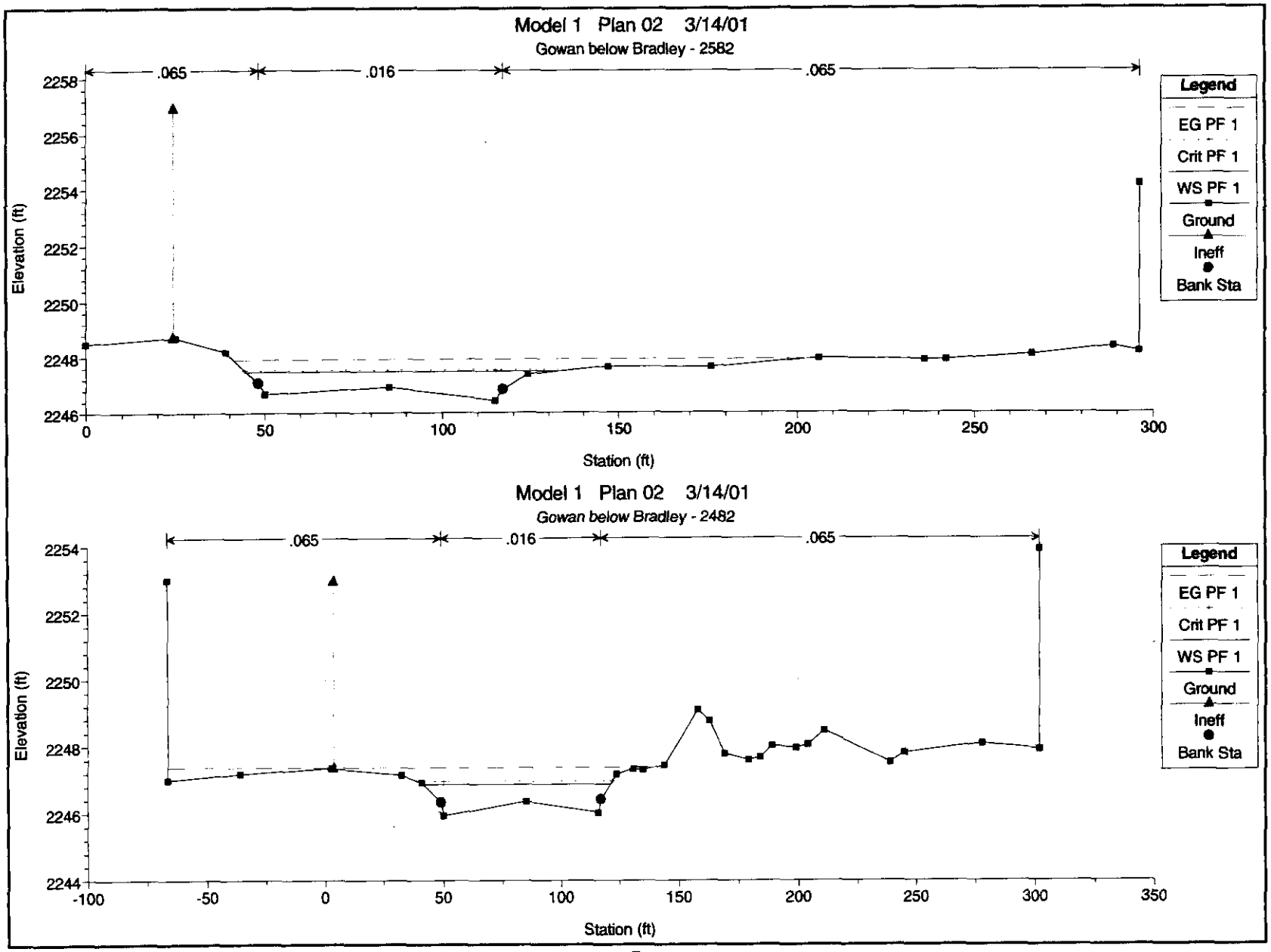

Model 1 Plan 02 3/14/01
Gowan Downstream of Rancho - 3304
.033
.016
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Gowan Downstream of Rancho - 3278
.038
.016
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta

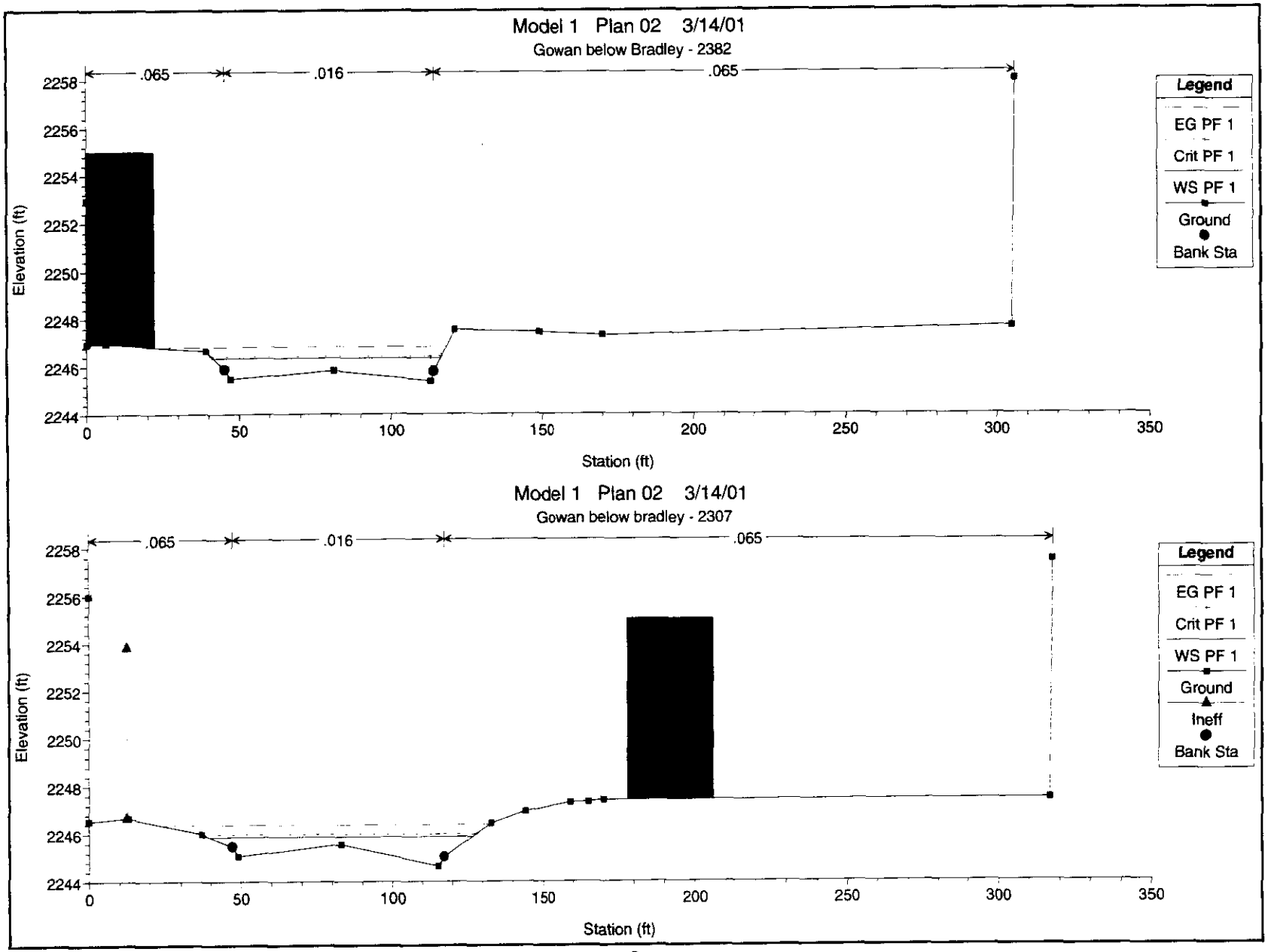

Model 1 Plan 02 3/14/01
Gowan Downstream of Rancho - 3226
.038
.016
0
6
5
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2264
2262
2260
2258
2256
2254
2252
-100
-50
0
50
100
150
Station (ft)
Model 1 Plan 02 3/14/01
Gowan Downstream of Rancho - 3141
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2260
2258
2256
2254
2252
2250
-100
-50
0
50
100
150
200
Station (ft)

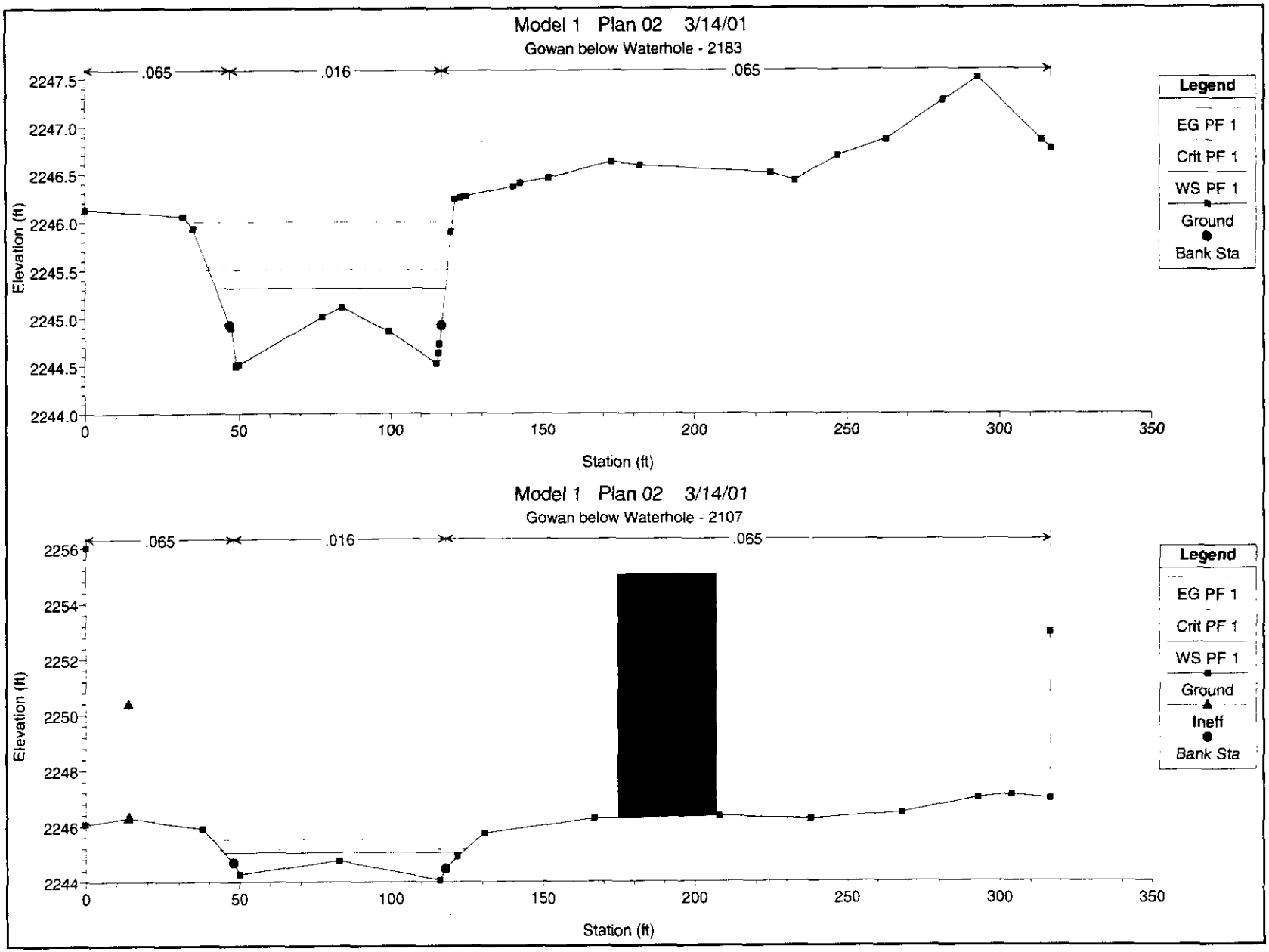

Model 1 Plan 02 3/14/01
Gowan Downstream of Rancho - 3041
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
Gowan Downstream of Rancho- 2985
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

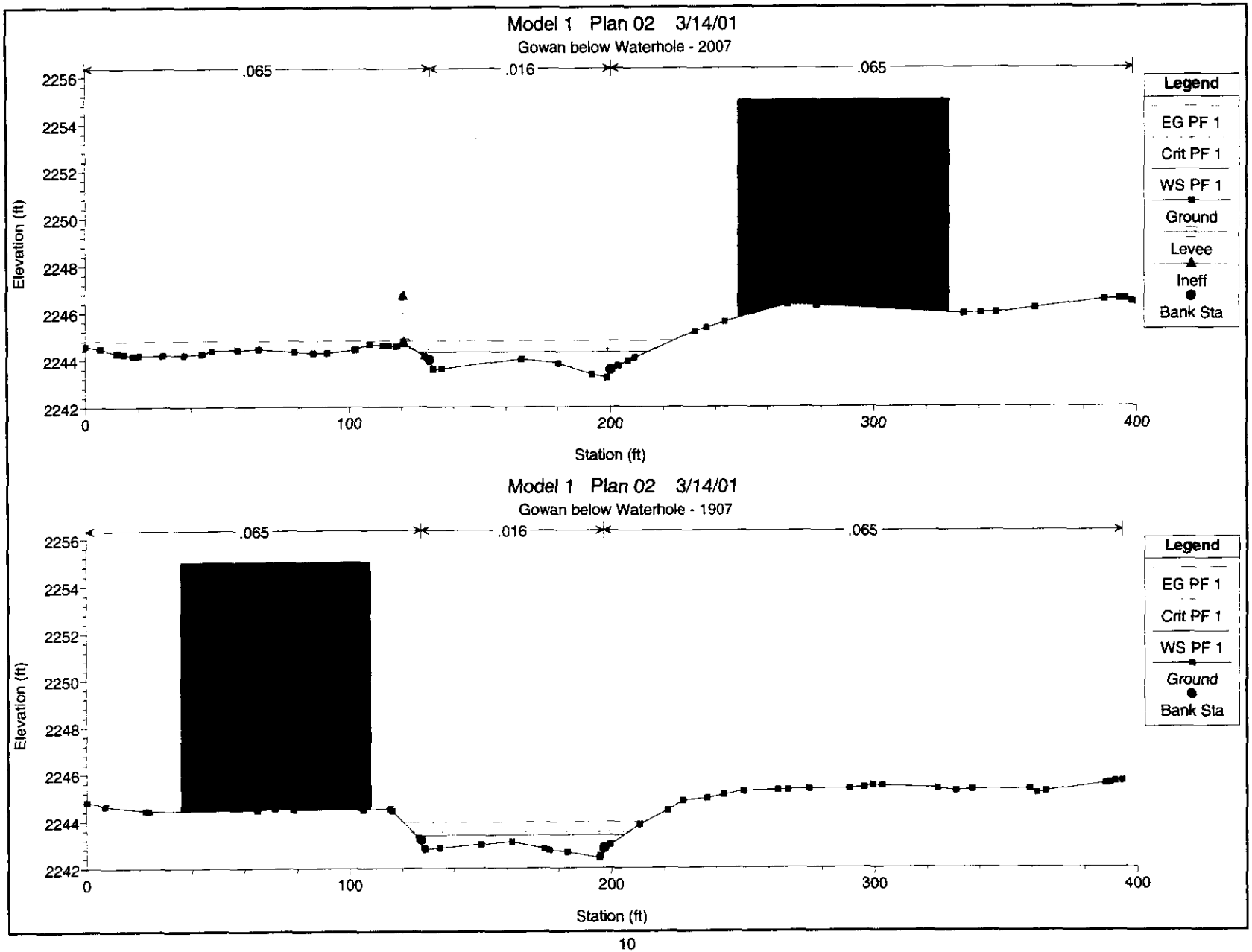

Model 1 Plan 02 3/14/01
Gowan Downstream of Rancho - 2935
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
Gowan Downstream of Rancho - 2831
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

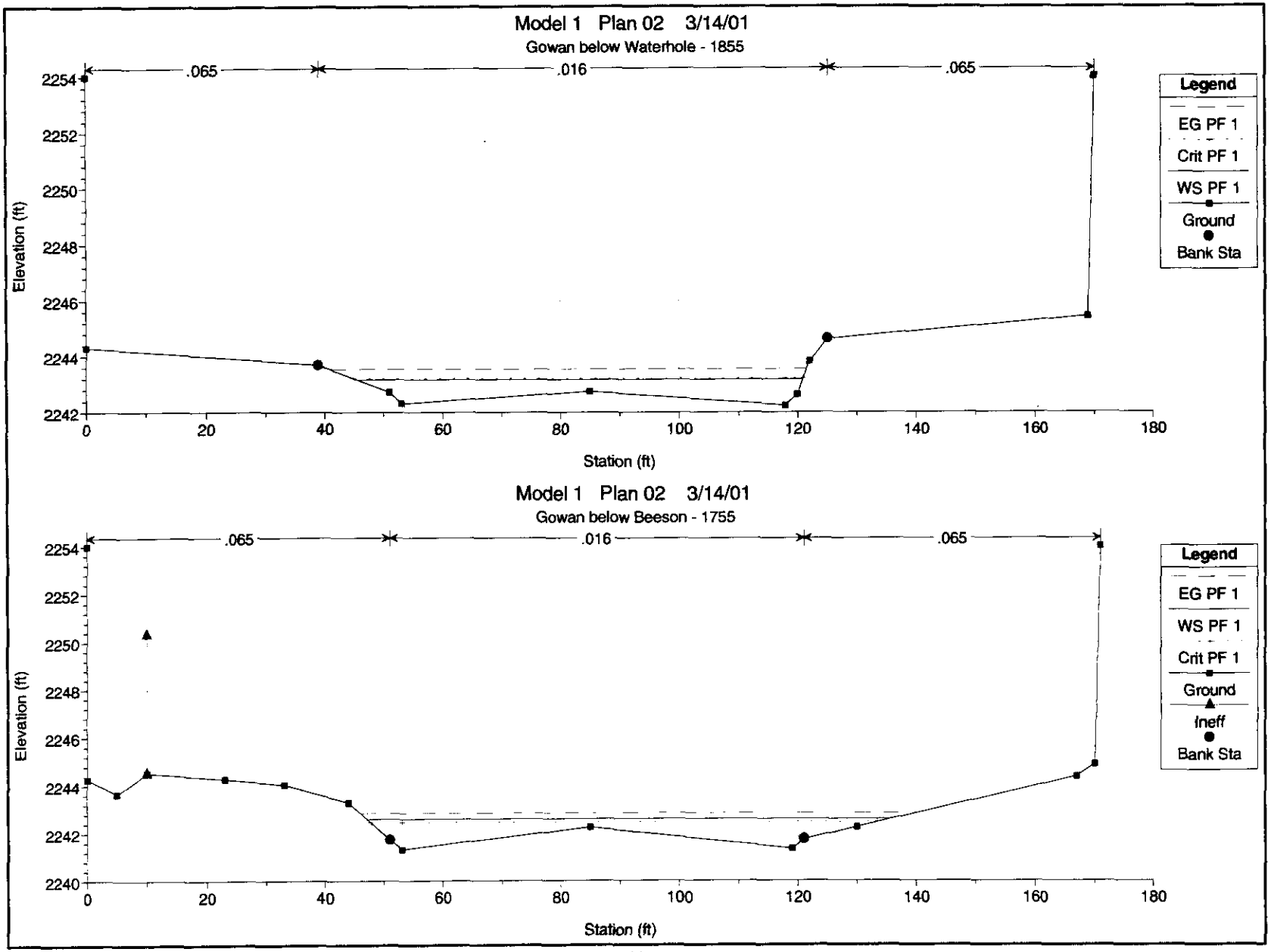

Model 1 Plan 02 3/14/01
Gowan Downstream of Rancho - 2778
.038
.016
.065
T-S TIE-IN
ON BRADLEY ROAD
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 1 Plan 02 3/14/01
Gowan below Bradley - 2660
.065
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

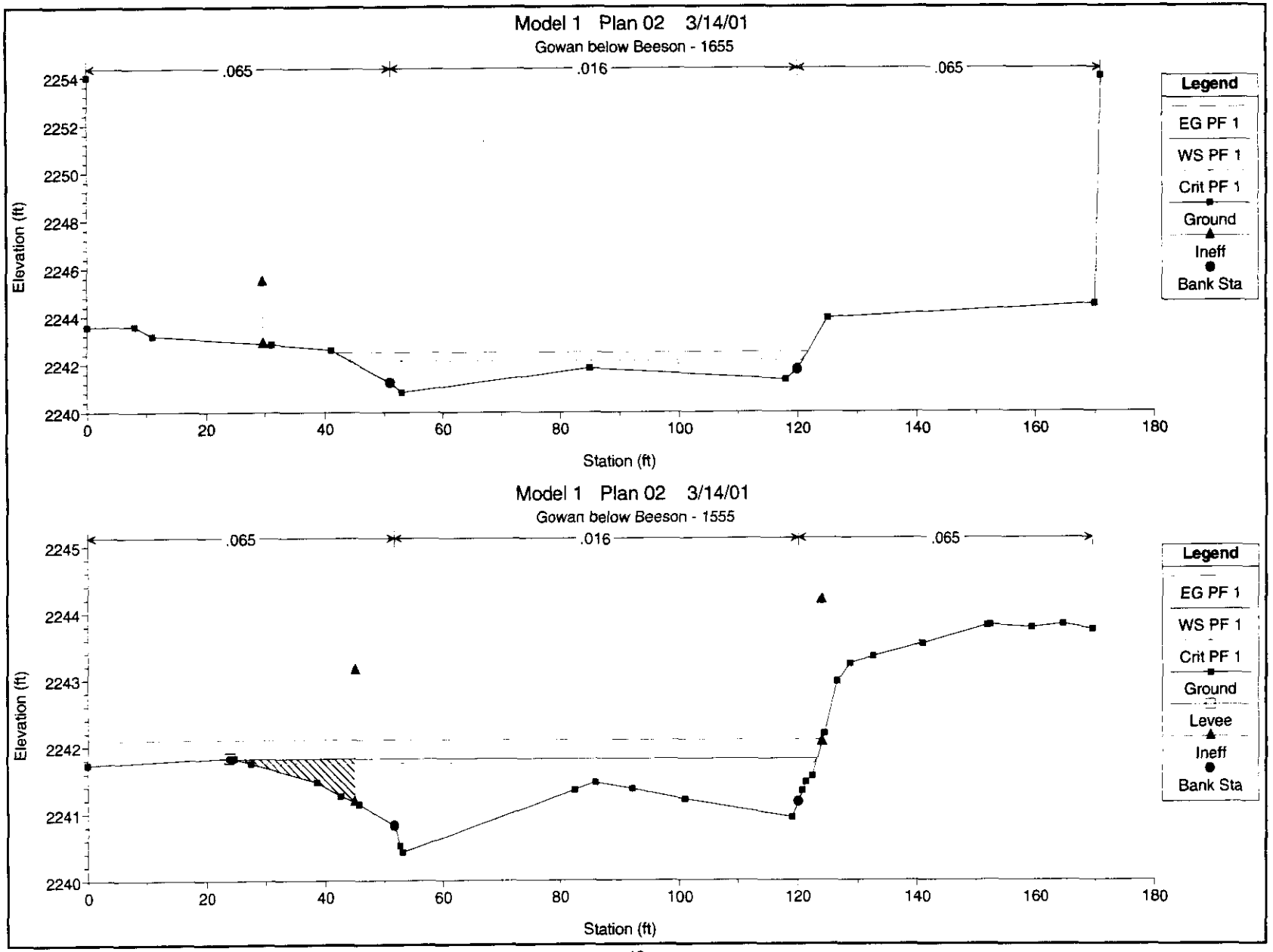

Model 1 Plan 02 3/14/01
Gowan below Bradley - 2582
.065
.016
.065
Elevation (ft)
2258
2256
2254
2252
2250
2248
2246
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Gowan below Bradley - 2482
.065
.016
.065
Elevation (ft)
2254
2252
2250
2248
2246
2244
-100
-50
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

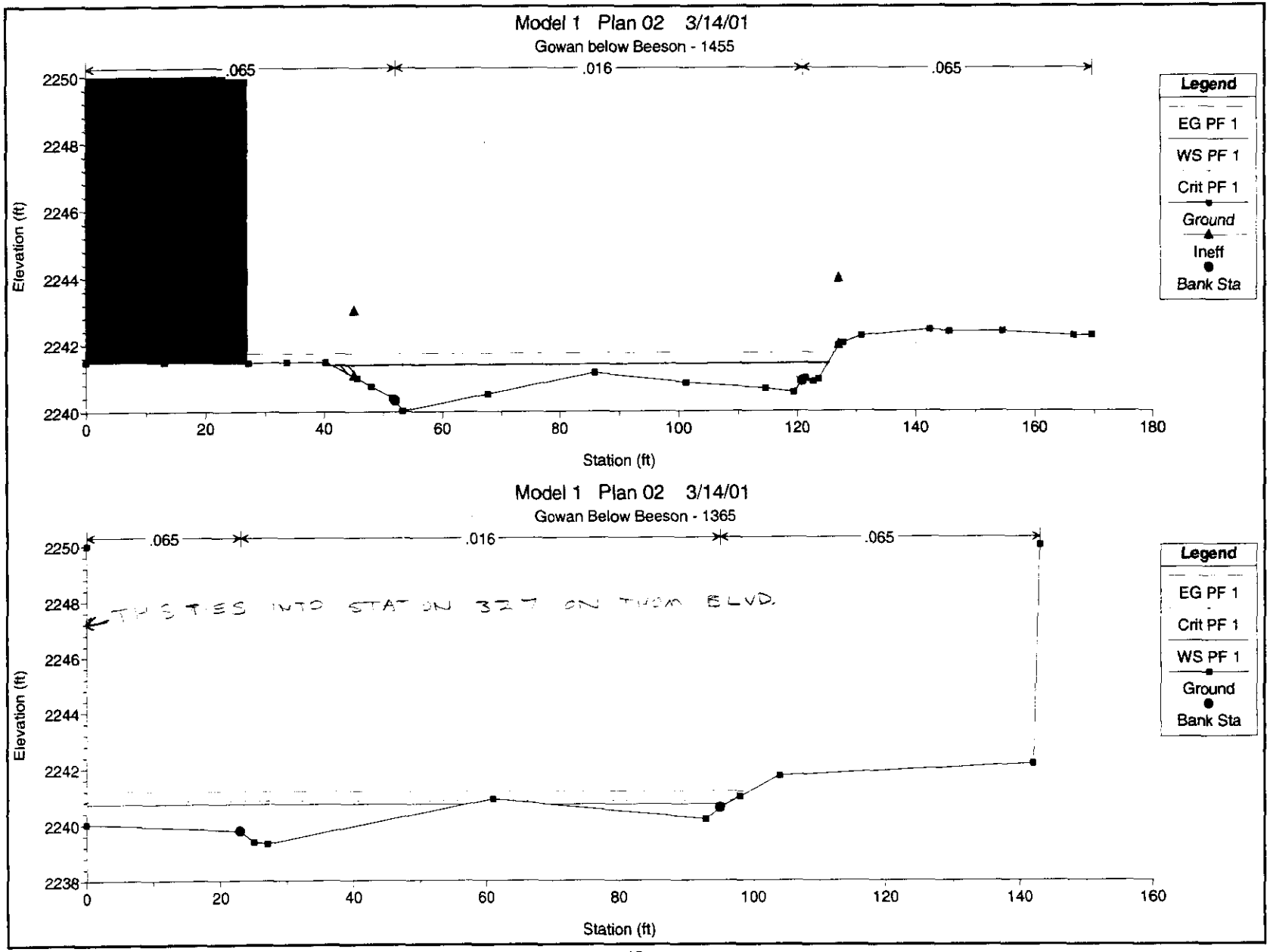

Model 1 Plan 02 3/14/01
Gowan below Bradley - 2382
.065
.016
.065
2258
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 1 Plan 02 3/14/01
Gowan below bradley - 2307
.065
.016
.065
2258
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

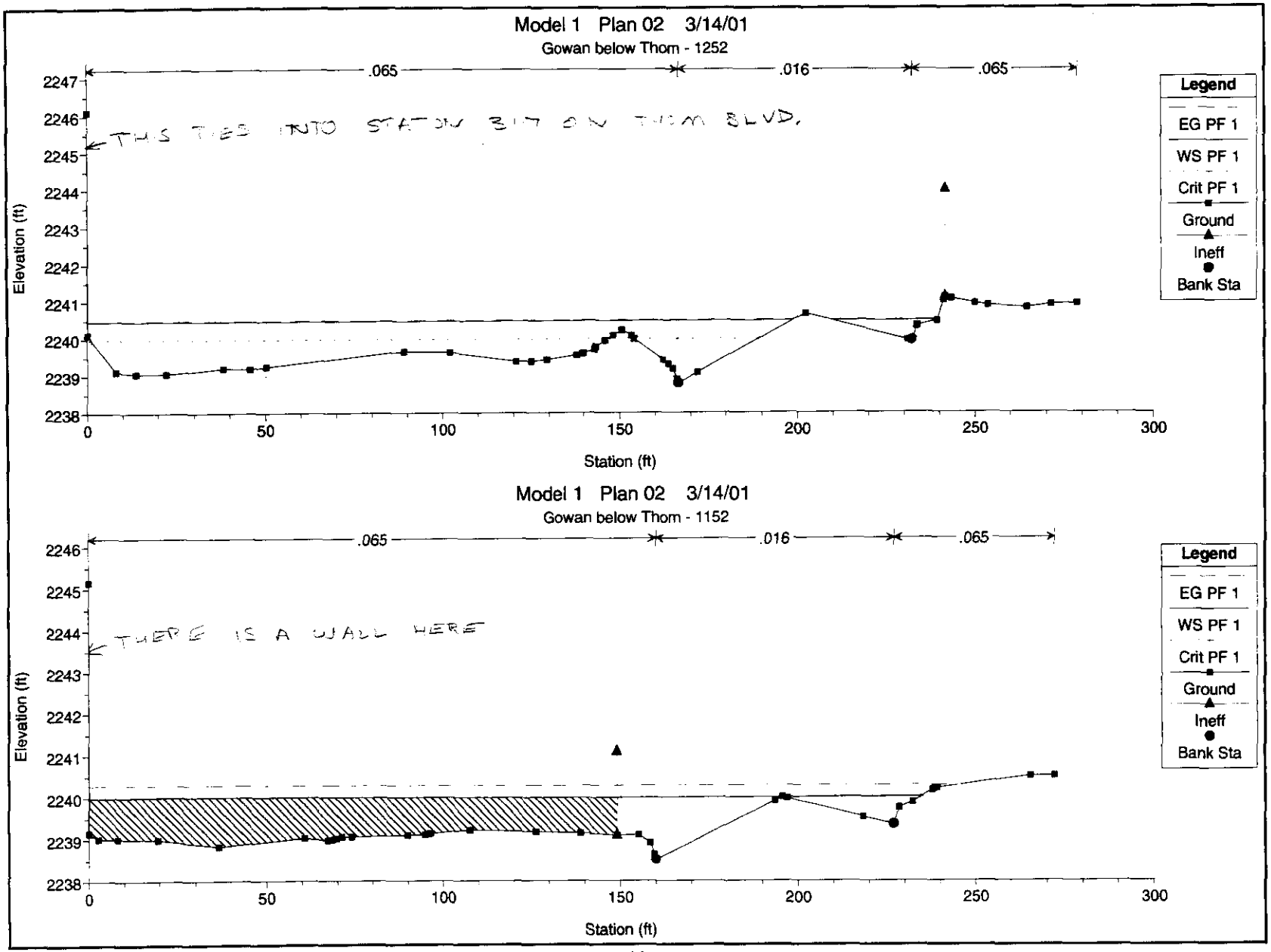

Model 1 Plan 02 3/14/01
Gowan below Waterhole - 2183
.065
.016
.065
2247.5
2247.0
2246.5
2246.0
2245.5
2245.0
2244.5
2244.0
Elevation (ft)
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 1 Plan 02 3/14/01
Gowan below Waterhole - 2107
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

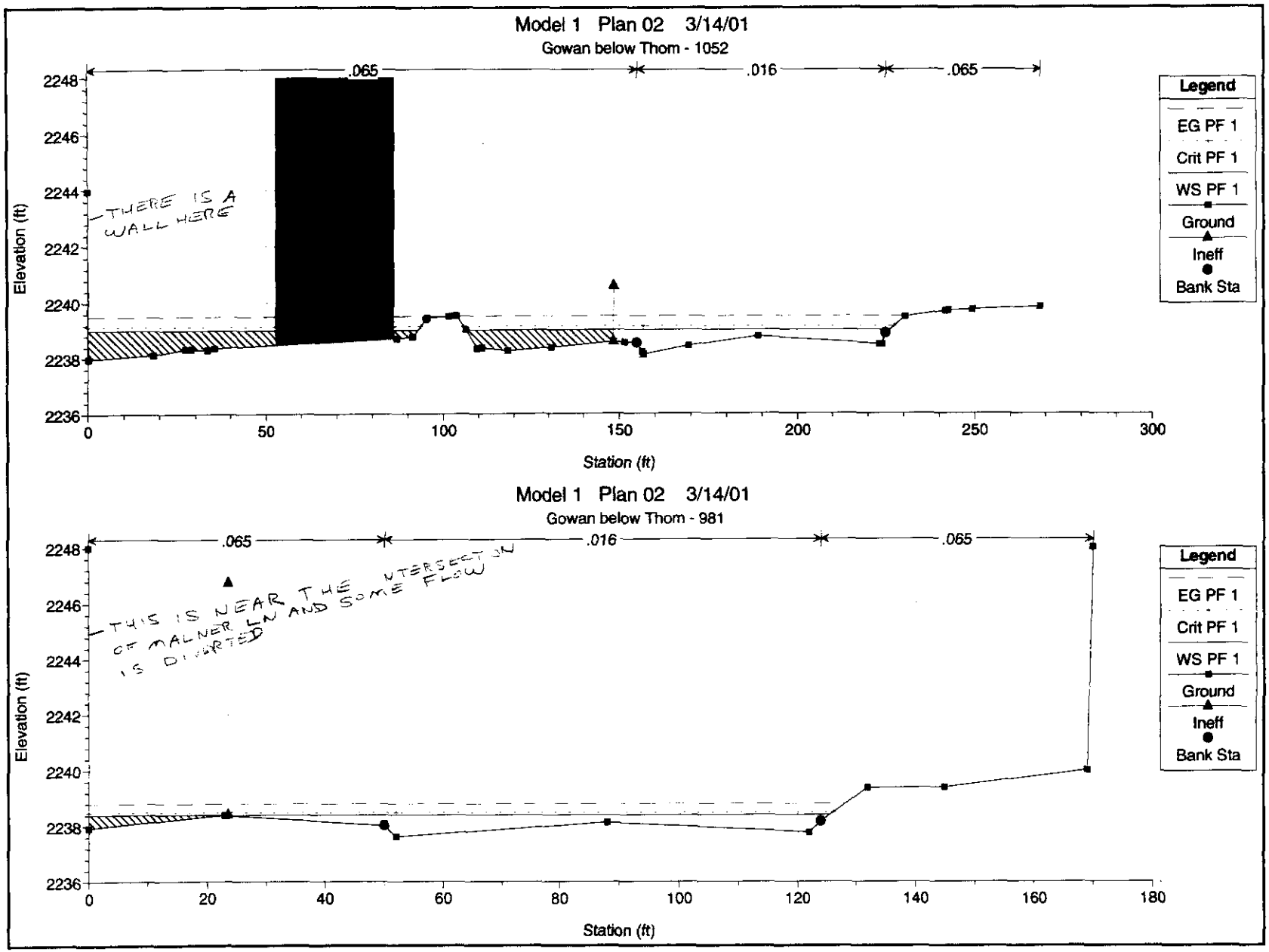

Model 1 Plan 02 3/14/01
Gowan below Waterhole - 2007
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
2256
2254
2252
2250
2248
2246
2244
2242
0
100
200
300
400
Station (ft)
Model 1 Plan 02 3/14/01
Gowan below Waterhole - 1907
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2256
2254
2252
2250
2248
2246
2244
2242
0
100
200
300
400
Station (ft)

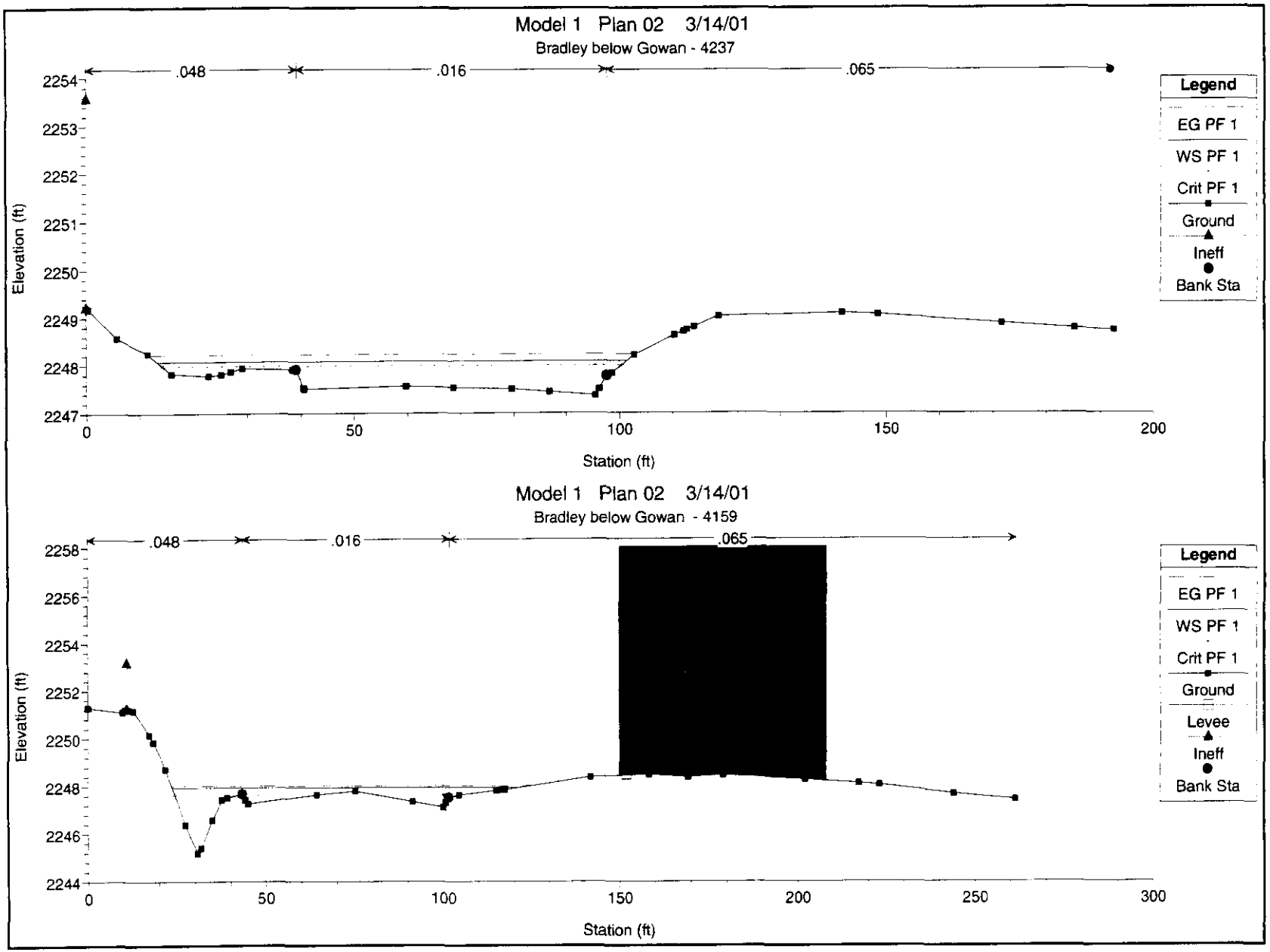

Model 1 Plan 02 3/14/01
Gowan below Waterhole - 1855
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
Gowan below Beeson - 1755
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

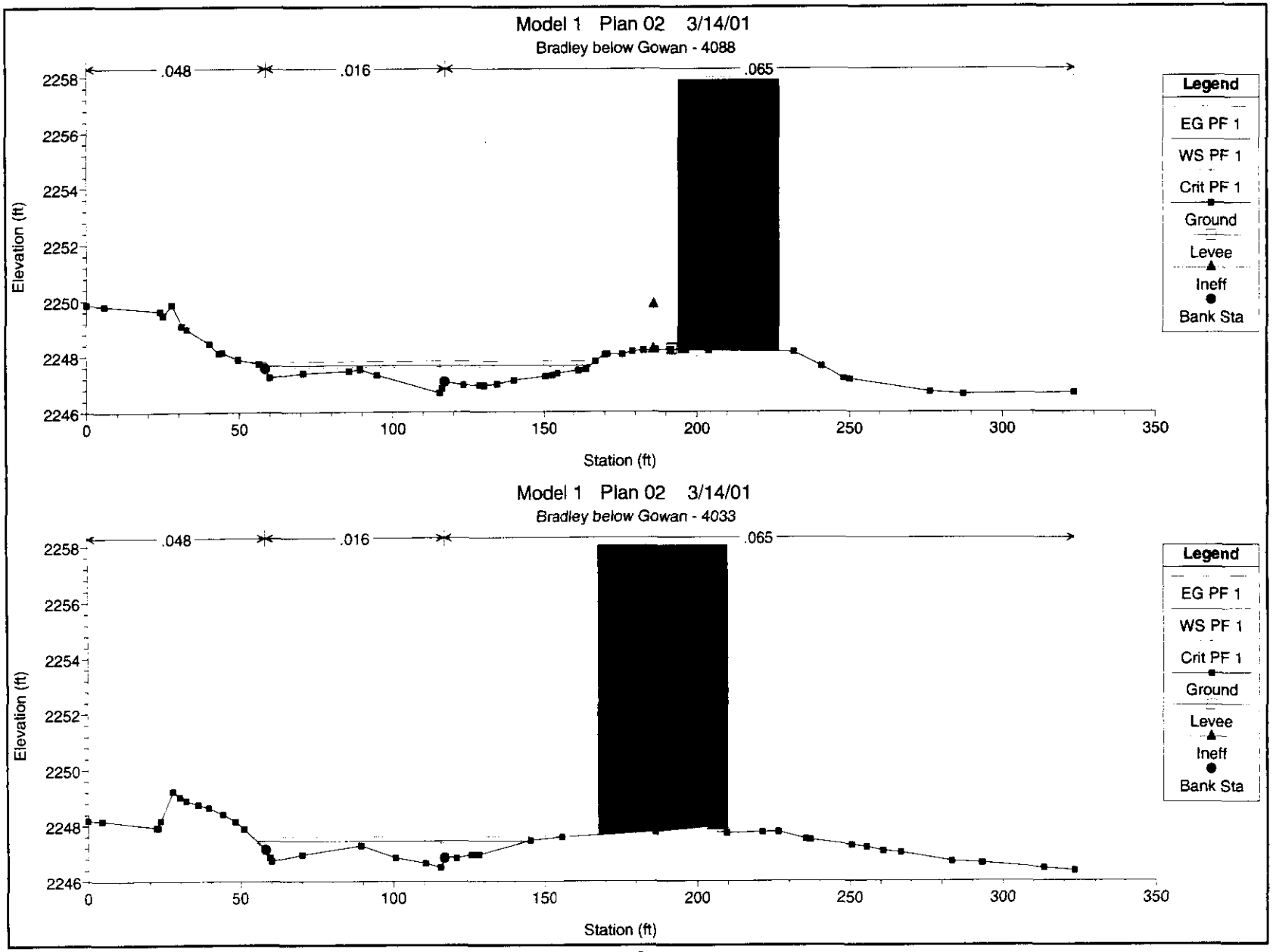

Model 1 Plan 02 3/14/01
Gowan below Beeson - 1655
.065
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Gowan below Beeson - 1555
.065
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta

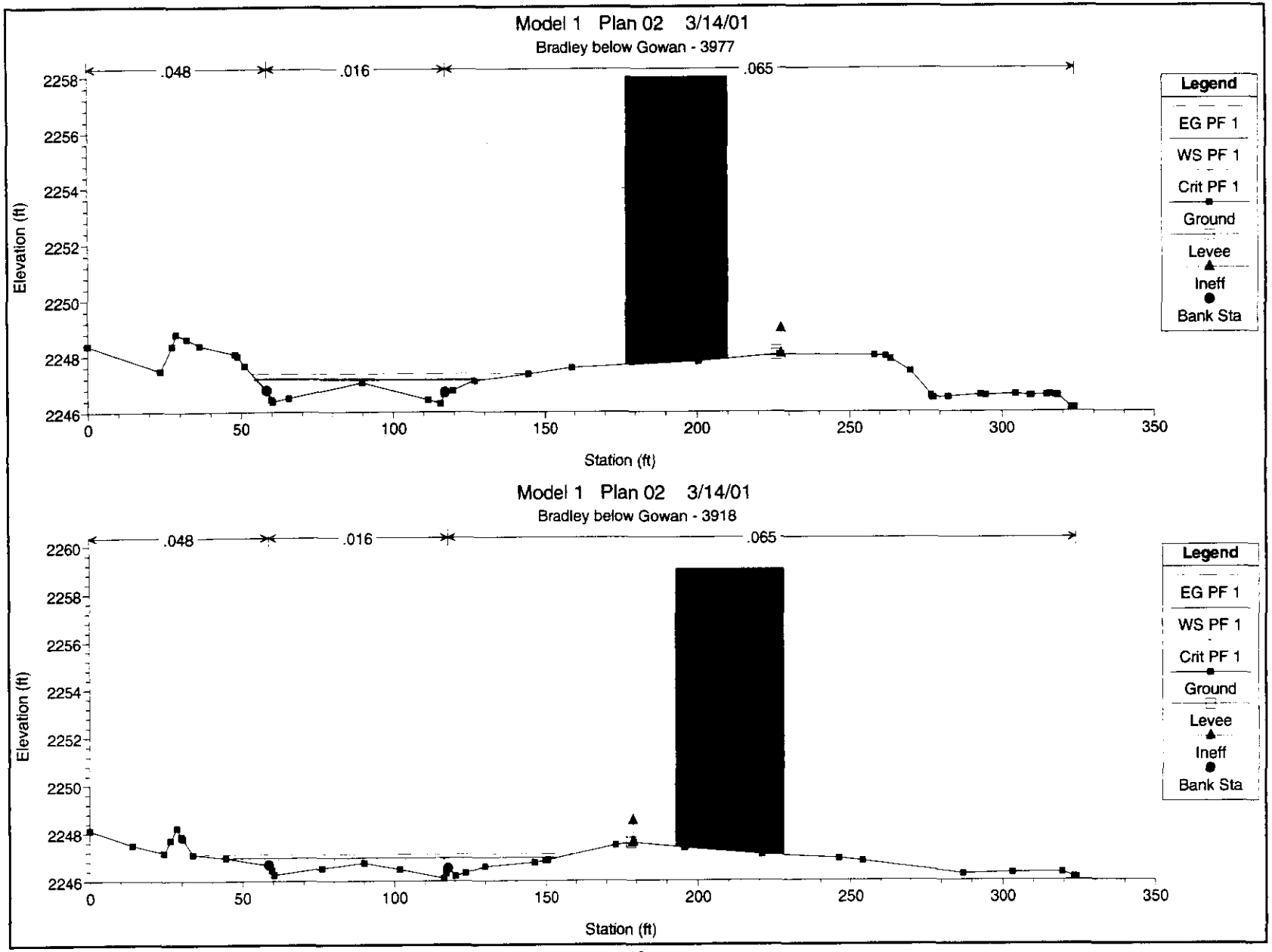

Model 1 Plan 02 3/14/01
Gowan below Beeson - 1455
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
Gowan Below Beeson - 1365
.065
.016
.065
THIS TIES INTO STATION 327 ON TYSON BLVD.
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

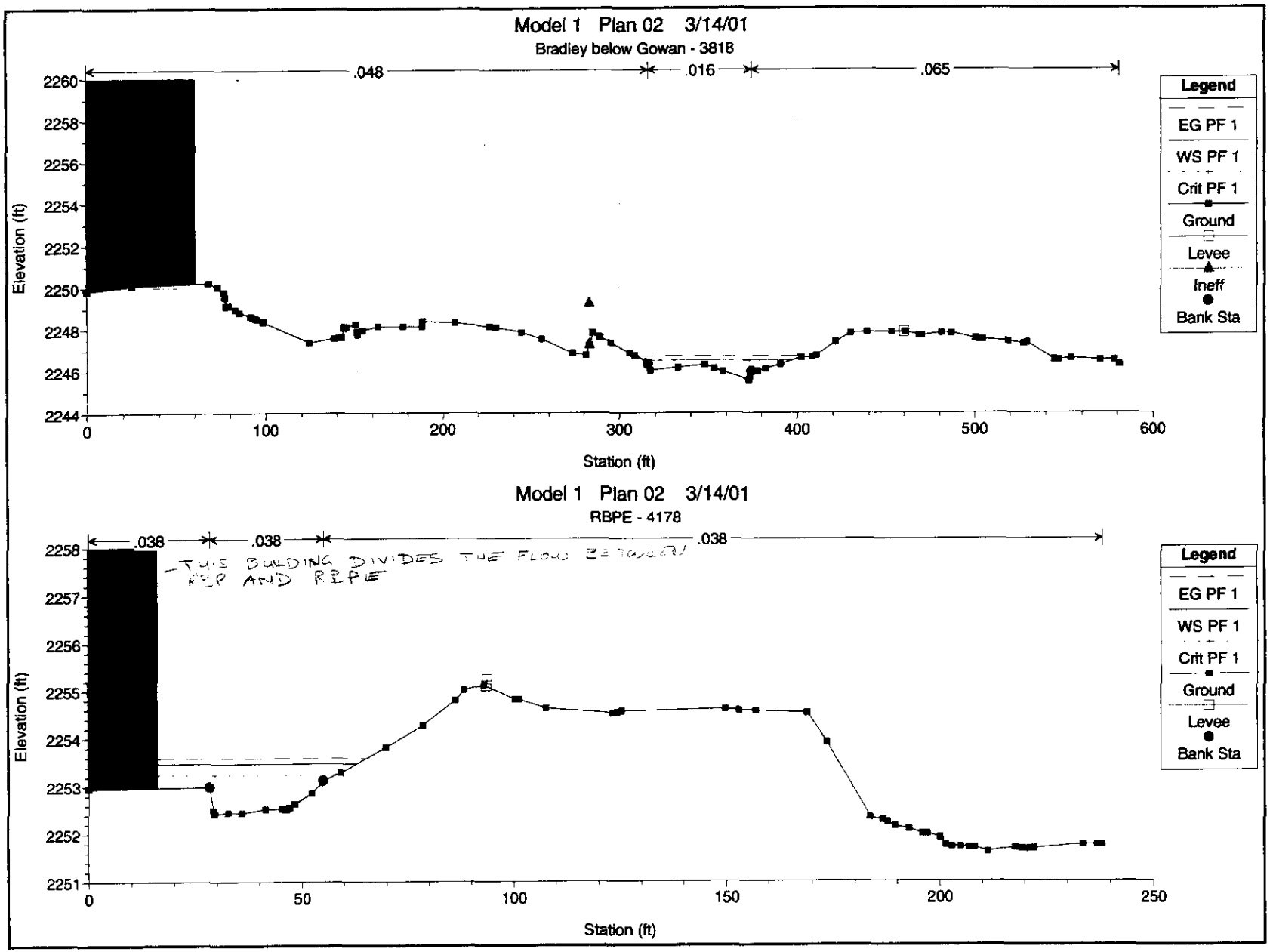

Model 1 Plan 02 3/14/01
Gowan below Thom - 1252
.065
.016
.065
THIS TIES INTO STATION 317 ON THOM BLVD.
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Gowan below Thom - 1152
.065
.016
.065
THERE IS A WALL HERE
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta

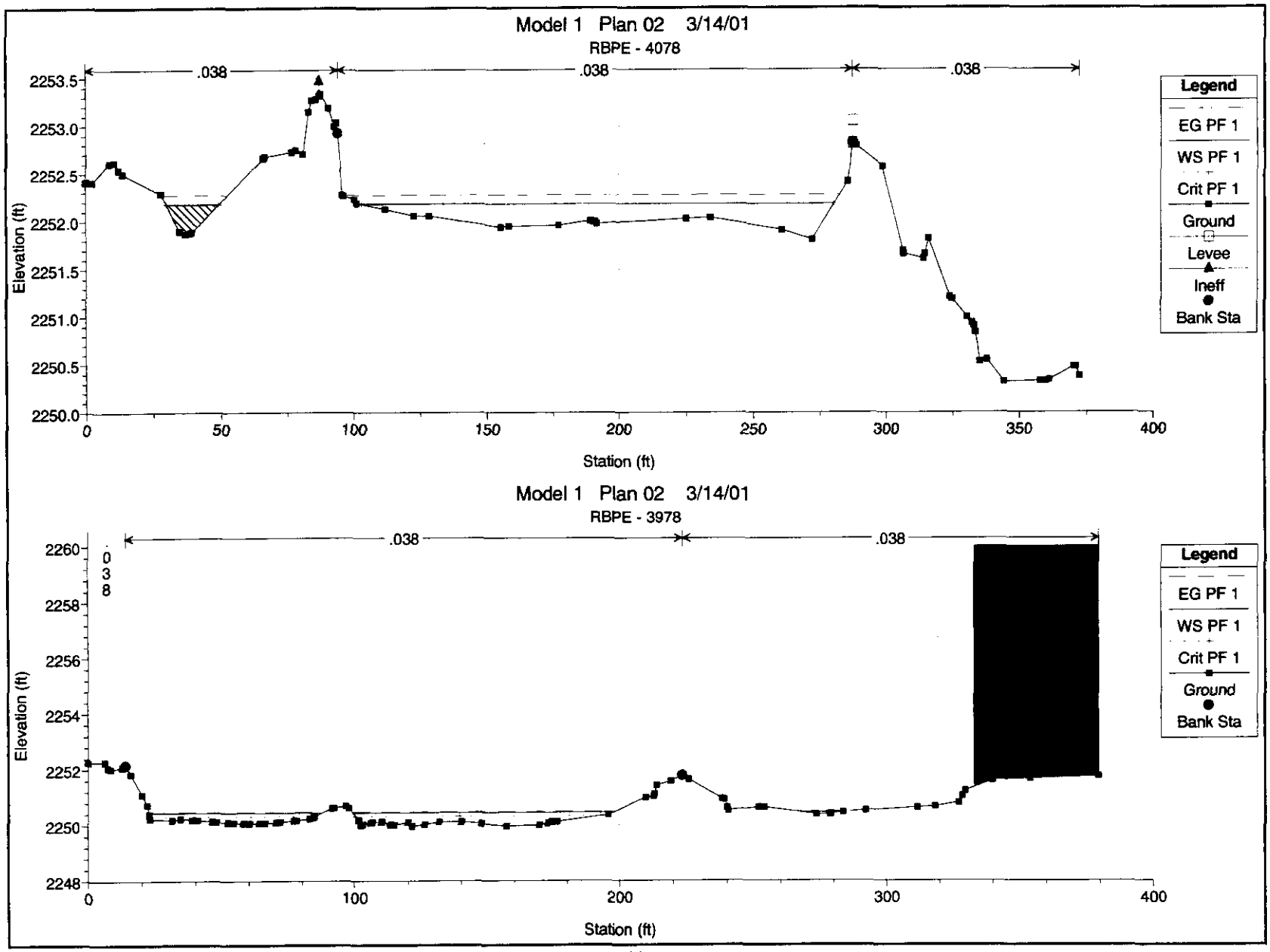

Model 1 Plan 02 3/14/01
Gowan below Thom - 1052
.065
.016
.065
THERE IS A WALL HERE
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Gowan below Thom - 981
.065
.016
.065
THIS IS NEAR THE INTERSECTION OF MALNER LN AND SOME FLOW IS DIVERTED
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

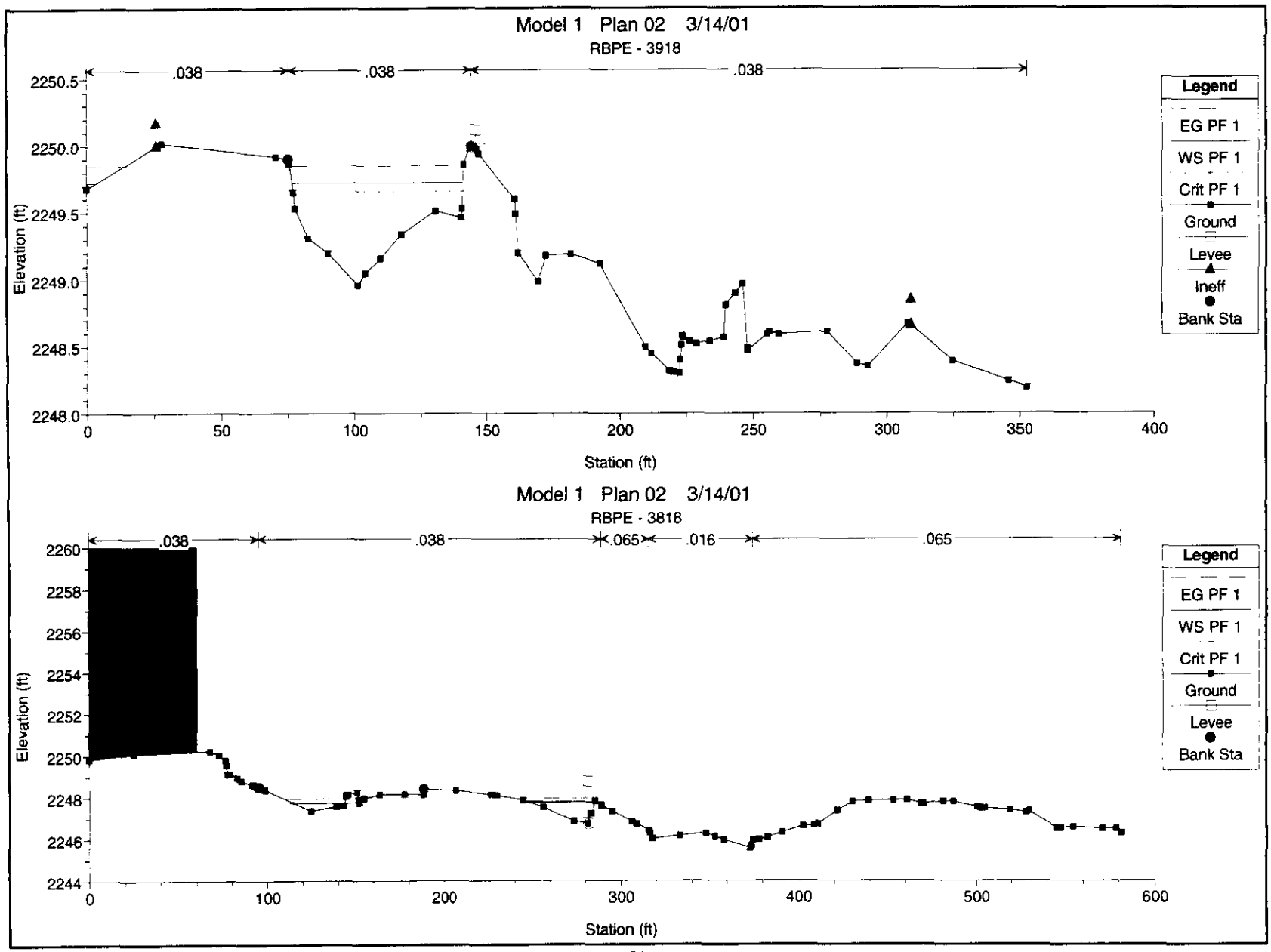

Model 1 Plan 02 3/14/01
Bradley below Gowan - 4237
.048
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
Bradley below Gowan - 4159
.048
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)

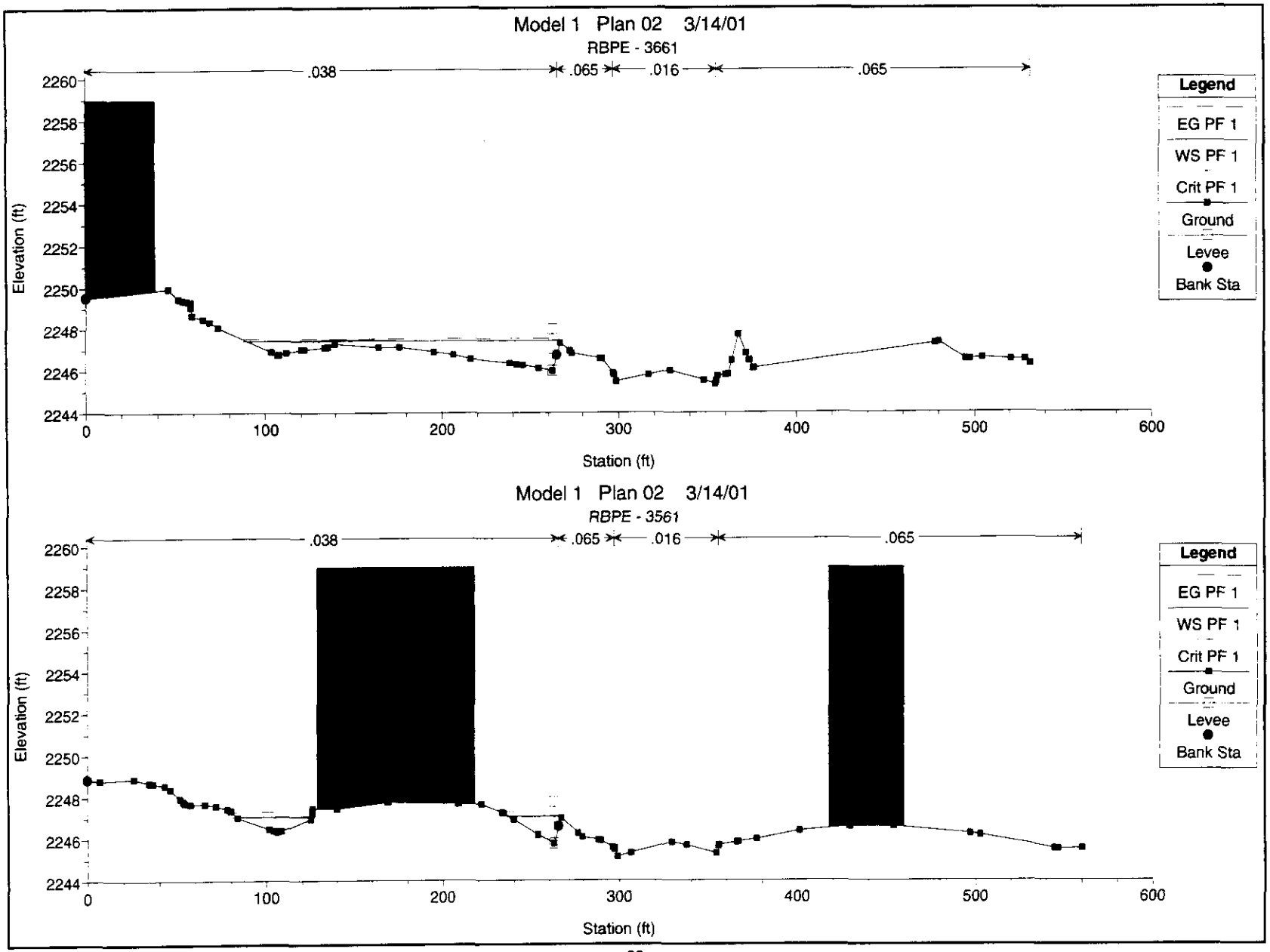

Model 1 Plan 02 3/14/01
Bradley below Gowan - 4088
.048
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Bradley below Gowan - 4033
.048
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta

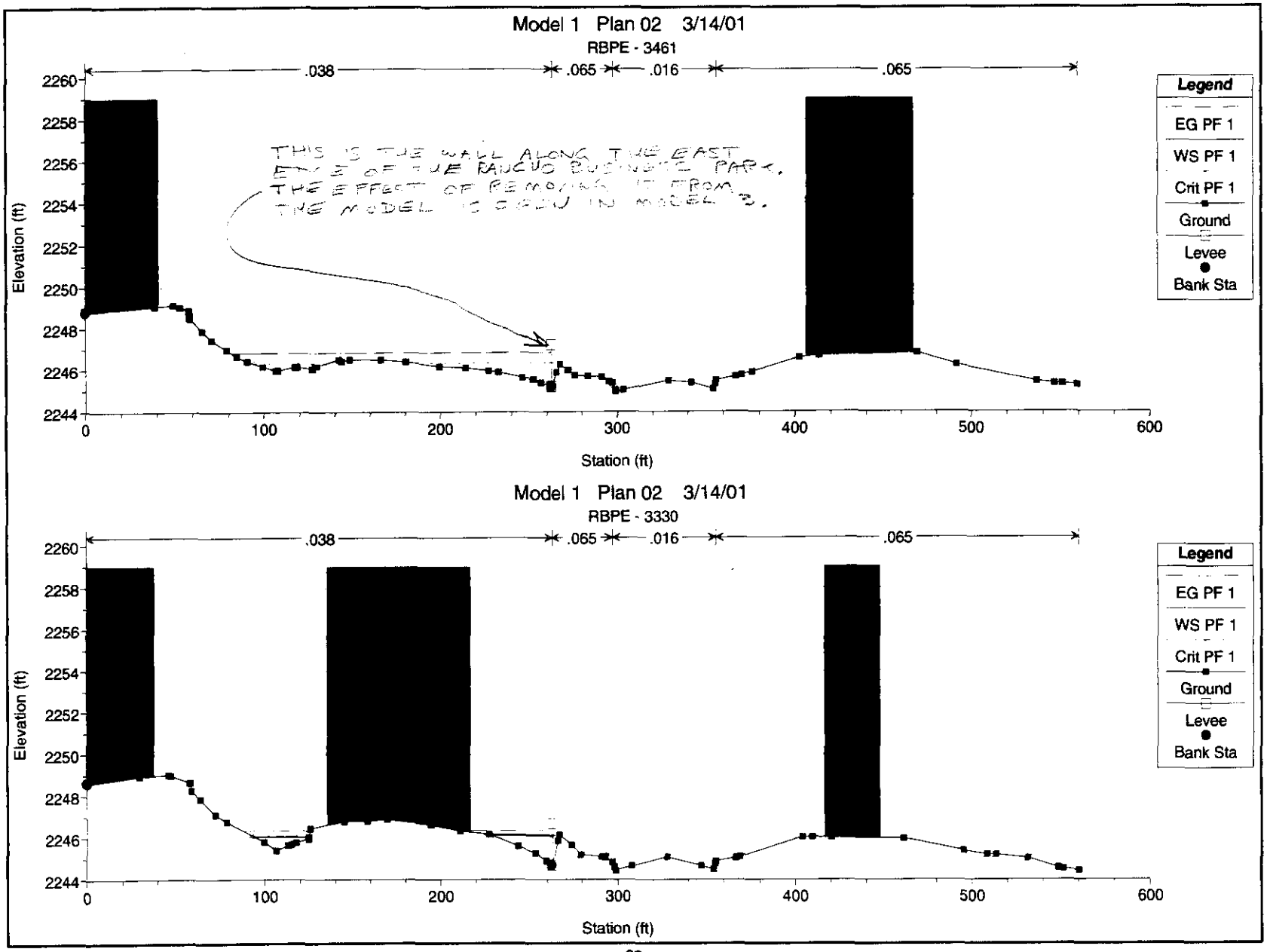

Model 1 Plan 02 3/14/01
Bradley below Gowan - 3977
.048
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Bradley below Gowan - 3918
.048
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta

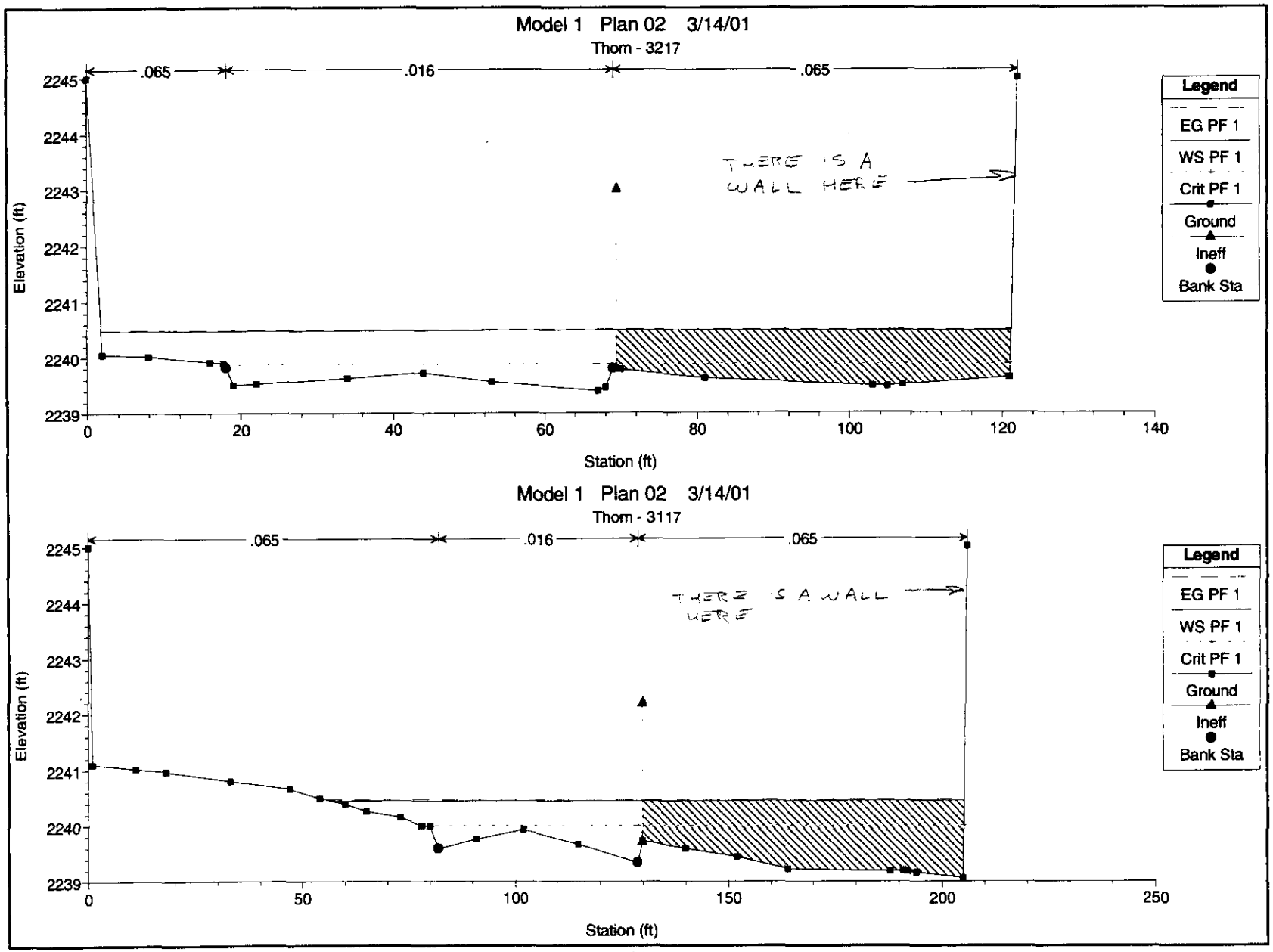

Model 1 Plan 02 3/14/01
Bradley below Gowan - 3818
.048
.016
.065
Elevation (ft)
2260
2258
2256
2254
2252
2250
2248
2246
2244
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
RBPE - 4178
.038
.038
.038
- THIS BUILDING DIVIDES THE FLOW BETWEEN
RBP AND RBPE
Elevation (ft)
2258
2257
2256
2255
2254
2253
2252
2251
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

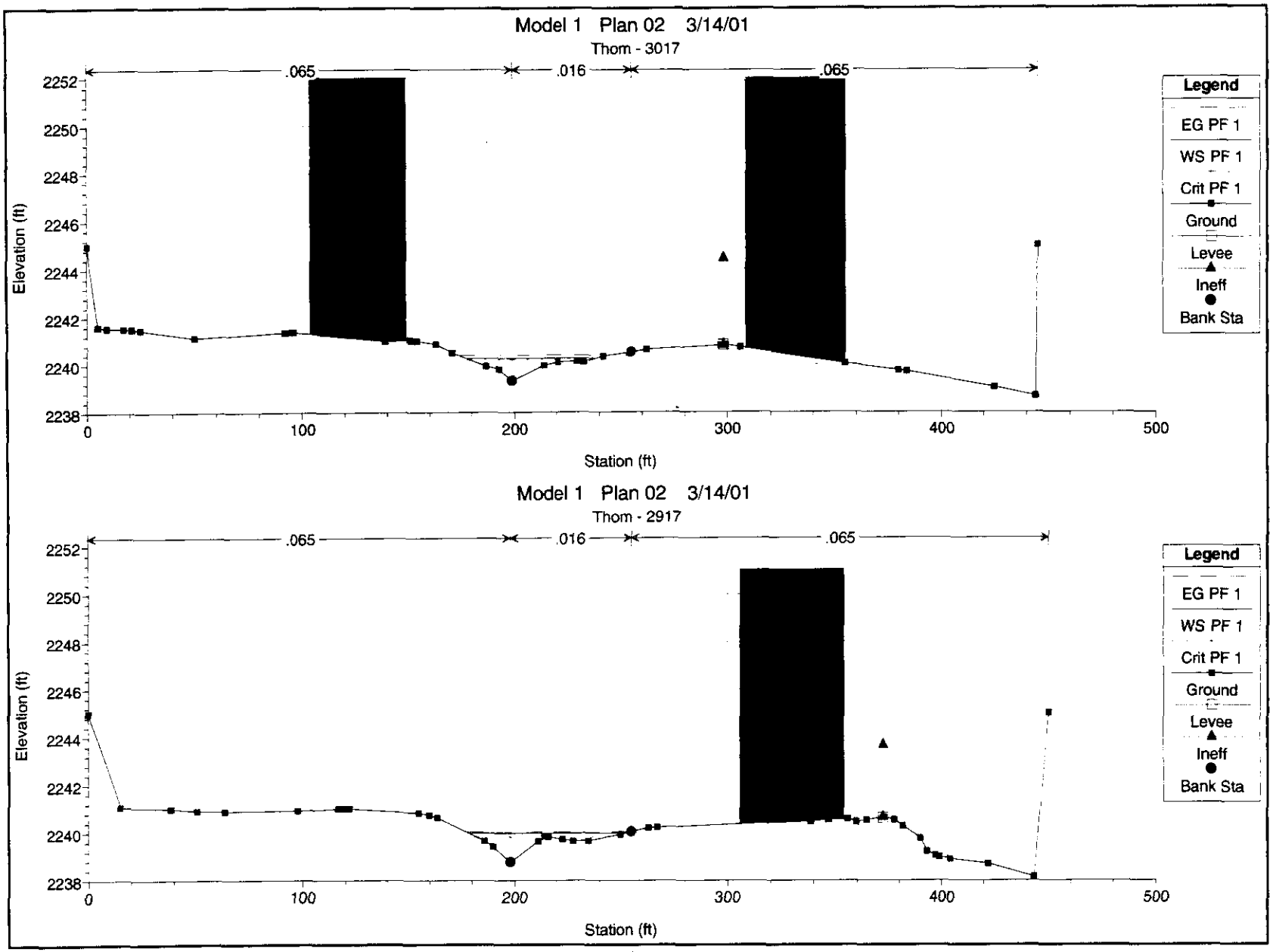

Model 1 Plan 02 3/14/01
RBPE - 4078
.038
.038
.038
Elevation (ft)
2253.5
2253.0
2252.5
2252.0
2251.5
2251.0
2250.5
2250.0
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
RBPE - 3978
.038
.038
Elevation (ft)
2260
2258
2256
2254
2252
2250
2248
0
100
200
300
400
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

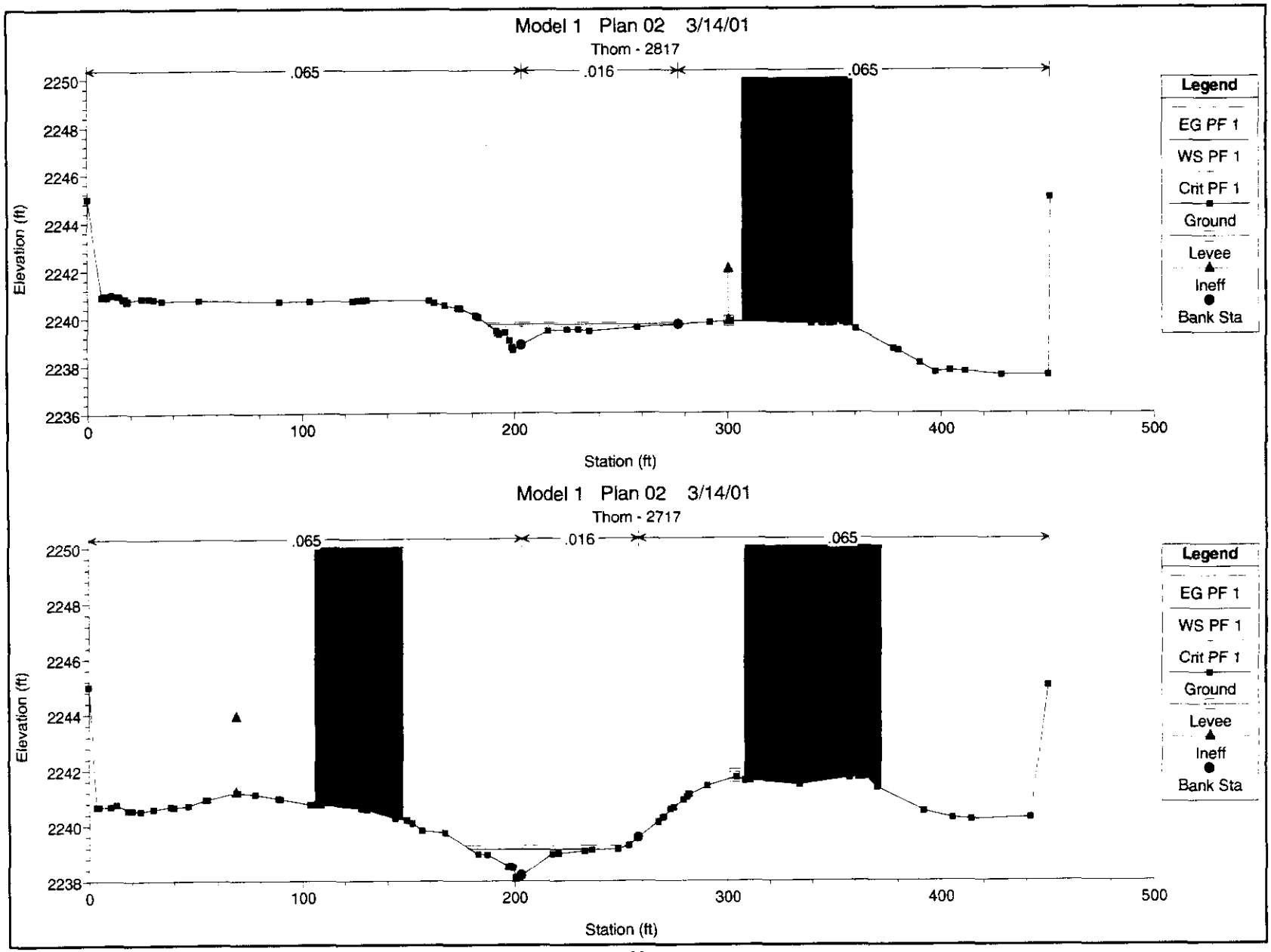

Model 1 Plan 02 3/14/01
RBPE - 3918
.038
.038
.038
2250.5
2250.0
2249.5
2249.0
2248.5
2248.0
Elevation (ft)
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
RBPE - 3818
.038
.038
.065
.016
.065
2260
2258
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

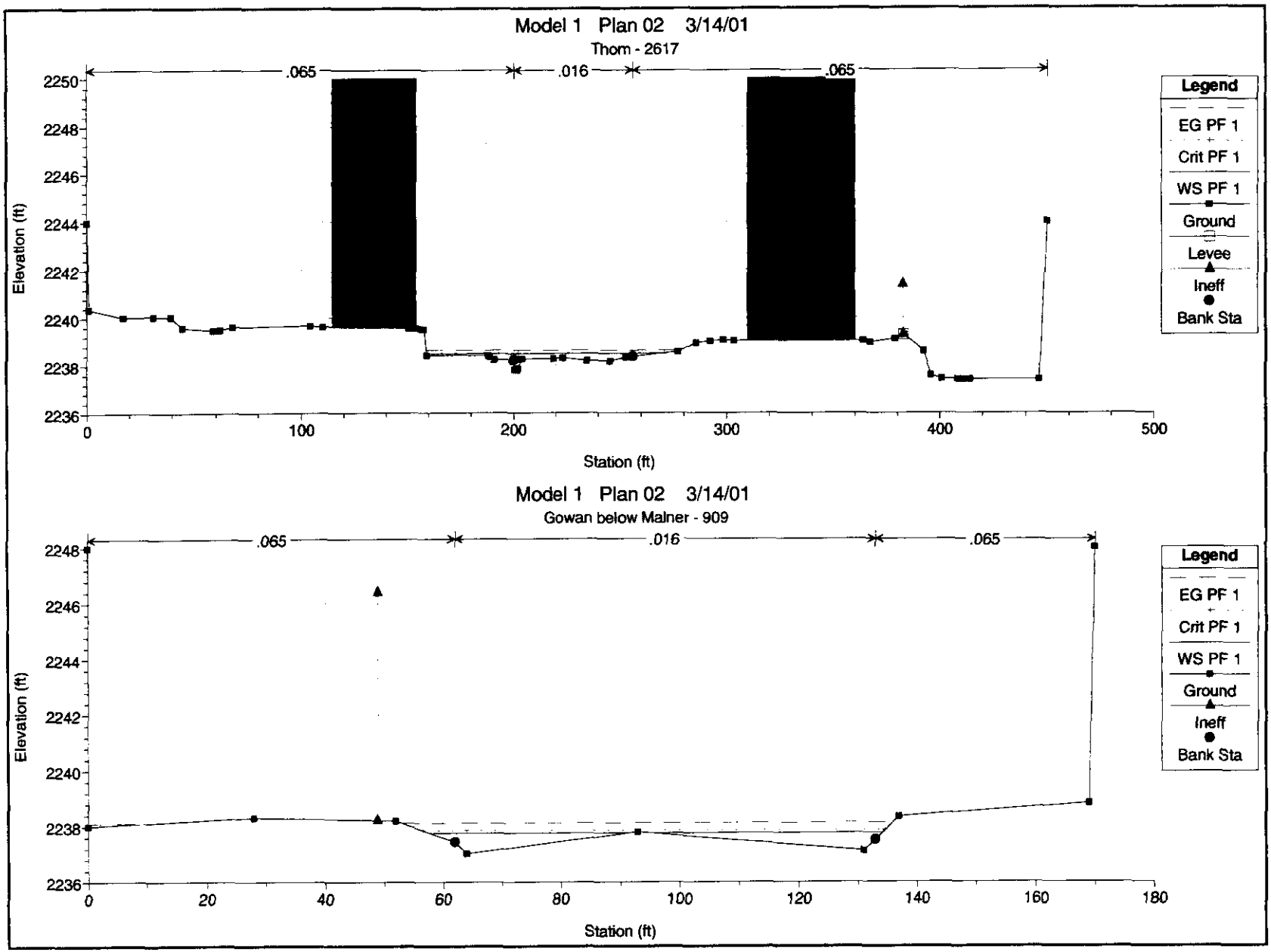

Model 1 Plan 02 3/14/01
RBPE - 3661
.038
.065
.016
.065
Elevation (ft)
2260
2258
2256
2254
2252
2250
2248
2246
2244
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 1 Plan 02 3/14/01
RBPE - 3561
.038
.065
.016
.065
Elevation (ft)
2260
2258
2256
2254
2252
2250
2248
2246
2244
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

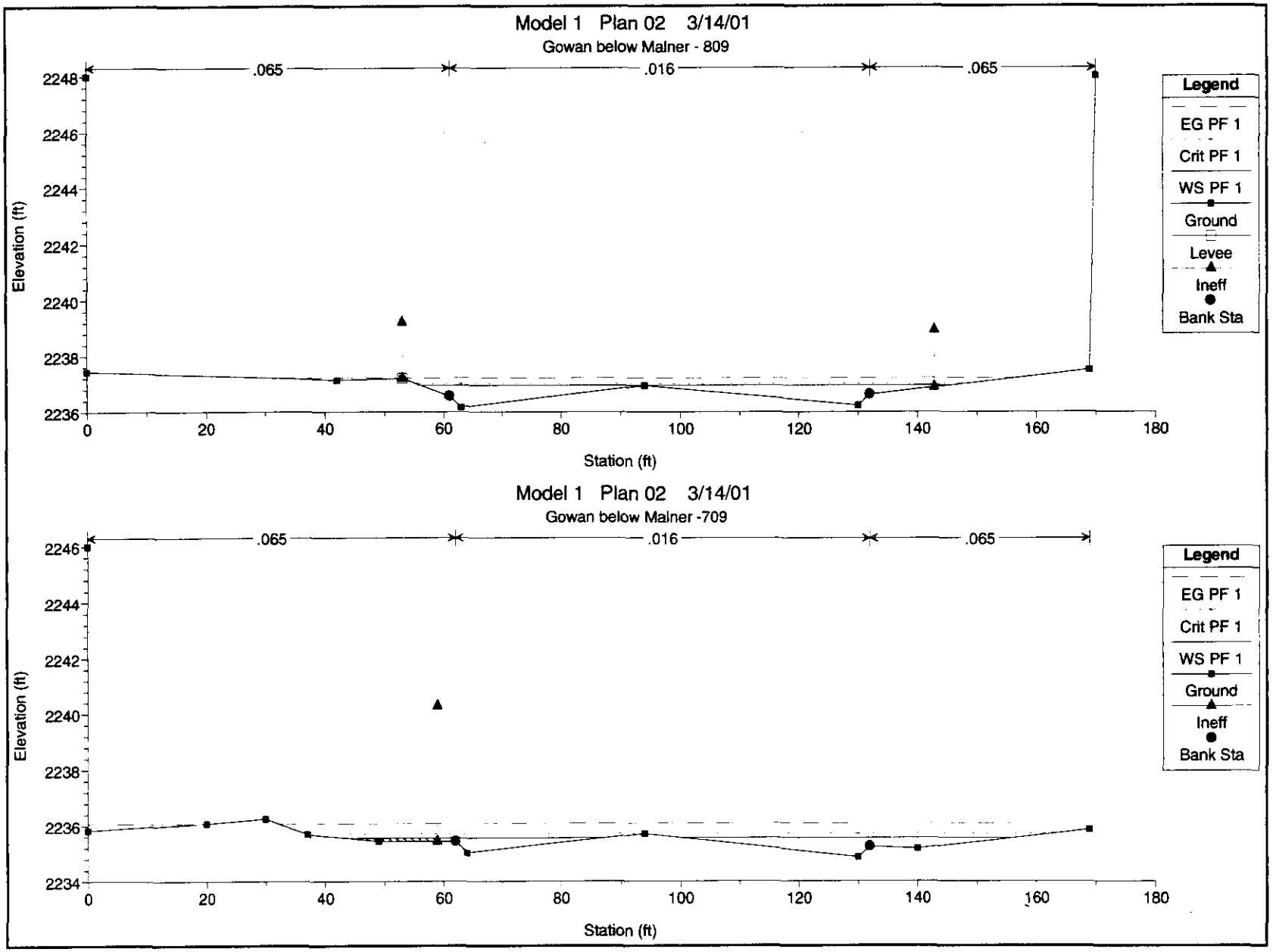

Model 1 Plan 02 3/14/01
RBPE - 3461
.038
.065
.016
.065
THIS IS THE WALL ALONG THE EAST
EDGE OF THE RANCHO BUSINESS PARK.
THE EFFECT OF REMOVING IT FROM
THE MODEL IS SHOWN IN MODEL 3.
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
RBPE - 3330
.038
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

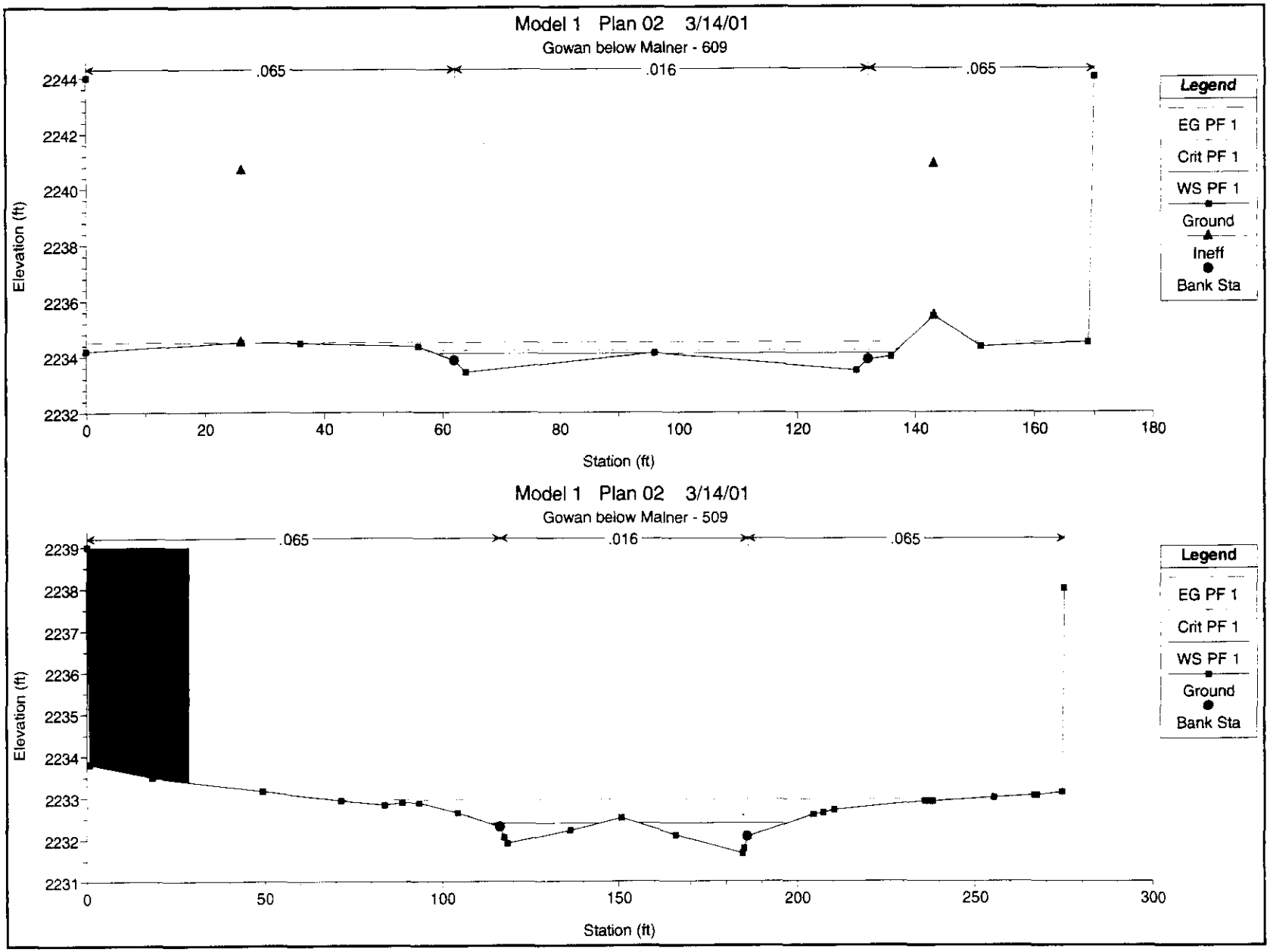

Model 1 Plan 02 3/14/01
Thorn - 3217
.065
.016
.065
THERE IS A WALL HERE
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
Thorn - 3117
.065
.016
.065
THERE IS A WALL HERE
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

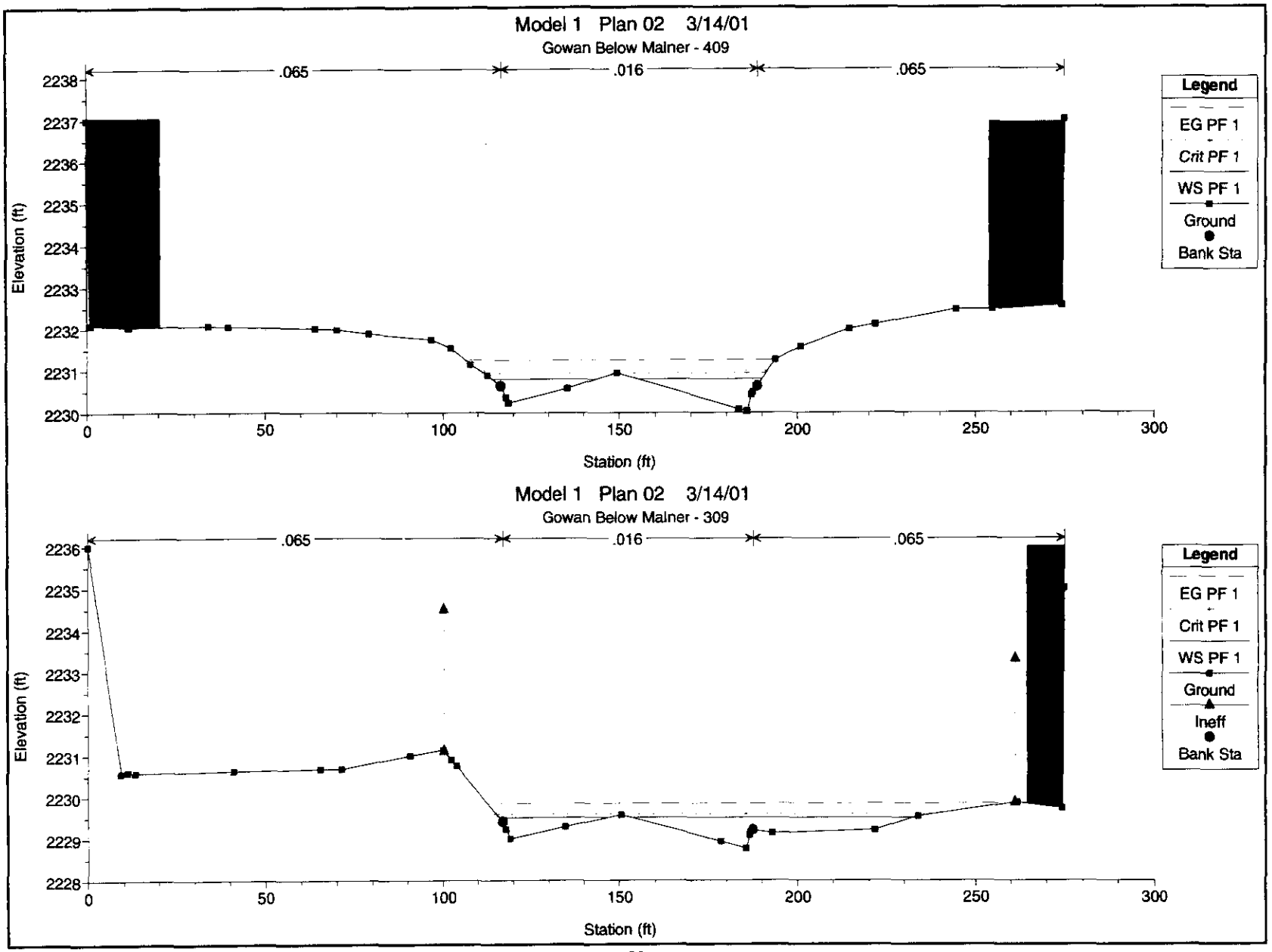

Model 1 Plan 02 3/14/01
Thom - 3017
.065
.016
.065
2252
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Thom - 2917
.065
.016
.065
2252
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta

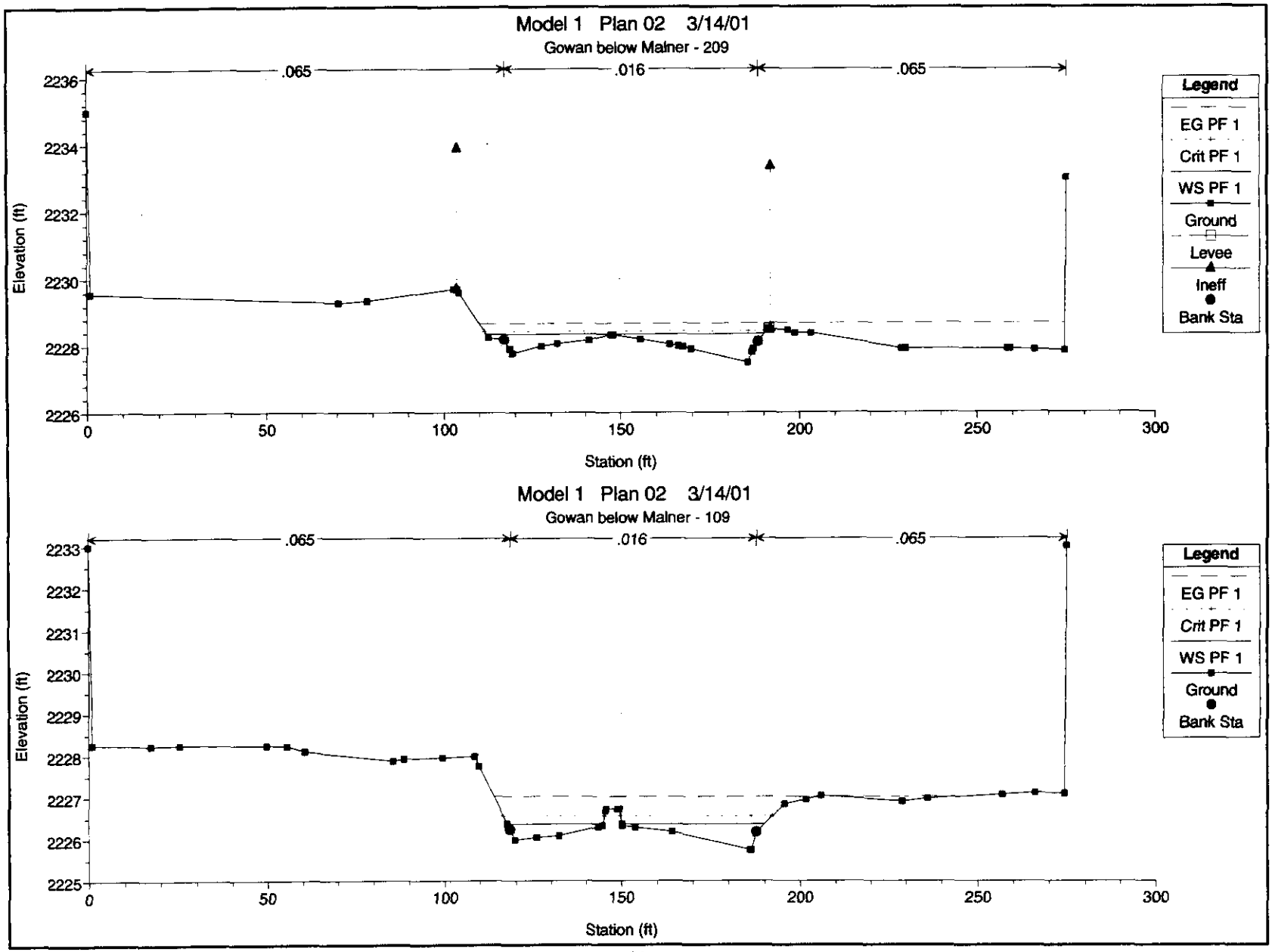

Model 1 Plan 02 3/14/01
Thom - 2817
.065
.016
.065
Elevation (ft)
2250
2248
2246
2244
2242
2240
2238
2236
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Thom - 2717
.065
.016
.065
Elevation (ft)
2250
2248
2246
2244
2242
2240
2238
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta

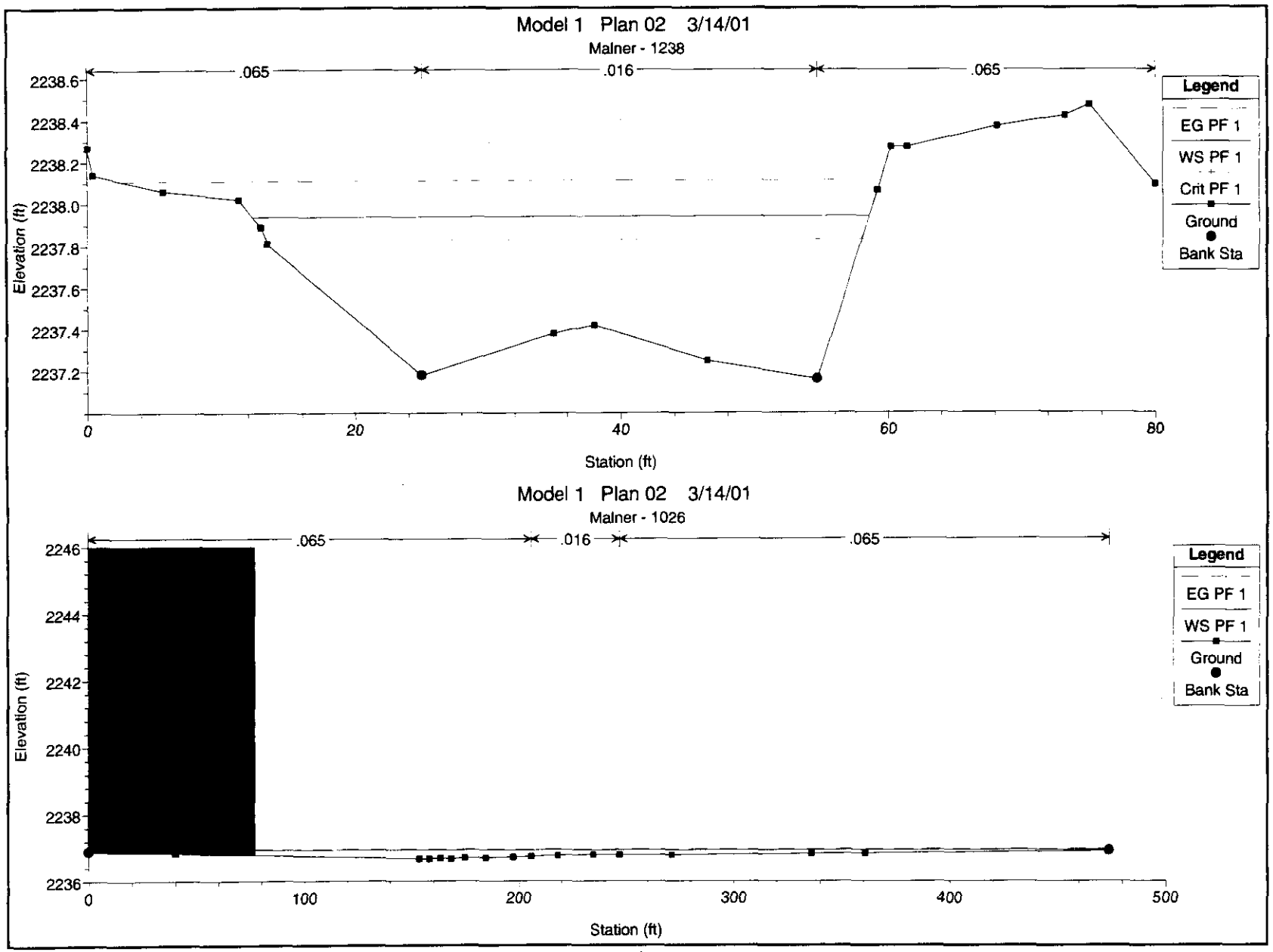

Model 1 Plan 02 3/14/01
Thorn - 2617
.065
.016
.065
Elevation (ft)
2250
2248
2246
2244
2242
2240
2238
2236
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Gowan below Malner - 909
.065
.016
.065
Elevation (ft)
2248
2246
2244
2242
2240
2238
2236
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

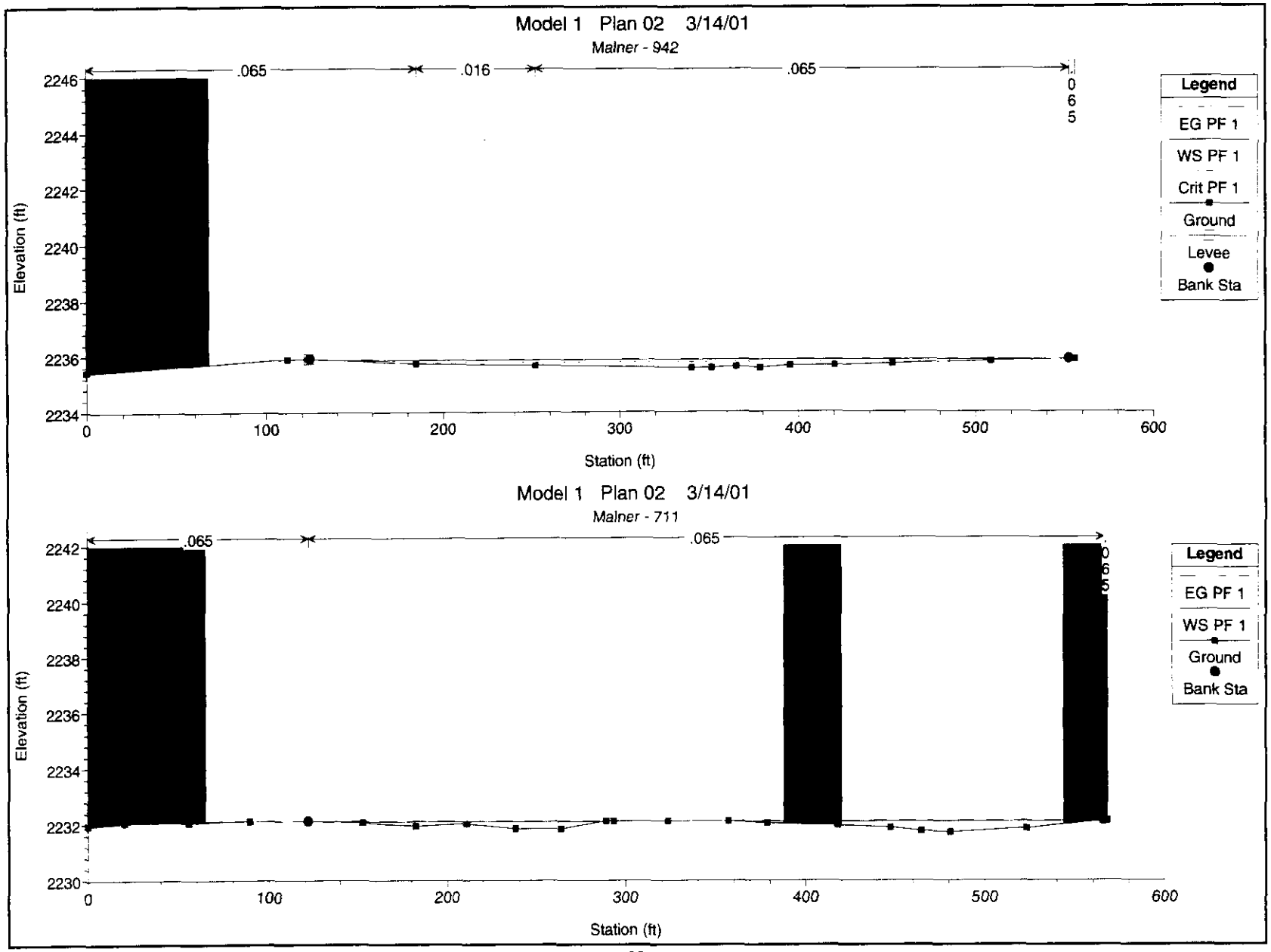

Model 1 Plan 02 3/14/01
Gowan below Malner - 809
.065
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Gowan below Malner -709
.065
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

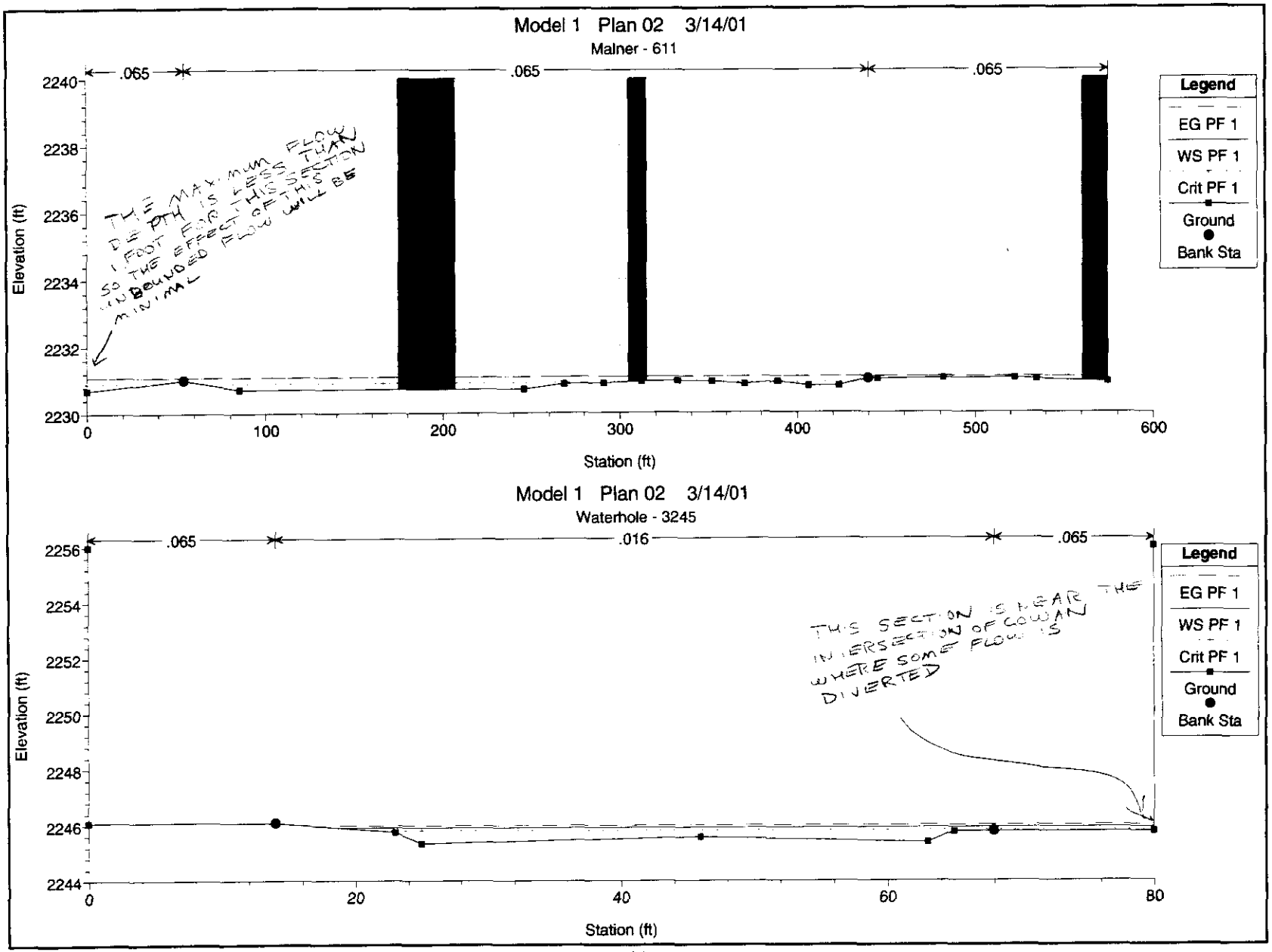

Model 1 Plan 02 3/14/01
Gowan below Malner - 609
.065
.016
.065
2244
2242
2240
2238
2236
2234
2232
Elevation (ft)
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Gowan below Malner - 509
.065
.016
.065
2239
2238
2237
2236
2235
2234
2233
2232
2231
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

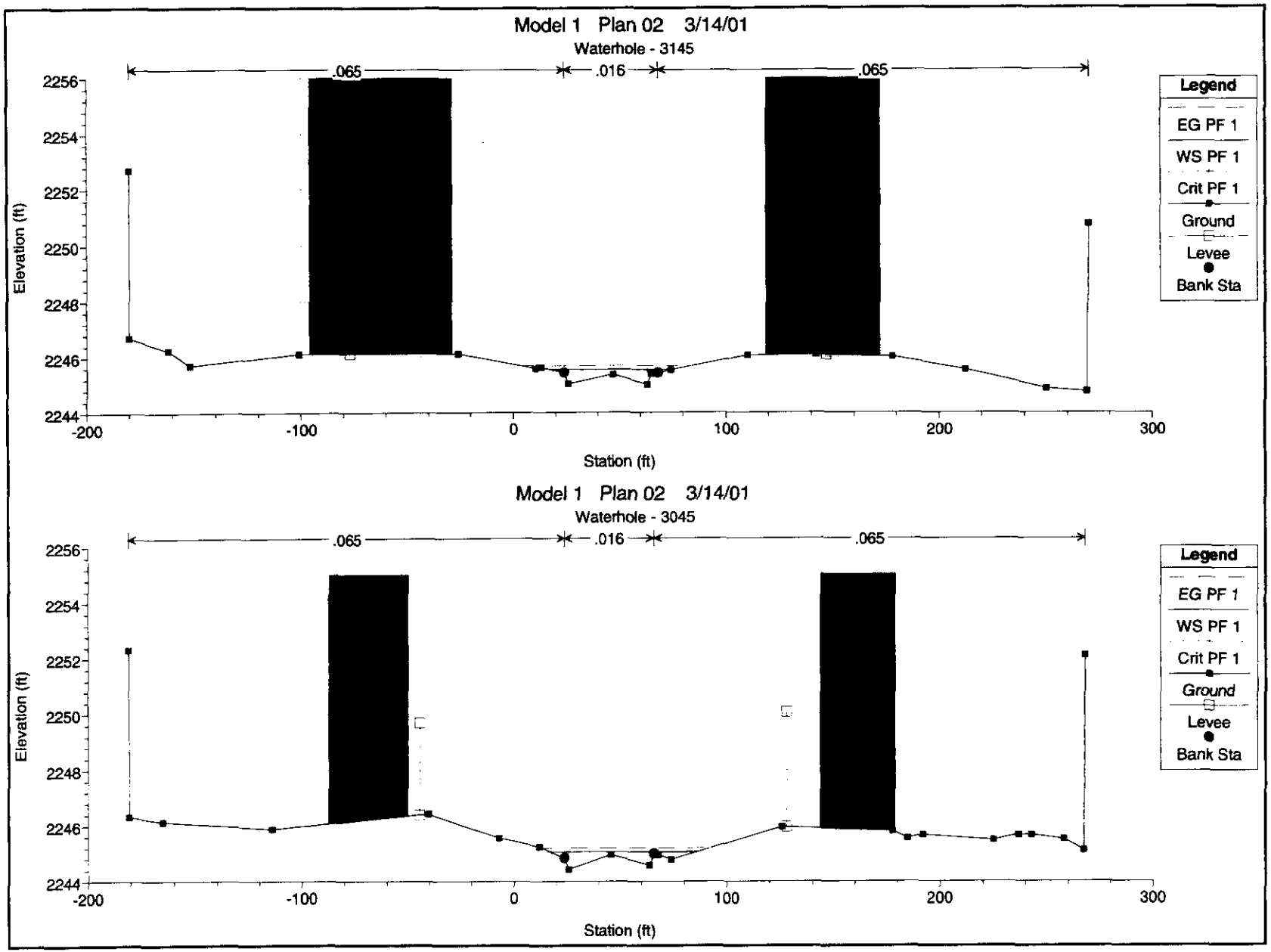

Model 1 Plan 02 3/14/01
Gowan Below Malner - 409
.065
.016
.065
Elevation (ft)
2238
2237
2236
2235
2234
2233
2232
2231
2230
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 1 Plan 02 3/14/01
Gowan Below Malner - 309
.065
.016
.065
Elevation (ft)
2236
2235
2234
2233
2232
2231
2230
2229
2228
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

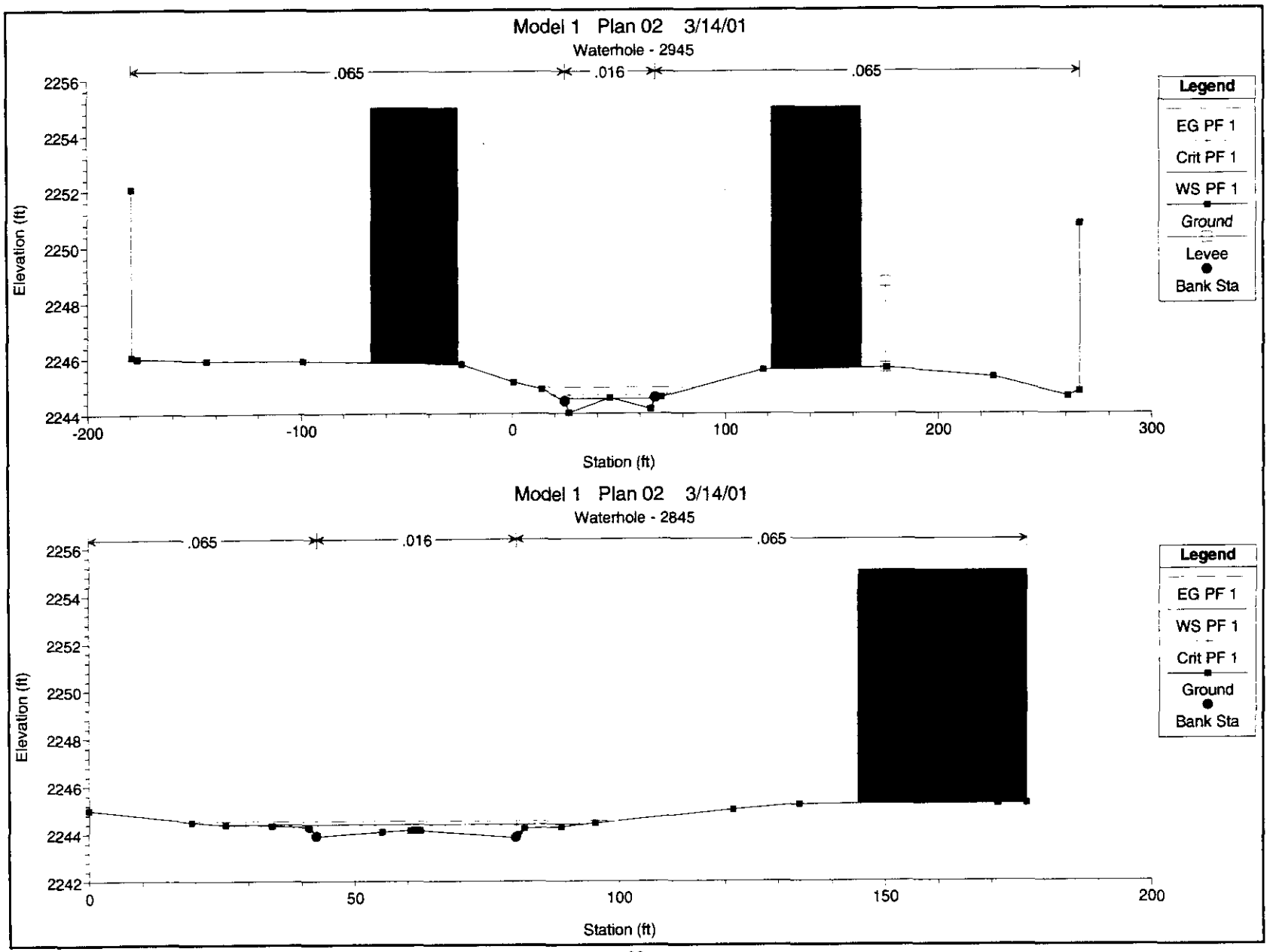

Model 1 Plan 02 3/14/01
Gowan below Malner - 209
.065
.016
.065
2236
2234
2232
2230
2228
2226
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
Gowan below Malner - 109
.065
.016
.065
2233
2232
2231
2230
2229
2228
2227
2226
2225
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

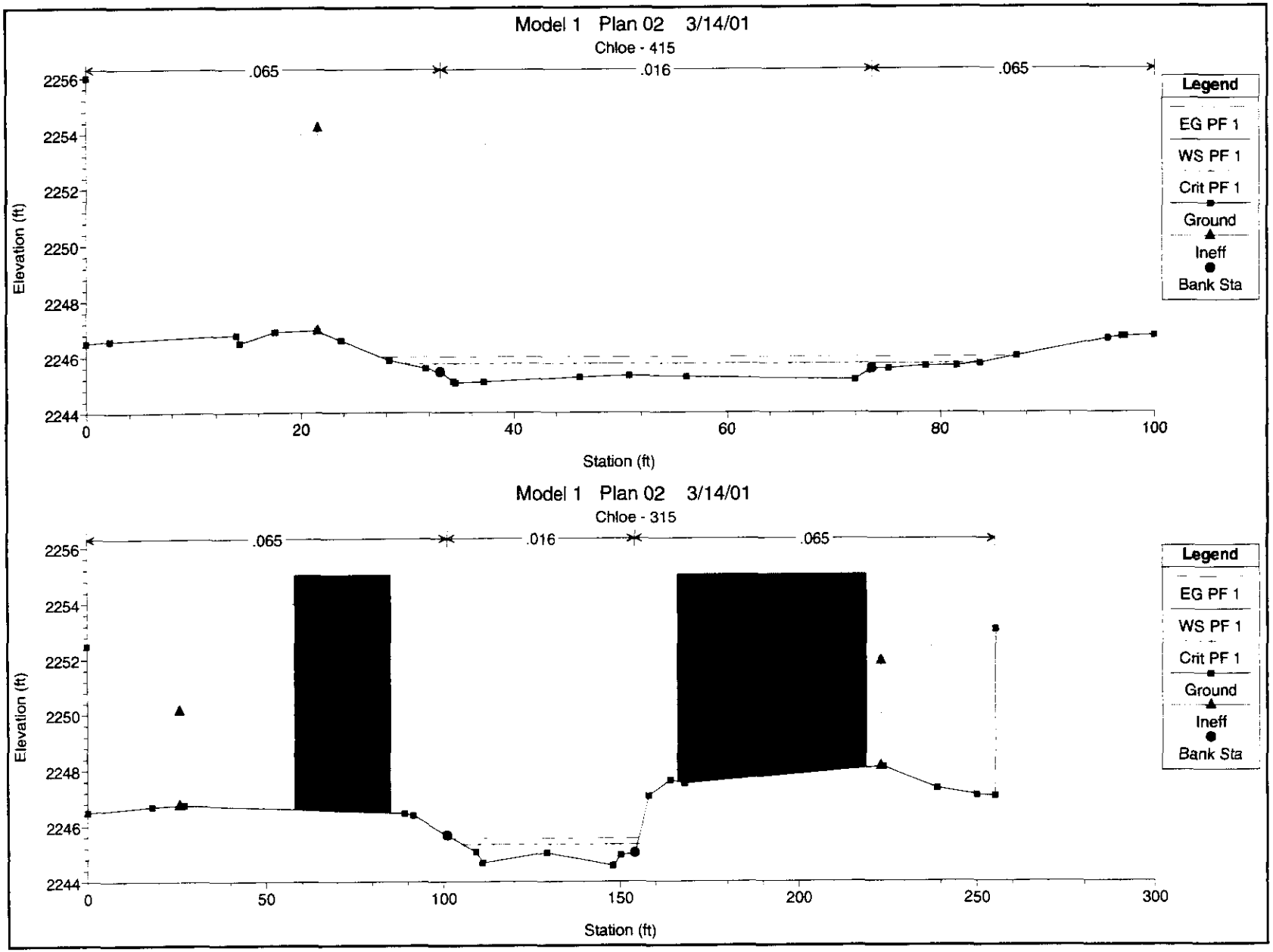

Model 1 Plan 02 3/14/01
Malner - 1238
.065
.016
.065
2238.6
2238.4
2238.2
2238.0
2237.8
2237.6
2237.4
2237.2
Elevation (ft)
0
20
40
60
80
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Model 1 Plan 02 3/14/01
Malner - 1026
.065
.016
.065
2246
2244
2242
2240
2238
2236
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

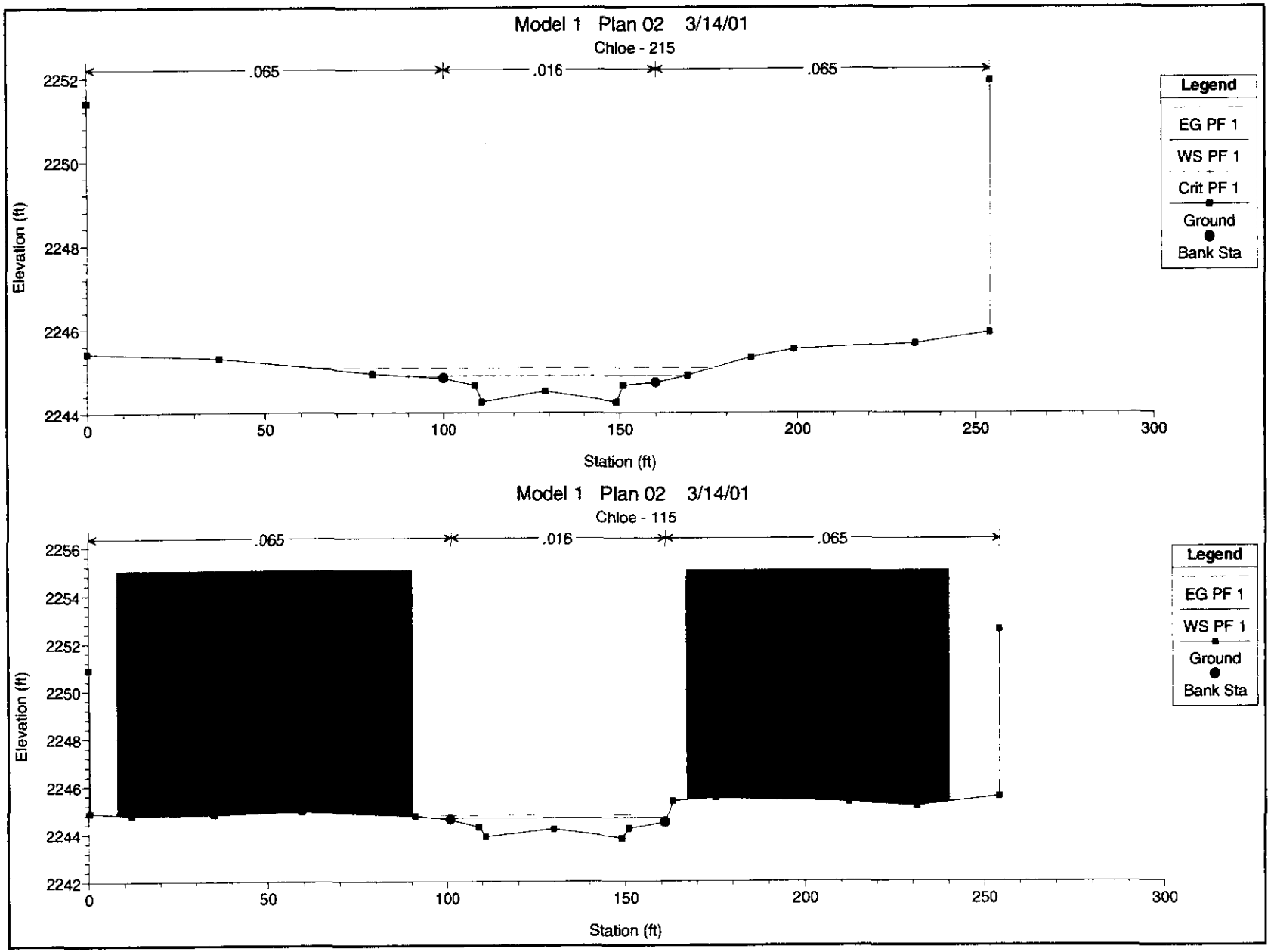

Model 1 Plan 02 3/14/01
Malner - 942
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
Malner - 711
.065
.065
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

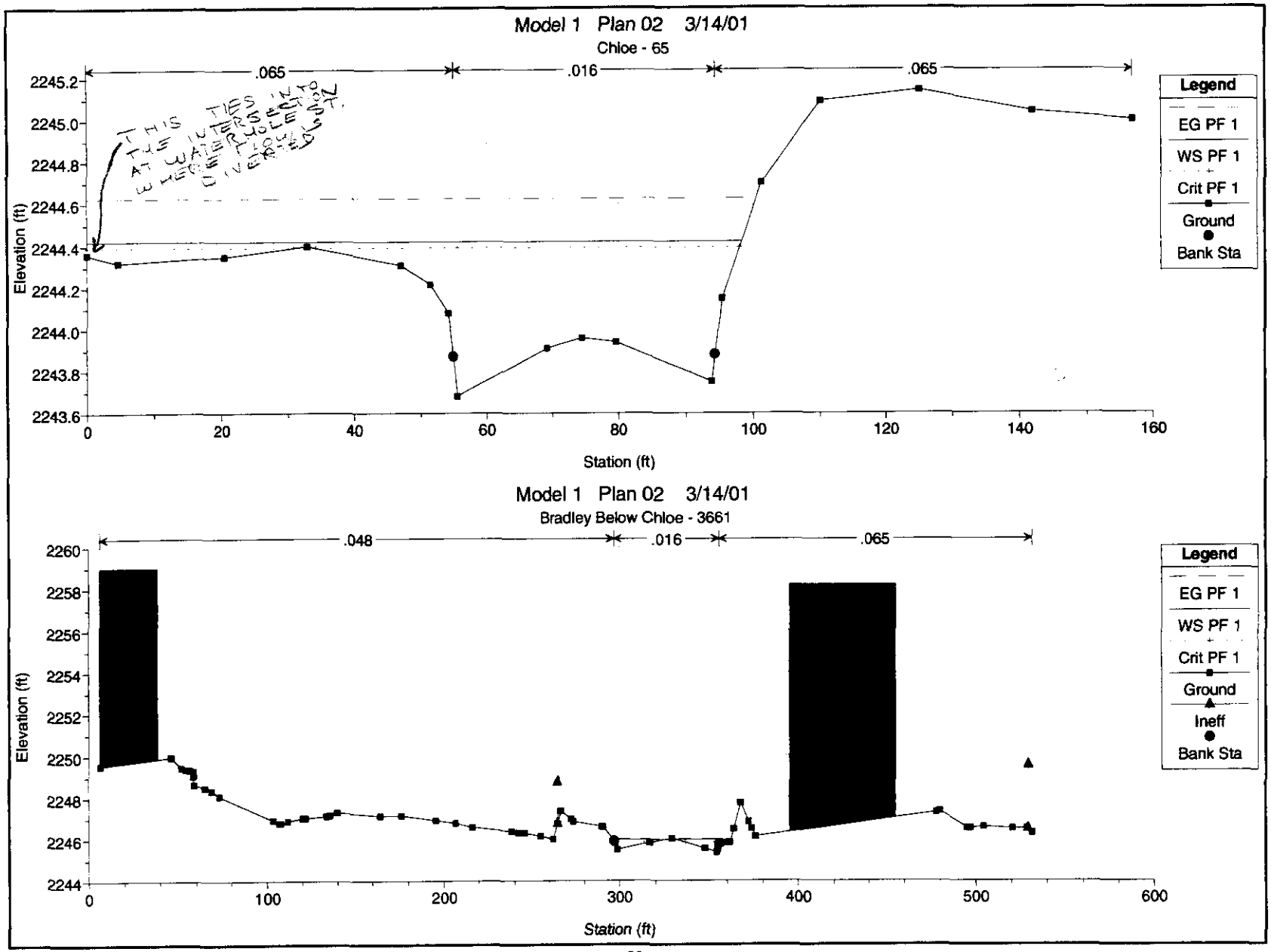

Model 1 Plan 02 3/14/01
Malner - 611
.065
.065
.065
2240
2238
2236
2234
2232
2230
Elevation (ft)
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
THE MAXIMUM FLOW DEPTH IS LESS THAN 1 FOOT FOR THIS SECTION SO THE EFFECT OF THIS SECTION BEING BOUNDED WILL BE MINIMAL
Model 1 Plan 02 3/14/01
Waterhole - 3245
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
0
20
40
60
80
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
THIS SECTION IS NEAR THE INTERSECTION OF COWAN WHERE SOME FLOW IS DIVERTED

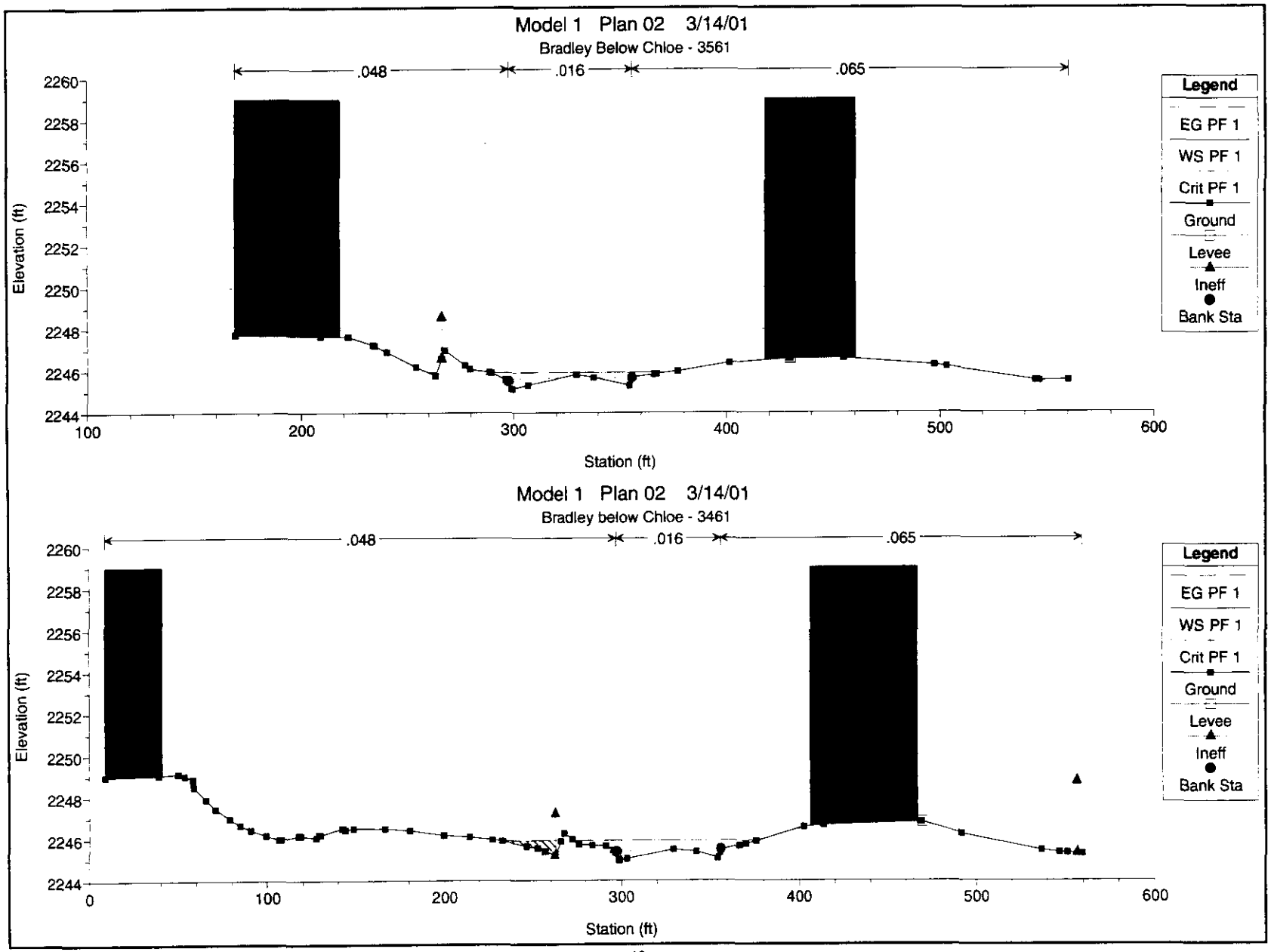

Model 1 Plan 02 3/14/01
Waterhole - 3145
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
-200
-100
0
100
200
300
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 1 Plan 02 3/14/01
Waterhole - 3045
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
-200
-100
0
100
200
300
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

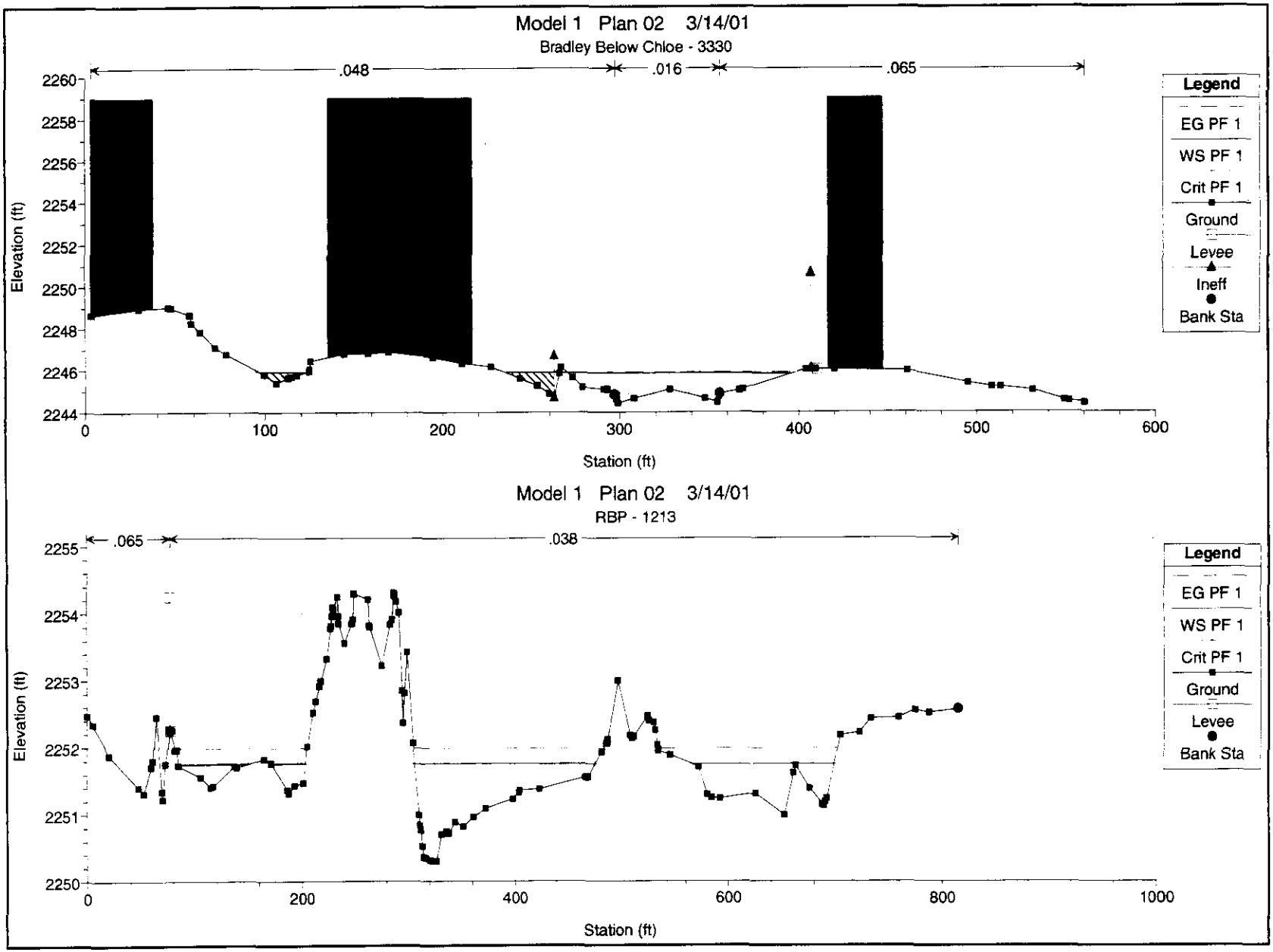

Model 1 Plan 02 3/14/01
Waterhole - 2945
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
Waterhole - 2845
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

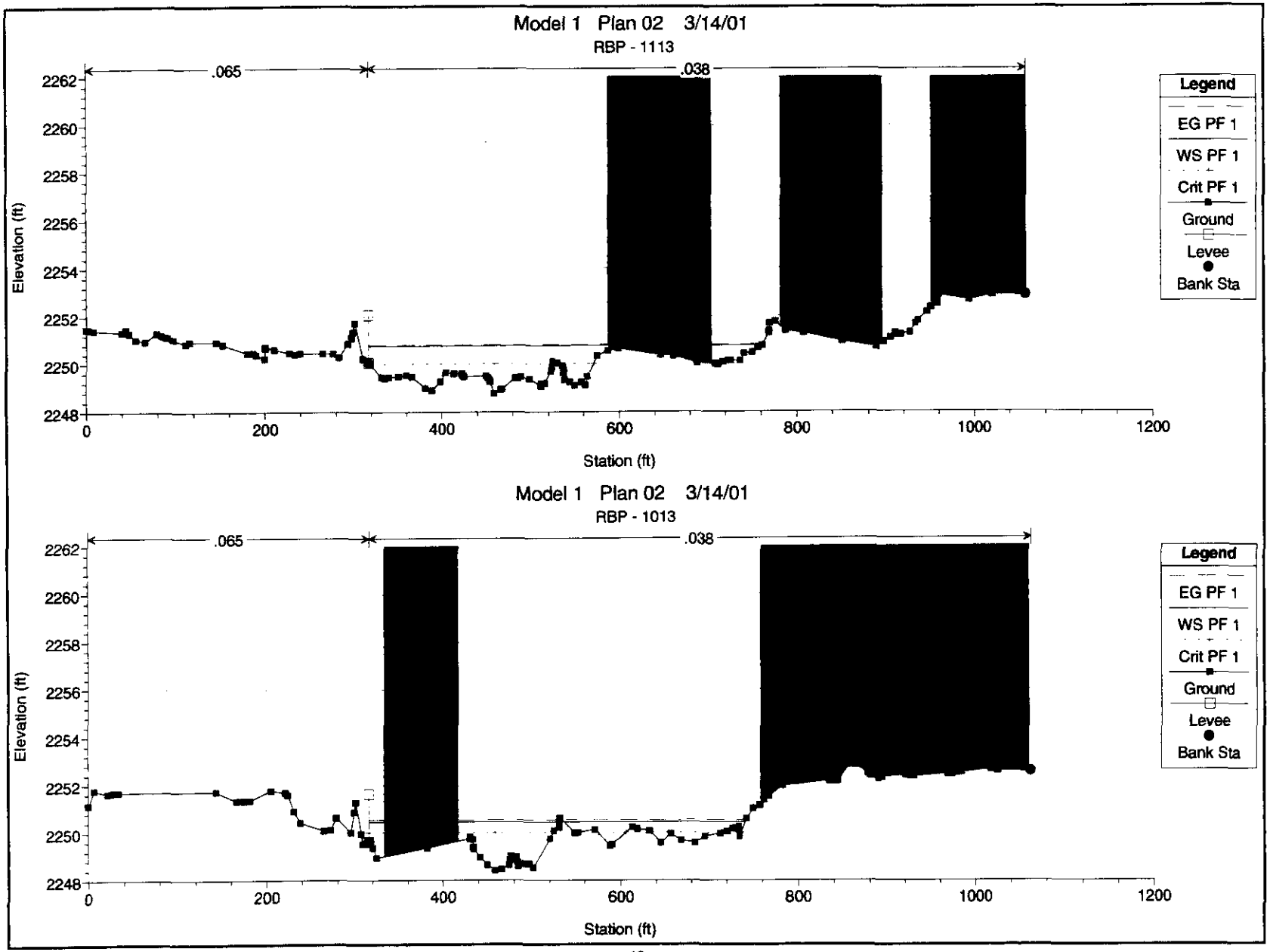

Model 1 Plan 02 3/14/01
Chloe - 415
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2256
2254
2252
2250
2248
2246
2244
0
20
40
60
80
100
Station (ft)
Model 1 Plan 02 3/14/01
Chloe - 315
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2256
2254
2252
2250
2248
2246
2244
0
50
100
150
200
250
300
Station (ft)

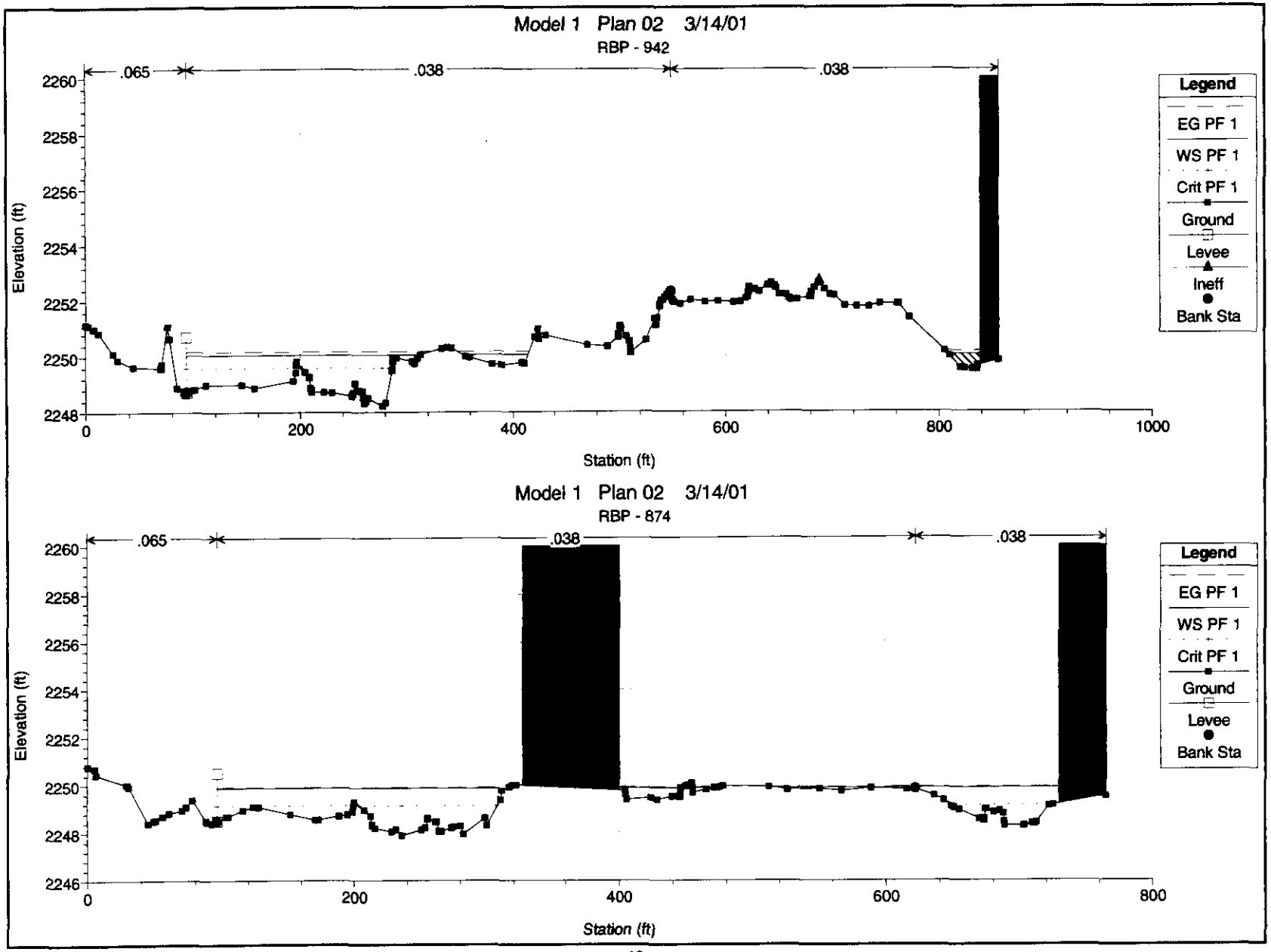

Model 1 Plan 02 3/14/01
Chloe - 215
.065
.016
.065
2252
2250
2248
2246
2244
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Model 1 Plan 02 3/14/01
Chloe - 115
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
2242
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

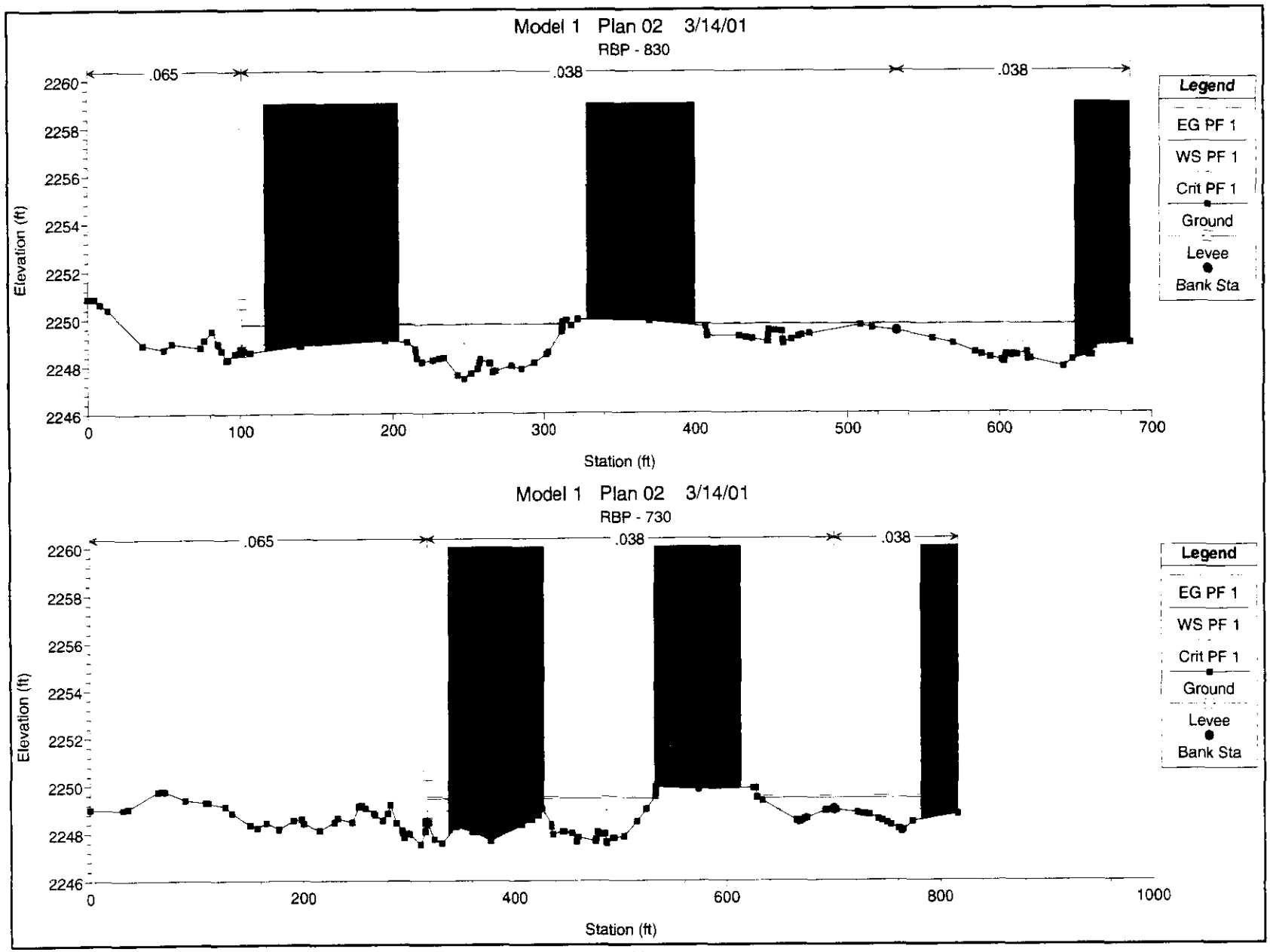

Model 1 Plan 02 3/14/01
Chloe - 65
.065
.016
.065
THIS TIES INTO THE INTERSECTION AT WATERLOO AVE. WHERE FLOW DIVERTED
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Model 1 Plan 02 3/14/01
Bradley Below Chloe - 3661
.048
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta

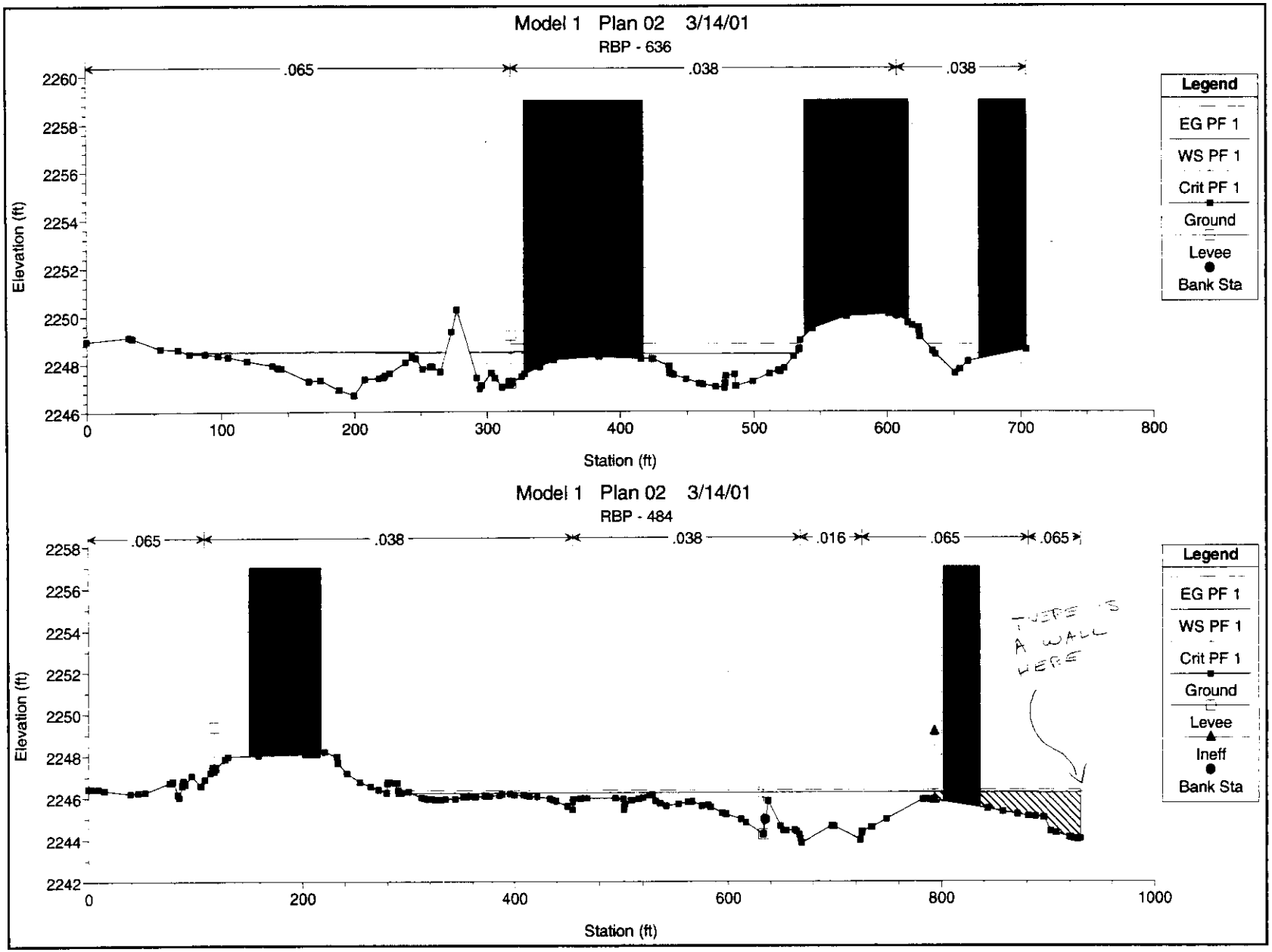

Model 1 Plan 02 3/14/01
Bradley Below Chloe - 3561
.048
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
Bradley below Chloe - 3461
.048
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)

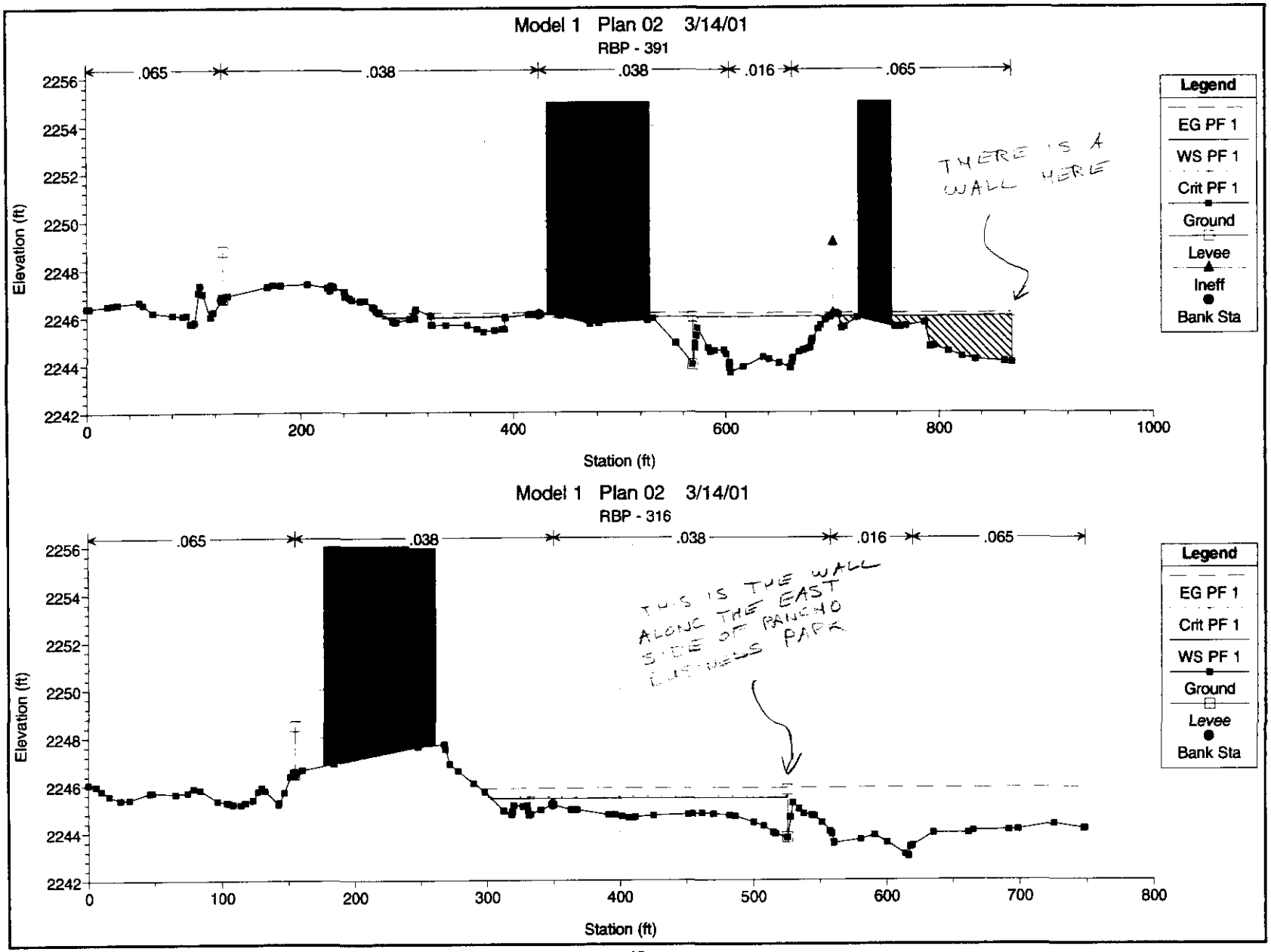

Model 1 Plan 02 3/14/01
Bradley Below Chloe - 3330
.048
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
RBP - 1213
.065
.038
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

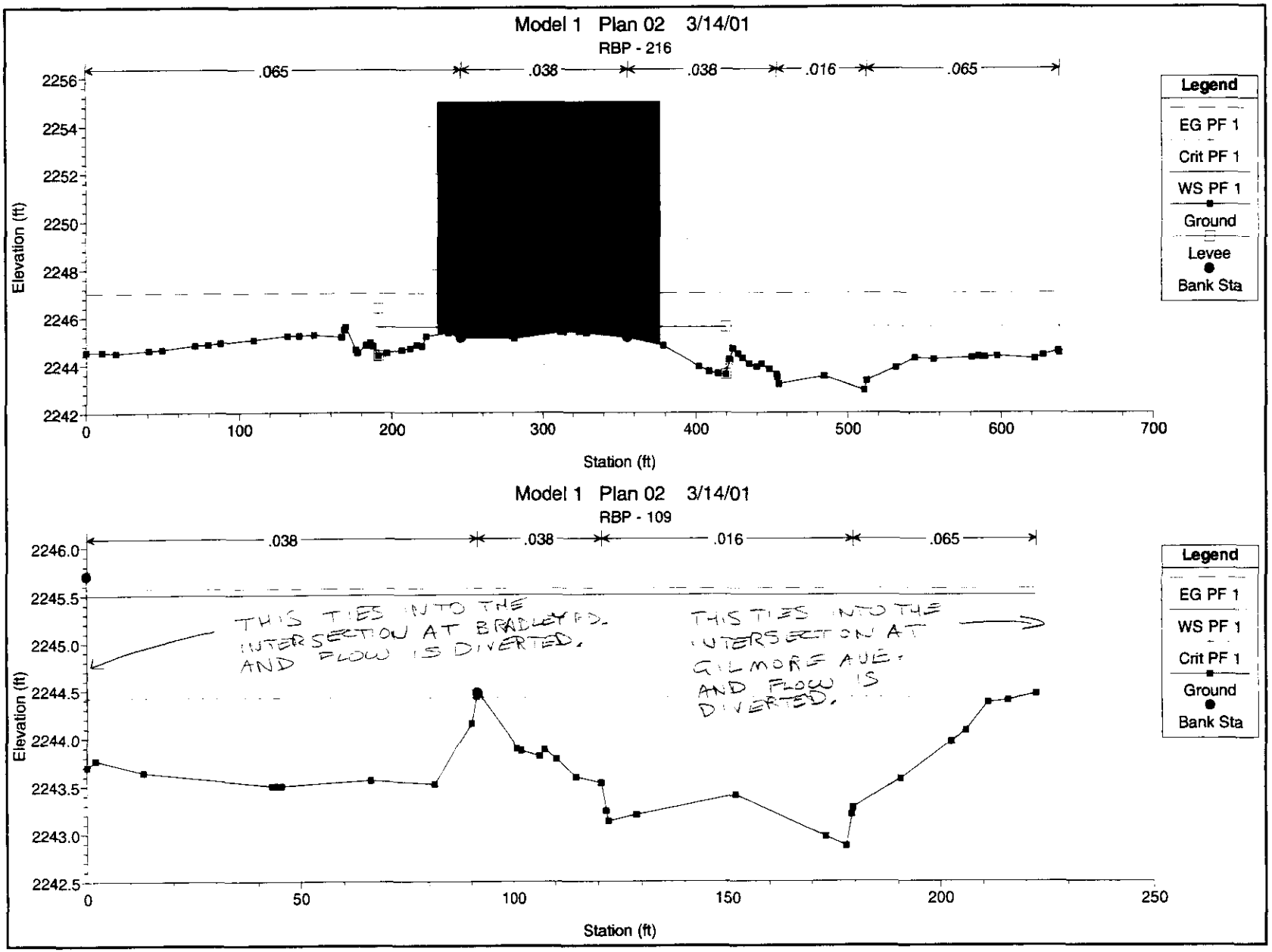

Model 1 Plan 02 3/14/01
RBP - 1113
.065
.038
Elevation (ft)
2262
2260
2258
2256
2254
2252
2250
2248
0
200
400
600
800
1000
1200
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 1 Plan 02 3/14/01
RBP - 1013
.065
.038
Elevation (ft)
2262
2260
2258
2256
2254
2252
2250
2248
0
200
400
600
800
1000
1200
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta


Model 1 Plan 02 3/14/01
RBP - 942
.065
.038
.038
Elevation (ft)
2260
2258
2256
2254
2252
2250
2248
0
200
400
600
800
1000
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
RBP - 874
.065
.038
.038
Elevation (ft)
2260
2258
2256
2254
2252
2250
2248
2246
0
200
400
600
800
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta


Model 1 Plan 02 3/14/01
RBP - 830
.065
.038
.038
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2260
2258
2256
2254
2252
2250
2248
2246
0
100
200
300
400
500
600
700
Station (ft)
Model 1 Plan 02 3/14/01
RBP - 730
.065
.038
.038
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2260
2258
2256
2254
2252
2250
2248
2246
0
200
400
600
800
1000
Station (ft)


Model 1 Plan 02 3/14/01
RBP - 636
.065
.038
.038
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 1 Plan 02 3/14/01
RBP - 484
.065
.038
.038
.016
.065
.065
THERE IS A WALL HERE
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta


Model 1 Plan 02 3/14/01
RBP - 391
.065
.038
.038
.016
.065
2256
2254
2252
2250
2248
2246
2244
2242
Elevation (ft)
0
200
400
600
800
1000
Station (ft)
THERE IS A WALL HERE
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 1 Plan 02 3/14/01
RBP - 316
.065
.038
.038
.016
.065
2256
2254
2252
2250
2248
2246
2244
2242
Elevation (ft)
0
100
200
300
400
500
600
700
800
Station (ft)
THIS IS THE WALL ALONG THE EAST SIDE OF RANCHO LOS PALOS
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta


Model 1 Plan 02 3/14/01
RBP - 216
.065
.038
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 1 Plan 02 3/14/01
RBP - 109
.038
.038
.016
.065
THIS TIES INTO THE INTERSECTION AT BRADLEY RD. AND FLOW IS DIVERTED.
THIS TIES INTO THE INTERSECTION AT GILMORE AVE. AND FLOW IS DIVERTED.
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

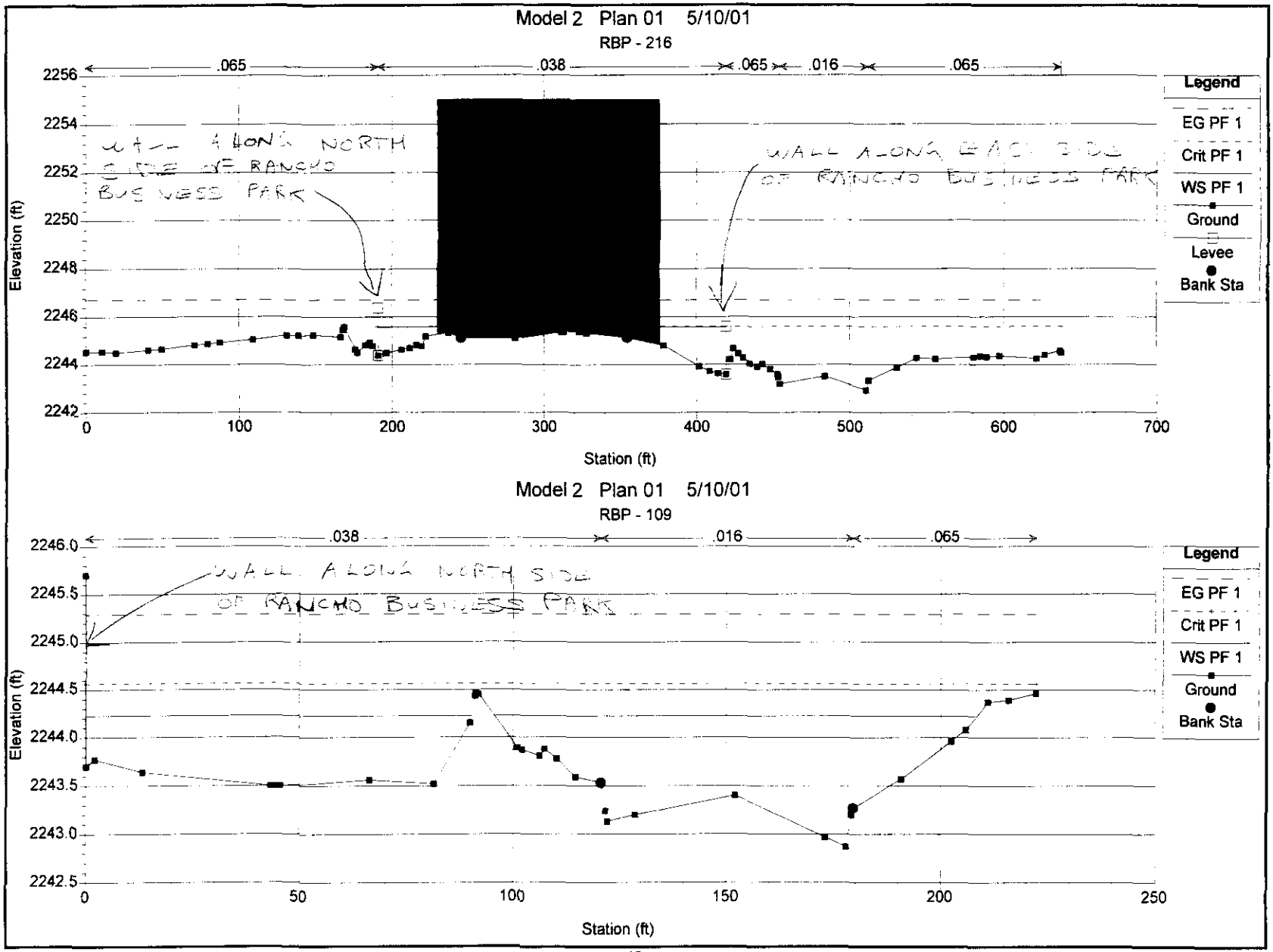
Model 2
With Walls, Northeast Portion

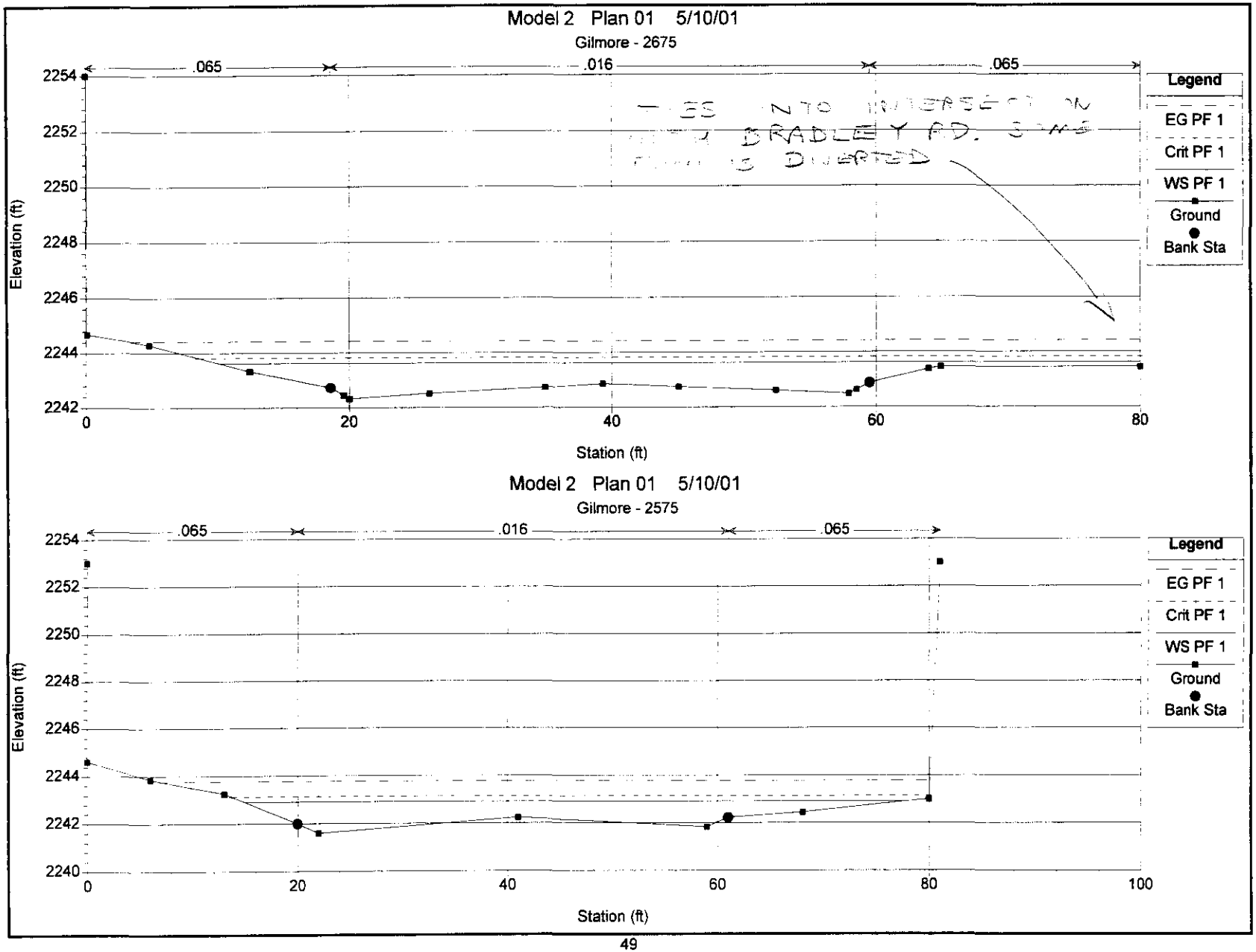
HEC-RAS Plan: Plan 01

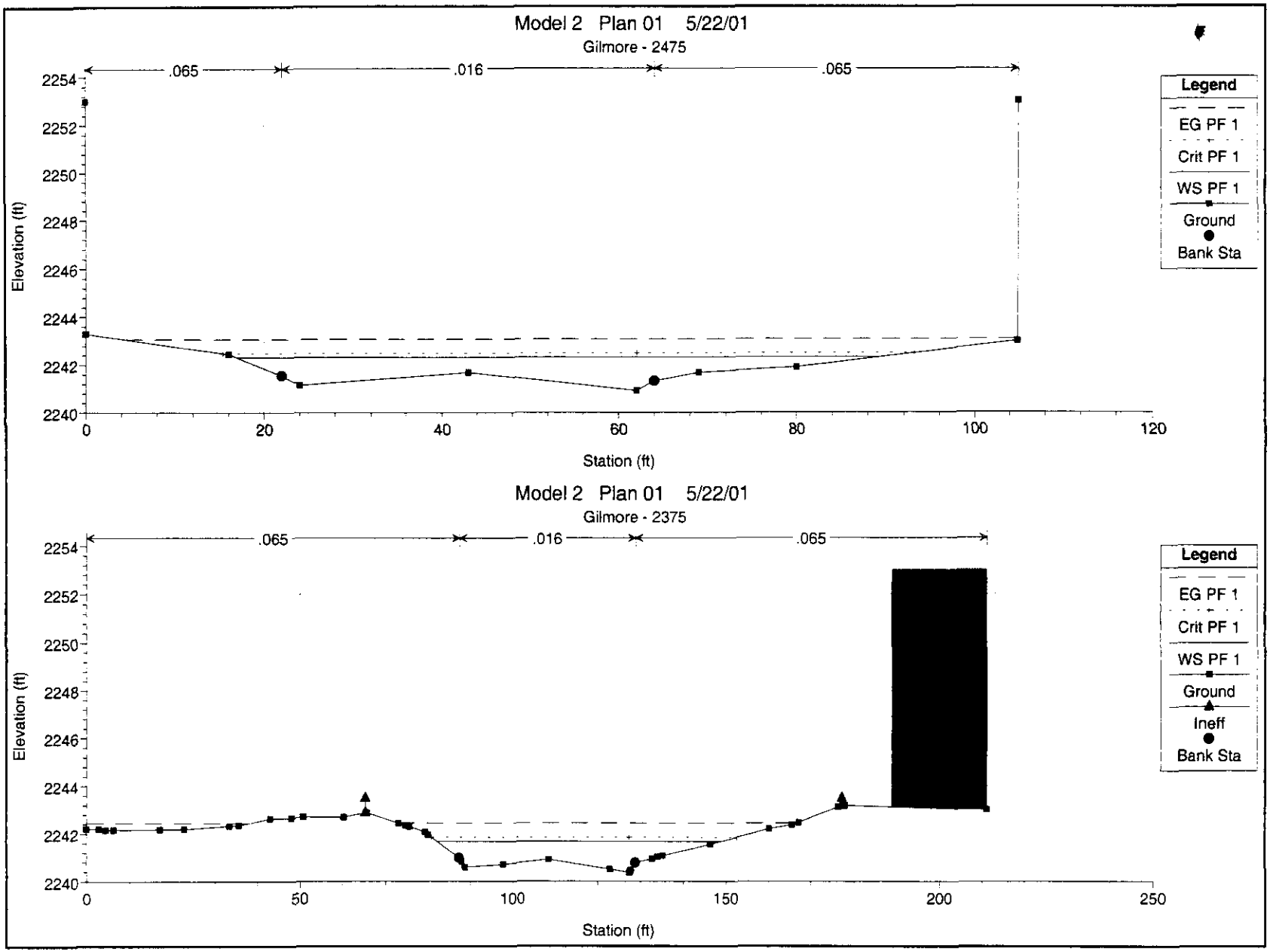
River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Max Chl Dpth	Hydr Depth
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	(ft)	(ft)
GB	W of Sweetwater	750	63.60	2228.74	2229.48	2228.10	2229.46	0.000373	0.20	254.93	296.43	1.85	0.86
GB	W of Sweetwater	689	63.60	2228.35	2229.12	2229.12	2229.44	0.055875	4.51	14.09	28.00	0.77	0.51
GB	T.B. Gilmore	1831	148.00	2233.26	2233.79	2234.12	2235.12	0.049732	9.70	19.92	82.49	0.54	0.32
GB	T.B. Gilmore	1731	148.00	2232.82	2233.42	2233.86	2234.23	0.022	7.61	25.50	89.29	2.09	0.39
GB	T.B. Gilmore	1631	148.00	2232.42	2233.33	2233.33	2233.86	0.004764	4.54	39.28	137.12	1.48	0.86
GB	T.B. Gilmore	1531	148.00	2231.47	2232.35	2232.53	2232.84	0.012650	6.19	24.63	76.11	1.78	0.45
GB	T.B. Gilmore	1431	148.00	2231.09	2231.87	2232.10	2232.82	0.017807	6.97	21.64	66.40	1.27	0.47
GB	T.B. Gilmore	1331	148.00	2230.89	2231.48	2231.50	2231.76	0.008284	4.71	40.69	90.45	0.77	0.45
GB	Thorn below Leo	1231	128.00	2230.25	2231.12	2231.03	2231.31	0.002883	3.66	47.35	89.40	0.87	0.53
GB	Thorn below Leo	1131	128.00	2229.85	2230.81	2230.81	2231.04	0.002447	3.93	76.18	204.69	1.74	0.46
GB	Thorn below Leo	1031	128.00	2229.18	2229.78	2230.00	2230.46	0.019135	6.73	19.57	54.38	0.60	0.36
GB	Sweetwater South	552	21.60	2224.95	2225.52	2225.62	2225.77	0.010224	4.08	5.61	21.90	0.57	0.26
GB	Sweetwater South	482	21.60	2224.44	2225.02	2226.04	2225.19	0.010489	3.07	7.71	43.06	0.55	0.18
GB	Sweetwater South	382	21.60	2223.60	2224.16	2224.37	2225.21	0.075415	8.32	2.60	16.03	0.36	0.16
GB	Sweetwater South	282	21.60	2223.10	2223.86	2223.86	2223.97	0.008038	2.48	10.37	43.31	0.78	0.24
GB	Sweetwater South	182	21.60	2222.47	2223.27	2223.27	2223.47	0.008909	3.17	9.75	28.92	0.80	0.34
GB	Sweetwater South	118	21.60	2221.96	2222.56	2222.56	2222.63	0.013615	4.20	5.75	30.13	0.57	0.19
GB	Sweetwater South	5	21.60	2221.31	2221.83	2221.83	2221.96	0.008898	2.89	8.30	34.62	0.52	0.24
GB	Sweetwater North	940	42.00	2224.90	2225.85	2225.76	2225.95	0.002222	2.49	16.55	44.36	0.95	0.42
GB	Sweetwater North	840	42.00	2224.55	2225.41	2225.47	2225.59	0.005228	3.43	14.44	48.34	0.83	0.31
GB	Sweetwater North	719	42.00	2223.70	2224.62	2224.63	2224.82	0.008615	3.79	13.83	39.47	0.92	0.35
GB	Sweetwater North	655	42.00	2223.36	2223.94	2224.04	2224.24	0.012124	4.47	10.97	40.54	0.68	0.27
GB	Sweetwater North	555	42.00	2222.63	2223.28	2223.85	2224.48	0.077806	9.97	5.22	24.75	0.48	0.21
GB	Sweetwater North	455	42.00	2222.22	2222.86	2222.86	2223.86	0.088717	9.28	4.96	28.01	0.44	0.20
GB	Sweetwater North	355	42.00	2221.56	2222.15	2222.27	2222.50	0.019152	4.79	9.33	39.41	0.59	0.25
GB	Sweetwater North	266	42.00	2220.85	2221.31	2221.46	2221.69	0.001874	2.24	22.87	86.64	0.93	0.39
GB	Sweetwater North	166	42.00	2220.47	2221.42		2221.48	0.001162	2.05	24.57	87.15	0.95	0.45
GB	Dole	35	63.60	2219.64	2220.83	2220.84	2221.14	0.006162	3.77	19.64	80.75	1.09	0.36
GB	Dole	0	63.60	2218.82	2220.09	2220.64	2220.78	0.013730	5.14	13.71	42.85	0.77	0.32
GB	cutty	2688	128.00	2243.20	2243.86	2244.02	2244.34	0.006034	4.85	31.08	89.56	0.78	0.46
GB	cutty	2638	128.00	2242.93	2243.80	2243.82	2244.11	0.004185	4.62	36.30	91.38	0.87	0.45
GB	cutty	2488	128.00	2242.34	2243.14	2243.17	2243.48	0.004654	4.87	38.07	84.19	0.95	0.40
GB	cutty	2373	128.00	2241.47	2242.05	2242.19	2242.53	0.018790	6.80	24.56	84.09	0.68	0.29
GB	cutty	2273	128.00	2240.77	2241.64	2241.74	2242.12	0.007760	5.62	46.80	93.75	0.77	0.63
GB	cutty	2123	128.00	2240.55	2241.42	2241.42	2241.78	0.004130	4.52	33.68	88.31	0.89	0.61
GB	cutty	1973	128.00	2239.71	2240.59	2240.66	2240.98	0.008078	5.08	31.38	77.74	0.85	0.44
GB	cutty	1851	128.00	2239.08	2240.00	2240.08	2240.41	0.008154	5.04	25.39	70.83	0.84	0.55
GB	cutty	1751	128.00	2238.61	2239.56	2239.62	2239.94	0.008865	4.86	26.32	67.24	0.86	0.57
GB	cutty	1651	128.00	2238.24	2239.05	2239.02	2239.33	0.008354	4.82	26.52	77.39	0.77	0.54
GB	cutty	1551	128.00	2236.68	2237.61	2237.80	2238.26	0.022295	7.60	17.75	46.95	0.87	0.67
GB	cutty	1451	128.00	2236.33	2237.45	2237.50	2237.87	0.022664	7.67	17.29	67.25	0.86	0.48
GB	cutty	1351	128.00	2235.84	2236.91		2236.98	0.002829	3.16	58.29	98.74	1.01	0.80
GB	cutty	1251	128.00	2235.45	2236.05	2236.10	2236.33	0.019825	6.33	29.91	368.45	0.98	0.44
GB	cutty	1151	128.00	2234.70	2235.81	2235.82	2236.02	0.004790	4.04	52.20	357.60	0.84	0.52
GB	cutty	1051	128.00	2233.78	2234.28	2234.28	2234.40	0.004310	3.04	82.11	254.23	1.47	0.24
GB	cutty	951	128.00	2233.37	2233.94	2233.85	2233.96	0.003047	2.65	96.06	116.05	2.05	0.57

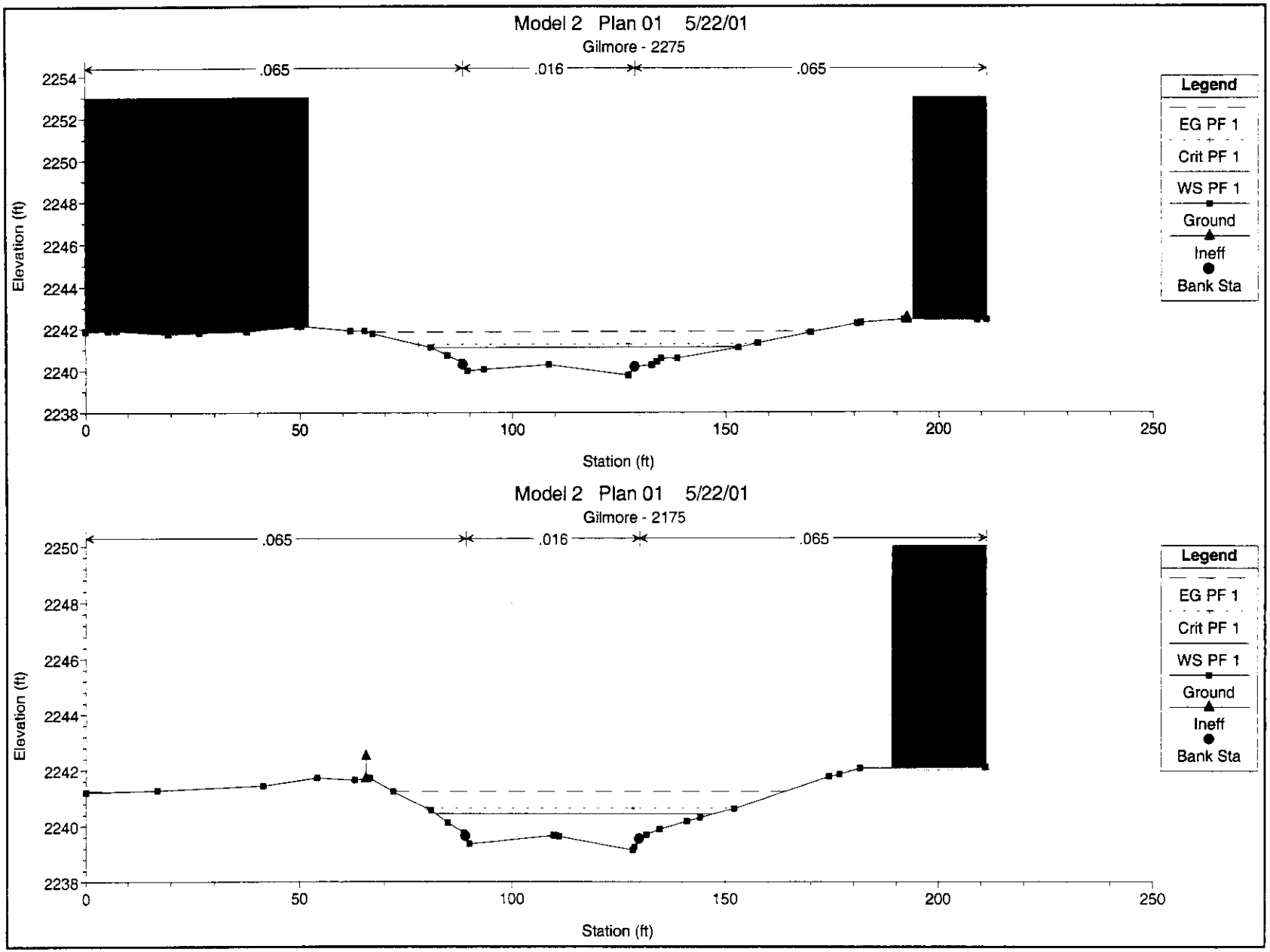
HEC-RAS Plan: Plan 01 (Continued)

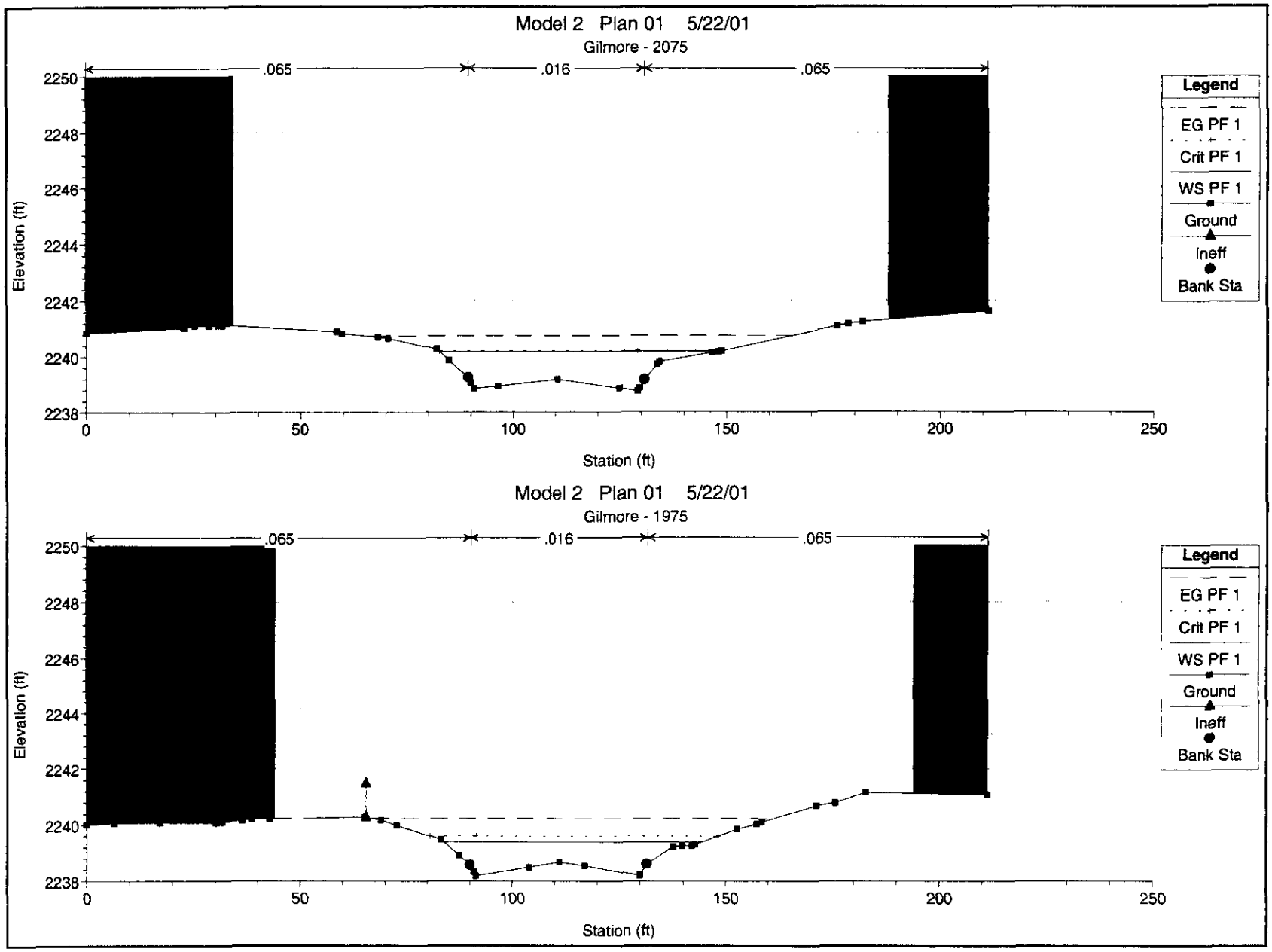
River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Max Chl Dpth	Hydr Depth
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	(ft)	(ft)
GB	cutty	518	175.00	2228.37	2229.35	2229.00	2229.39	0.009693	1.68	104.14	161.18	3.76	0.65
GB	cutty	518	175.00	2227.60	2228.64	2228.26	2228.68	0.003377	1.16	148.57	177.55	4.03	0.54
GB	cutty	418	175.00	2226.70	2228.43	2227.79	2228.48	0.005029	1.31	133.99	156.87	4.27	0.73
GB	cutty	318	175.00	2226.27	2227.13	2227.05	2227.27	0.050008	3.02	57.98	127.59	3.48	0.45
GB	cutty	218	175.00	2224.65	2226.17	2225.46	2226.21	0.004208	1.61	108.45	95.26	3.76	1.14
GB	cutty	118	175.00	2224.38	2225.93	2225.14	2225.96	0.003002	1.26	139.13	141.82	3.65	0.95
GB	Leo below Thom	1000	20.00	2230.72	2231.24	2231.22	2231.32	0.004670	2.48	14.82	66.87	0.82	0.22
GB	Leo below Thom	900	20.00	2230.29	2230.76	2230.76	2230.88	0.004477	2.59	19.66	135.03	0.50	0.12
GB	Leo below Thom	800	20.00	2229.10	2229.42	2229.54	2229.86	0.038649	5.34	3.96	25.40	0.55	0.16
GB	Leo below Thom	600	20.00	2227.28	2228.58	2228.13	2228.74	0.000862	0.21	6.23	289.80	2.52	1.25
GB	Judy	1000	31.00	2227.57	2228.39	2228.39	2228.57	0.005702	3.47	10.53	32.59	0.82	0.32
GB	Judy	900	31.00	2226.92	2227.51	2227.58	2227.79	0.012215	4.28	8.19	34.98	1.93	0.23
GB	Judy	581	51.00	2224.74	2225.48	2225.48	2225.70	0.004731	3.88	15.83	41.58	2.54	0.37
GB	Judy	516	51.00	2224.47	2225.09	2225.07	2225.21	0.015074	4.38	26.03	175.13	3.11	0.23
GB	Thom below Judy	868	94.00	2227.29	2228.28	2228.30	2228.56	0.006300	4.37	23.48	53.15	0.99	0.44
GB	Thom below Judy	768	94.00	2225.70	2227.21	2227.34	2227.68	0.012526	5.47	19.24	50.20	0.85	0.36
GB	Gilmore b. Thom	1334	158.00	2233.30	2233.95	2234.18	2235.13	0.030211	9.30	21.52	87.75	0.55	0.32
GB	Gilmore b. Thom	1244	158.00	2232.68	2233.90	2233.90	2234.36	0.005571	6.27	42.98	154.94	1.59	0.83
GB	Gilmore b. Thom	1144	158.00	2232.10	2232.92	2231.62	2232.33	0.001650	3.94	198.59	263.65	1.37	0.75
GB	Gilmore b. Thom	1044	158.00	2231.87	2232.07		2232.08	0.000978	1.48	157.96	412.28	0.70	0.38
GB	Gilmore b. Thom	944	158.00	2230.49	2230.87	2230.87	2231.01	0.005009	5.04	52.22	193.12	0.46	0.27
GB	Gilmore b. Thom	844	158.00	2228.19	2230.75	2229.11	2230.76	0.000781	0.30	428.80	336.74	2.41	1.27
GB	Gilmore b. Thom	750	94.40	2229.77	2230.49	2230.49	2230.65	0.003875	3.94	50.80	467.28	2.88	0.31
GB	Gilmore b. Thom	518	94.40	2227.85	2228.37	2228.81	2229.28	0.050918	7.65	12.52	49.68	2.80	0.25
GB	Gilmore b. Thom	518	94.40	2226.45	2227.66	2227.66	2227.90	0.006247	4.31	24.30	55.02	2.86	0.44
GB	Gilmore b. Thom	418	94.40	2226.62	2228.46	2228.81	2228.99	0.018674	5.86	16.52	45.08	2.30	0.37
GB	Gilmore b. Thom	318	94.40	2224.78	2225.68	2225.80	2226.10	0.014987	5.28	18.39	50.14	2.03	0.37
GB	Gilmore b. Thom	218	94.40	2223.58	2224.81	2224.84	2225.09	0.006937	4.34	23.91	48.52	1.82	0.48
GB	Gilmore b. Thom	118	94.40	2222.20	2223.24	2223.41	2223.78	0.031843	5.86	18.10	48.17	1.04	0.38
north zone	RBP	216	760.00	2255.00	2245.55	2245.60	2246.72	0.036503		94.92	82.40	2.65	1.15
north zone	RBP	109	760.00	2242.87	2244.23	2244.56	2245.29	0.010352	9.55	142.32	203.10	1.36	0.70
north zone	Gilmore	2675	303.00	2242.32	2243.52	2243.52	2244.42	0.008227	7.27	48.75	89.92	1.80	0.71
north zone	Gilmore	2575	303.00	2241.59	2242.91	2243.14	2243.77	0.007190	7.56	47.61	88.10	1.82	0.75
north zone	Gilmore	2475	303.00	2240.93	2242.32	2242.45	2243.07	0.006286	7.15	54.03	72.49	1.39	0.75
north zone	Gilmore	2375	303.00	2240.37	2241.67	2241.85	2242.45	0.006204	7.20	51.20	69.62	1.30	0.77
north zone	Gilmore	2275	303.00	2239.78	2241.10	2241.26	2241.85	0.005784	7.09	54.36	72.34	1.32	0.75
north zone	Gilmore	2175	303.00	2239.18	2240.44	2240.64	2241.25	0.006450	7.34	48.99	65.28	1.29	0.75
north zone	Gilmore	2075	303.00	2238.78	2240.11	2240.19	2240.74	0.003476	6.10	55.99	65.85	1.41	0.87
north zone	Gilmore	1975	303.00	2238.78	2239.41	2239.62	2240.24	0.008771	7.42	46.45	60.50	1.23	0.76
north zone	Gilmore	1875	303.00	2237.43	2238.67	2238.91	2239.55	0.007369	7.87	45.08	66.73	1.24	0.73
north zone	Gilmore	1775	303.00	2236.85	2237.80	2238.08	2238.78	0.008439	7.98	45.08	61.80	1.15	0.76
north zone	Gilmore	1675	303.00	2235.84	2236.92	2237.19	2237.90	0.008702	8.09	45.25	62.04	1.28	0.78
north zone	Gilmore	1575	303.00	2235.10	2236.49	2236.81	2237.19	0.005120	6.78	58.93	73.80	1.39	0.80
north zone	B.B. Gilmore	2833	480.00	2242.03	2243.65	2243.79	2244.42	0.004448	6.98	80.00	82.82	1.65	0.98
north zone	B.B. Gilmore	2733	480.00	2241.22	2243.68	2242.95	2243.80	0.000730	3.81	140.71	87.77	2.46	1.61
north zone	B.B. Gilmore	2633	480.00	2240.87	2242.89	2242.89	2243.71	0.002560	7.62	96.22	72.80	2.02	1.32

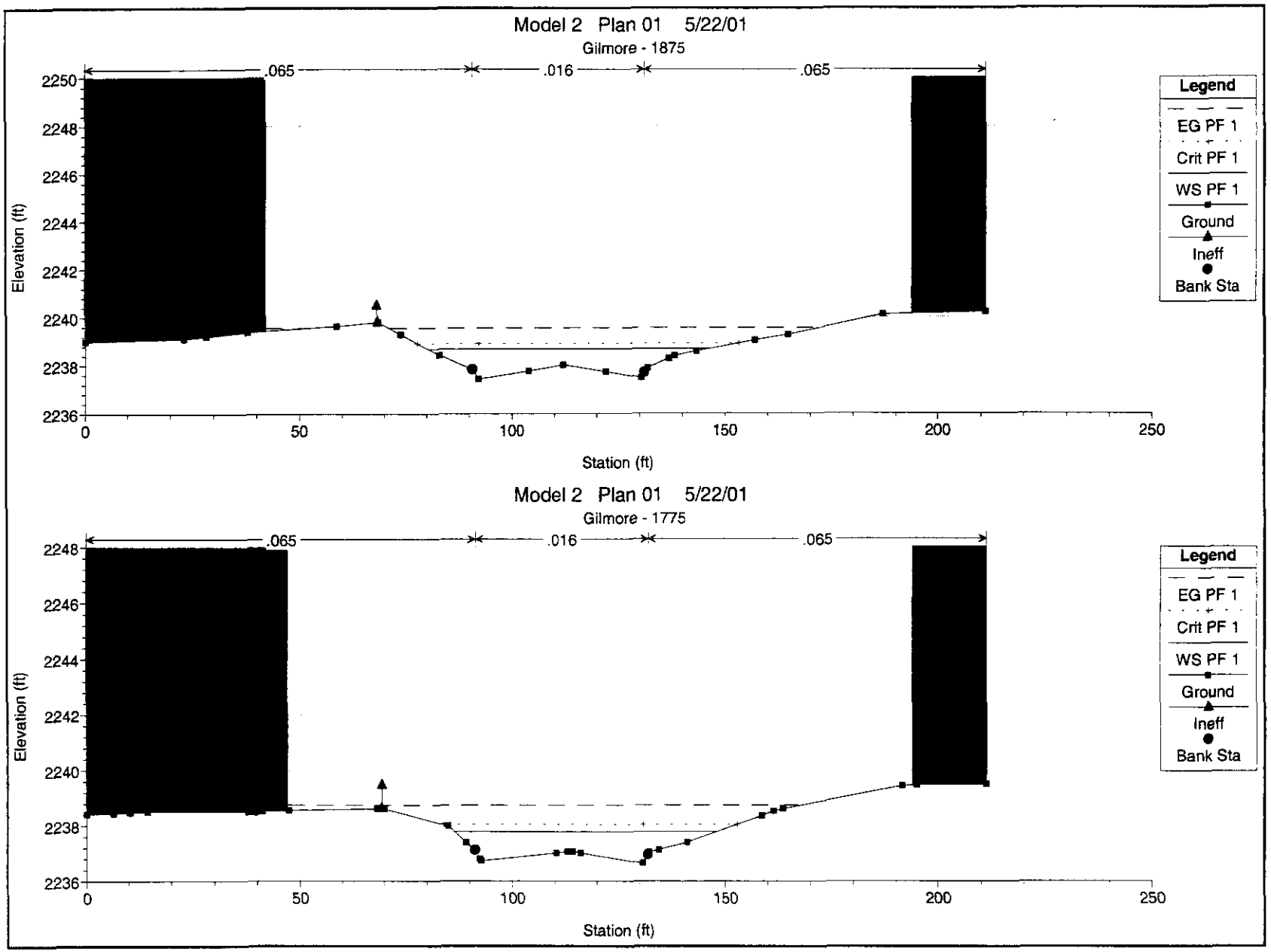

Model 2 Plan 01 5/10/01
RBP - 216
.065
.038
.065
.016
.065
WALL ALONG NORTH SIDE OF RANCHO BUSINESS PARK
WALL ALONG EACH SIDE OF RANCHO BUSINESS PARK
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/10/01
RBP - 109
.038
.016
.065
WALL ALONG NORTH SIDE OF RANCHO BUSINESS PARK
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

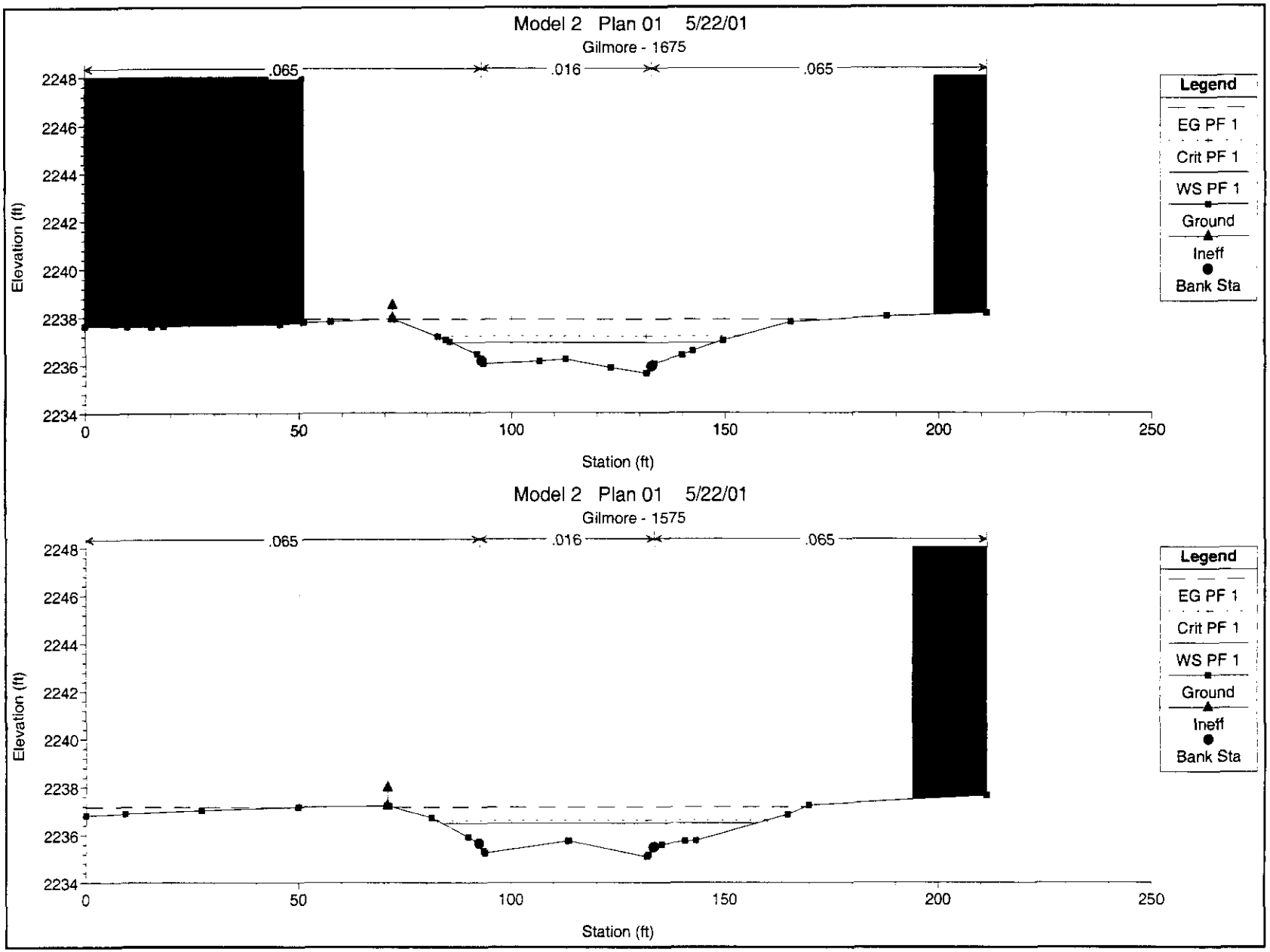

Model 2 Plan 01 5/10/01
Gilmore - 2675
.065
.016
.065
2254
2252
2250
2248
2246
2244
2242
Elevation (ft)
0
20
40
60
80
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 2 Plan 01 5/10/01
Gilmore - 2575
.065
.016
.065
2254
2252
2250
2248
2246
2244
2242
2240
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

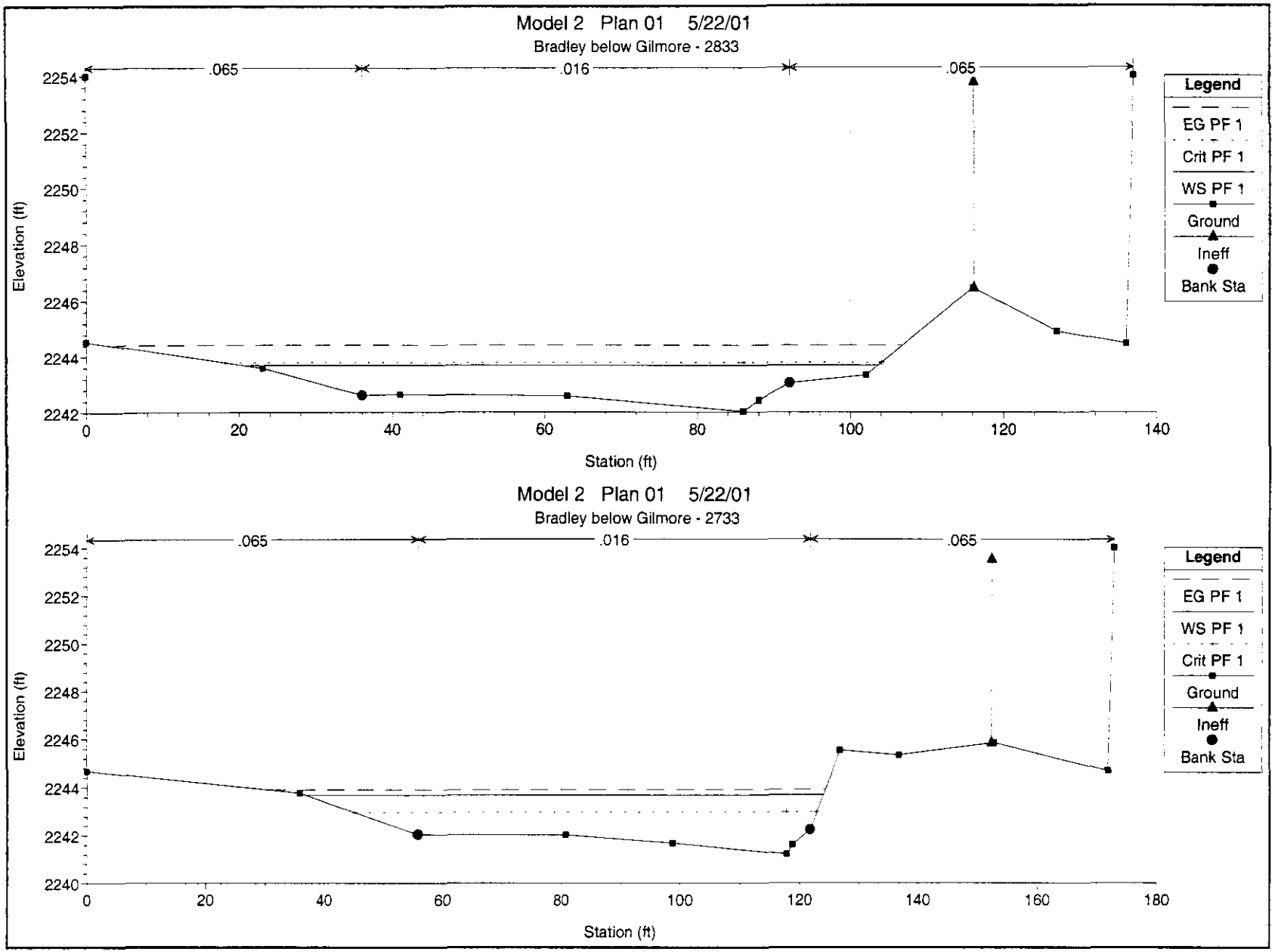

Model 2 Plan 01 5/22/01
Gilmore - 2475
.065
.016
.065
Elevation (ft)
2254
2252
2250
2248
2246
2244
2242
2240
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 2 Plan 01 5/22/01
Gilmore - 2375
.065
.016
.065
Elevation (ft)
2254
2252
2250
2248
2246
2244
2242
2240
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

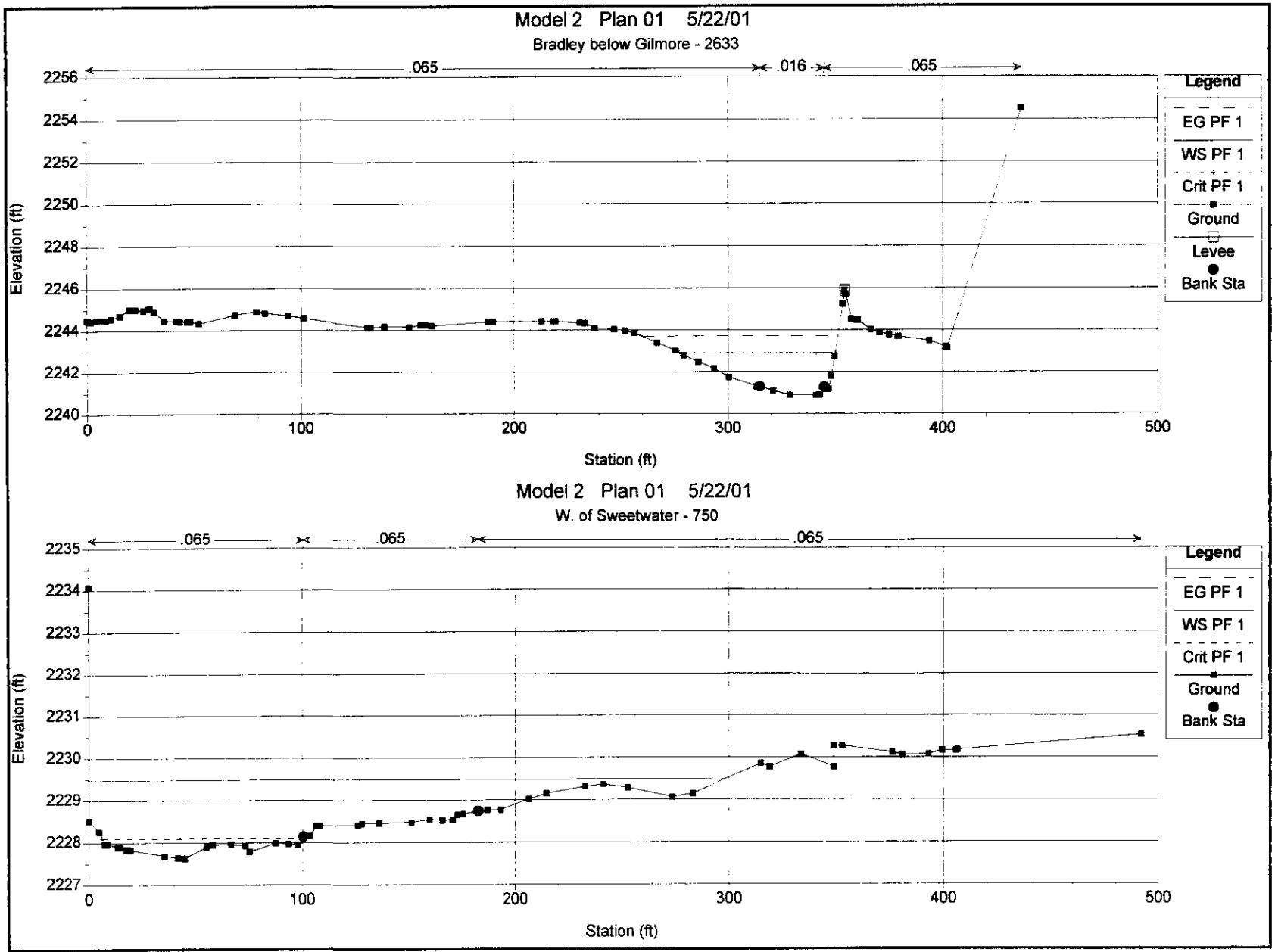

Model 2 Plan 01 5/22/01
Gilmore - 2275
.065
.016
.065
2254
2252
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 2 Plan 01 5/22/01
Gilmore - 2175
.065
.016
.065
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

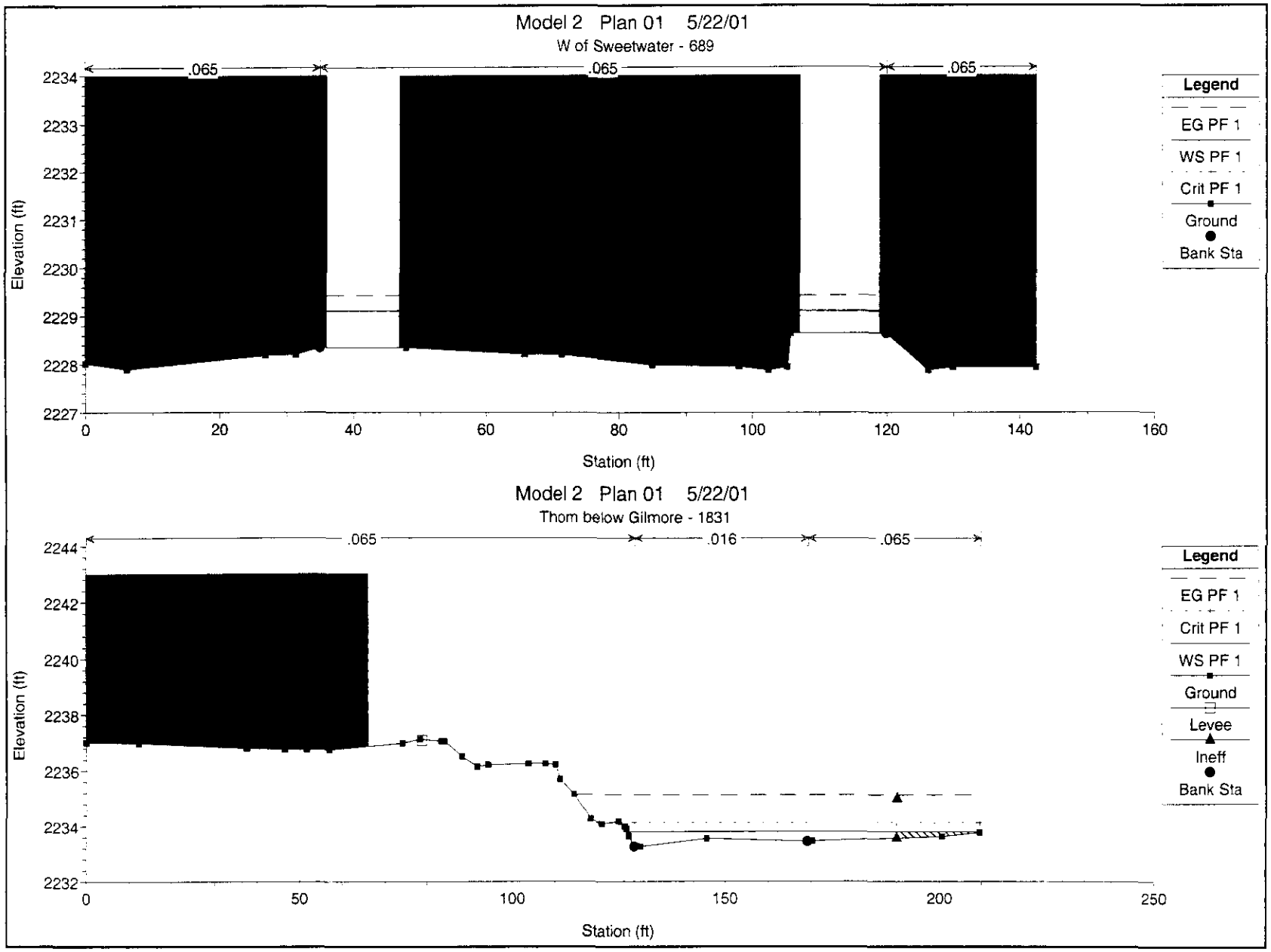

Model 2 Plan 01 5/22/01
Gilmore - 2075
.065
.016
.065
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 2 Plan 01 5/22/01
Gilmore - 1975
.065
.016
.065
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

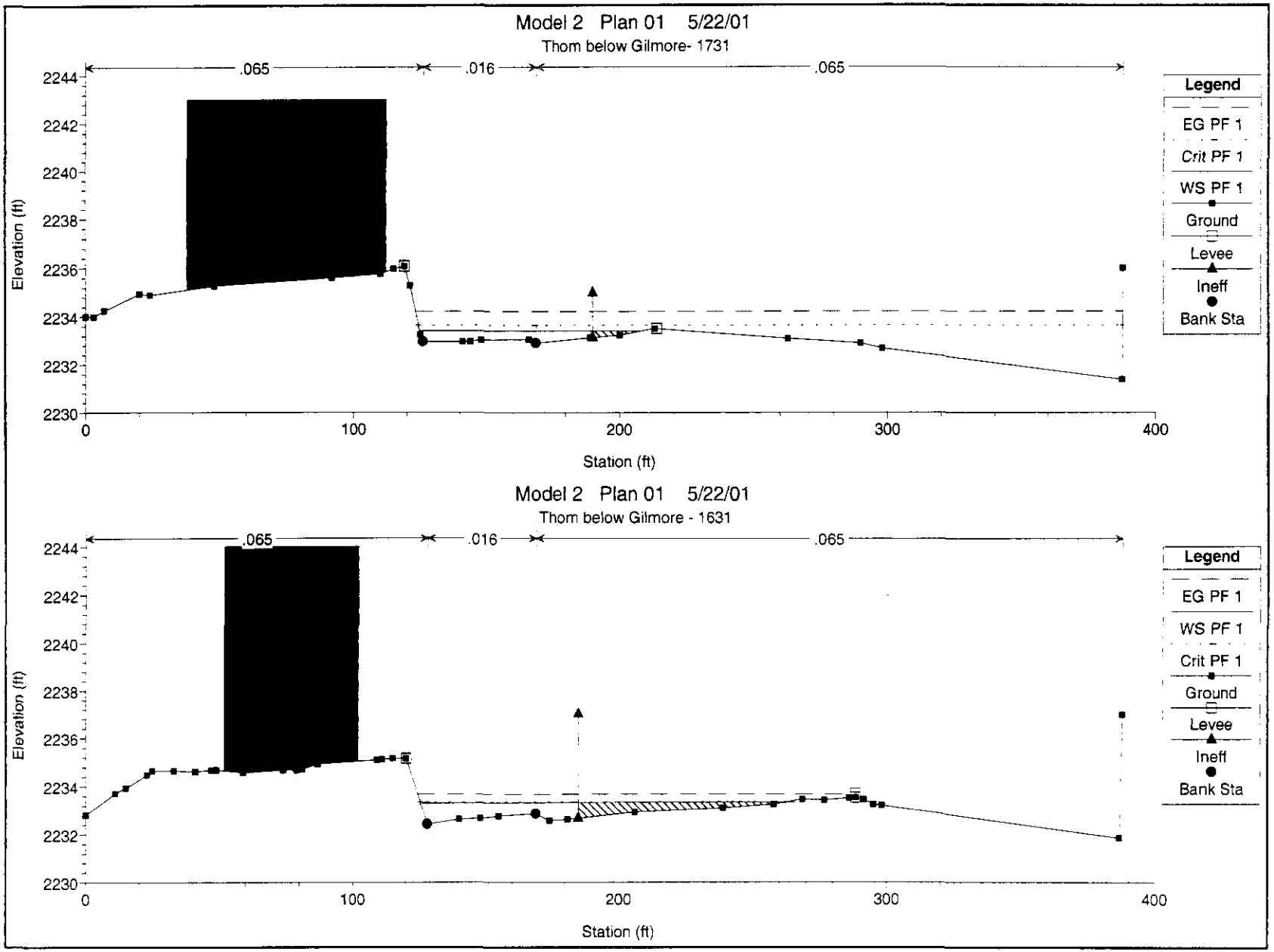

Model 2 Plan 01 5/22/01
Gilmore - 1875
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2250
2248
2246
2244
2242
2240
2238
2236
0
50
100
150
200
250
Station (ft)
Model 2 Plan 01 5/22/01
Gilmore - 1775
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2248
2246
2244
2242
2240
2238
2236
0
50
100
150
200
250
Station (ft)

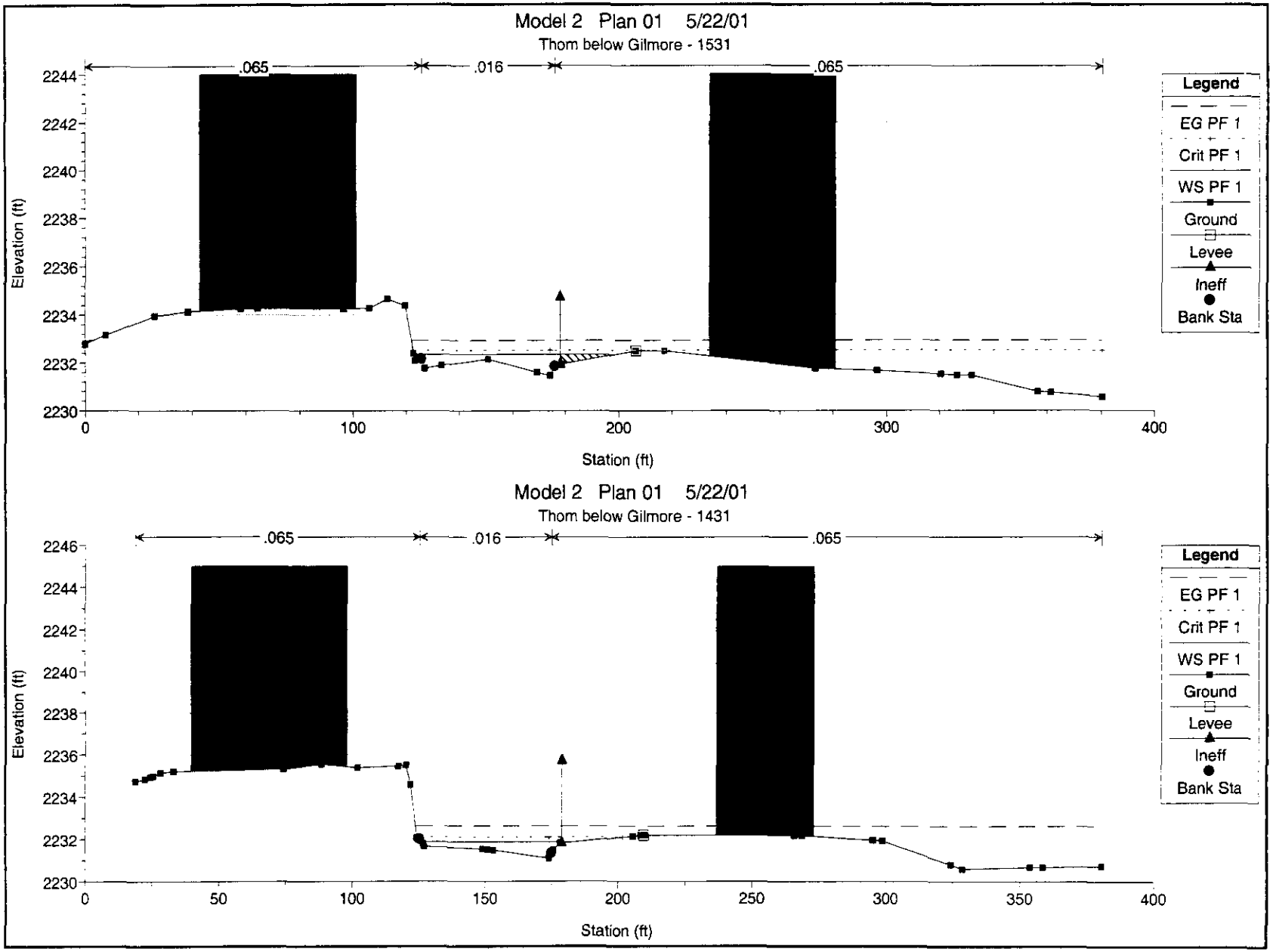

Model 2 Plan 01 5/22/01
Gilmore - 1675
.065
.016
.065
2248
2246
2244
2242
2240
2238
2236
2234
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 2 Plan 01 5/22/01
Gilmore - 1575
.065
.016
.065
2248
2246
2244
2242
2240
2238
2236
2234
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

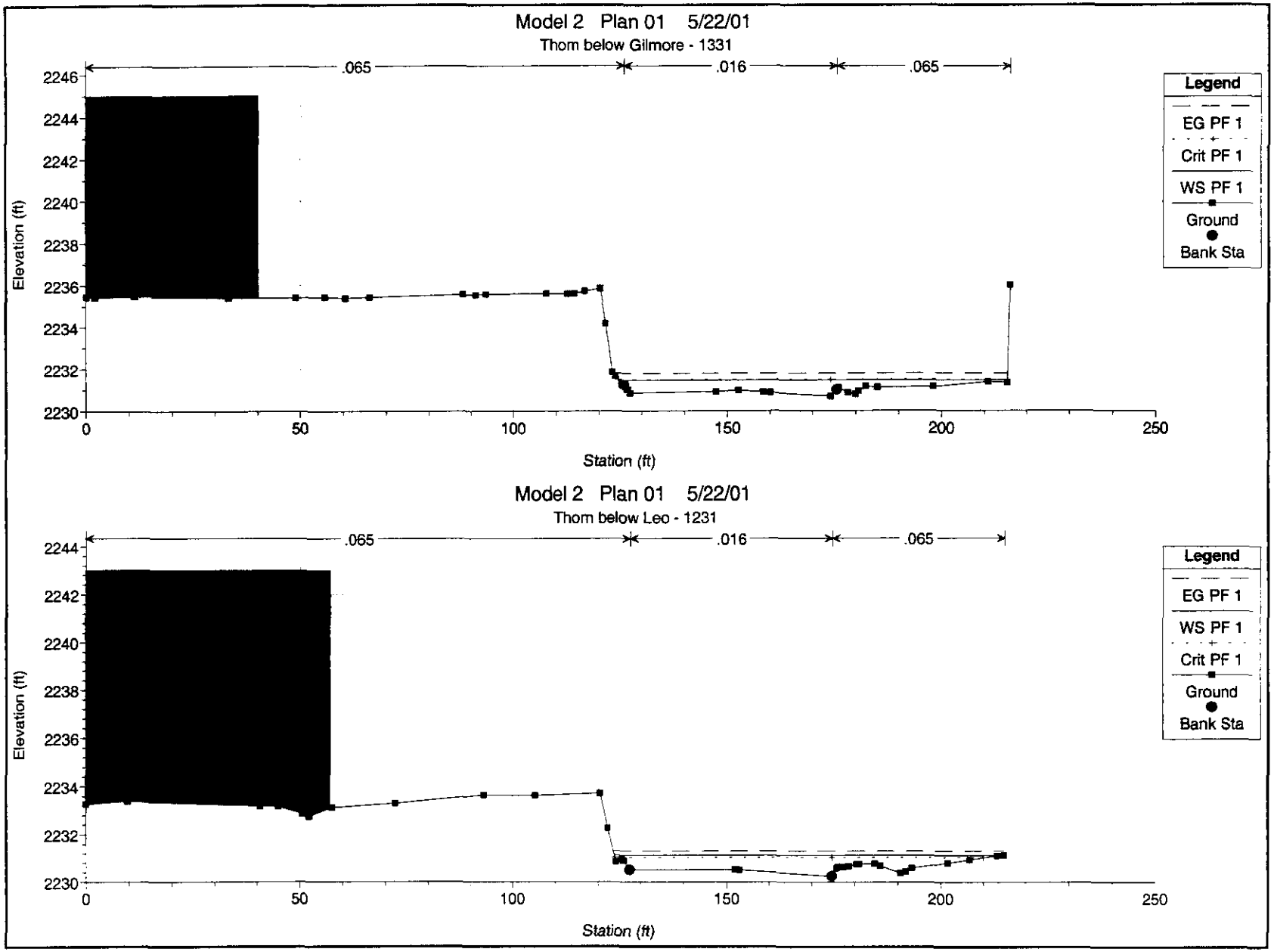

Model 2 Plan 01 5/22/01
Bradley below Gilmore - 2833
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 2 Plan 01 5/22/01
Bradley below Gilmore - 2733
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

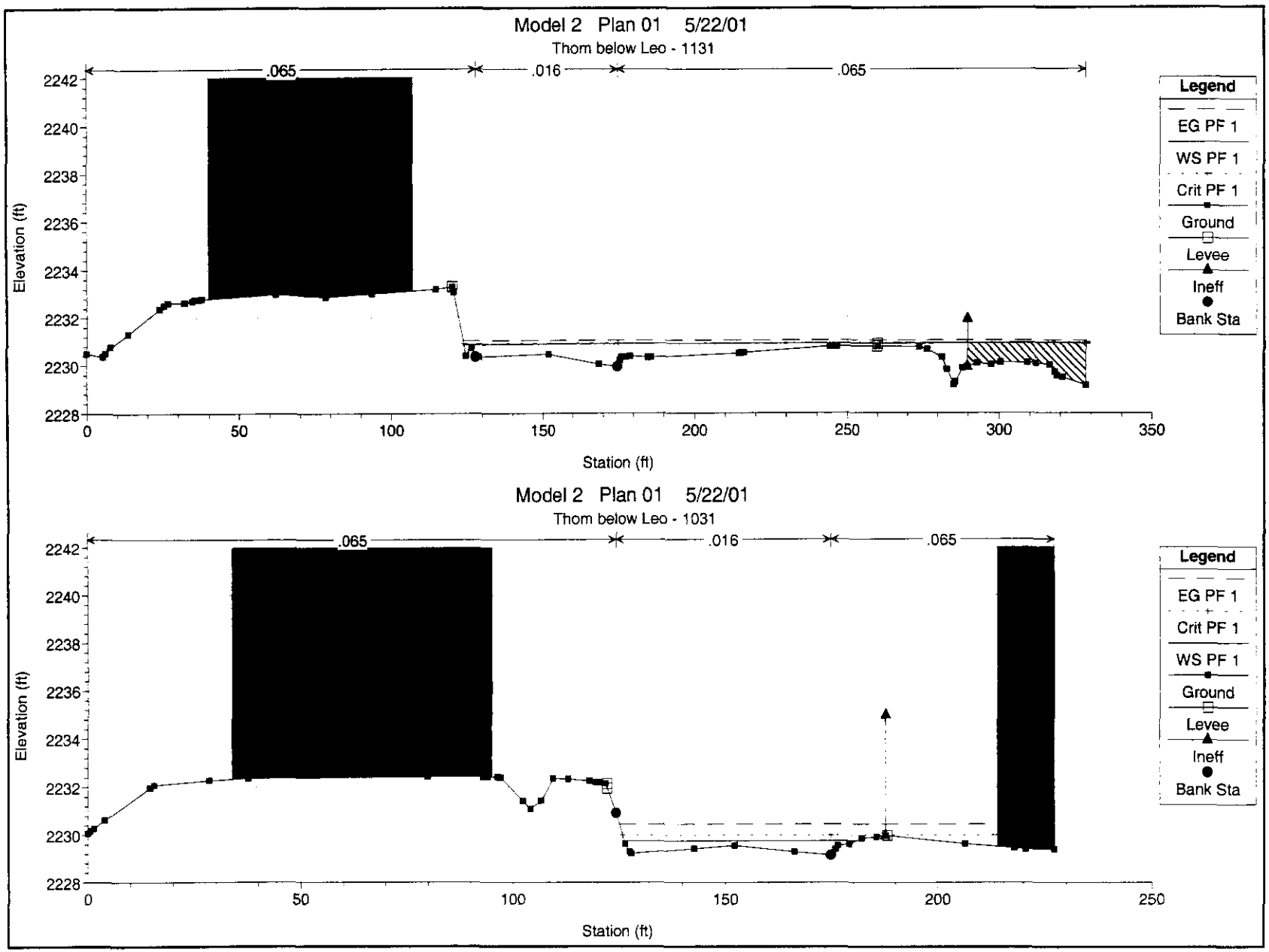

Model 2 Plan 01 5/22/01
Bradley below Gilmore - 2633
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 2 Plan 01 5/22/01
W. of Sweetwater - 750
.065
.065
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

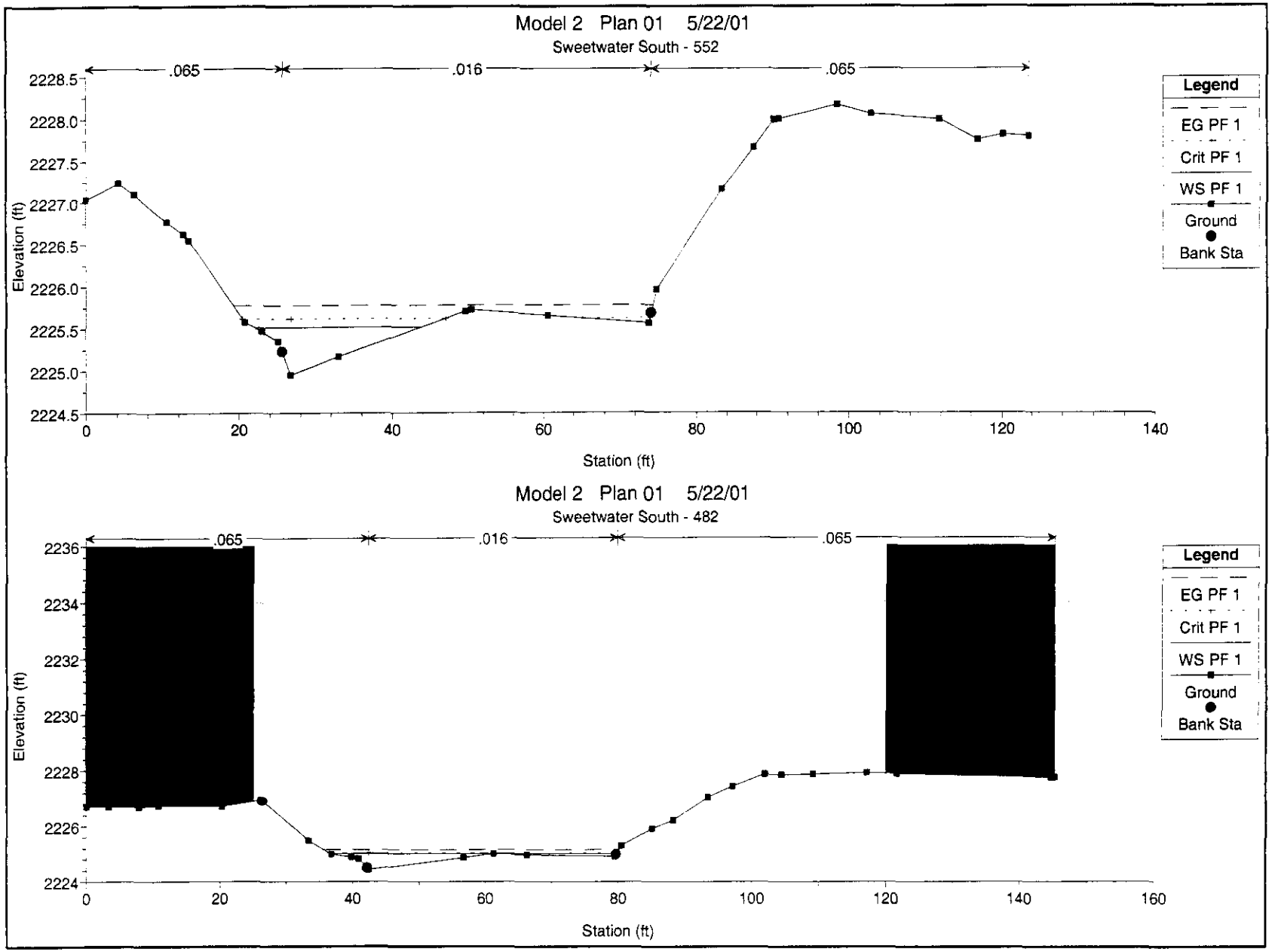

Model 2 Plan 01 5/22/01
W of Sweetwater - 689
.065
.065
.065
Elevation (ft)
2234
2233
2232
2231
2230
2229
2228
2227
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Model 2 Plan 01 5/22/01
Thorn below Gilmore - 1831
.065
.016
.065
Elevation (ft)
2244
2242
2240
2238
2236
2234
2232
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta

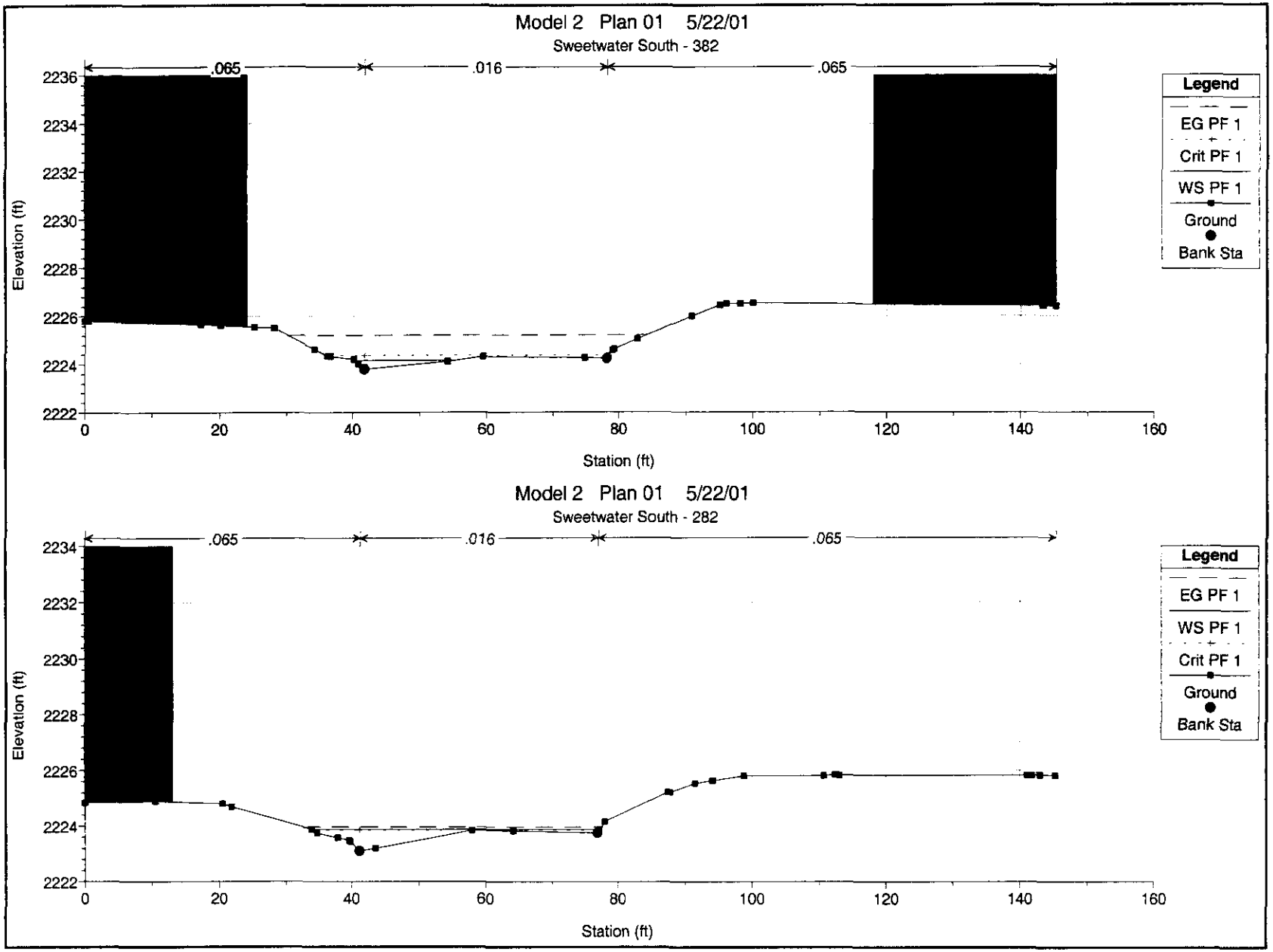

Model 2 Plan 01 5/22/01
Thom below Gilmore- 1731
.065
.016
.065
Elevation (ft)
2244
2242
2240
2238
2236
2234
2232
2230
0
100
200
300
400
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Model 2 Plan 01 5/22/01
Thom below Gilmore - 1631
.065
.016
.065
Elevation (ft)
2244
2242
2240
2238
2236
2234
2232
2230
0
100
200
300
400
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta

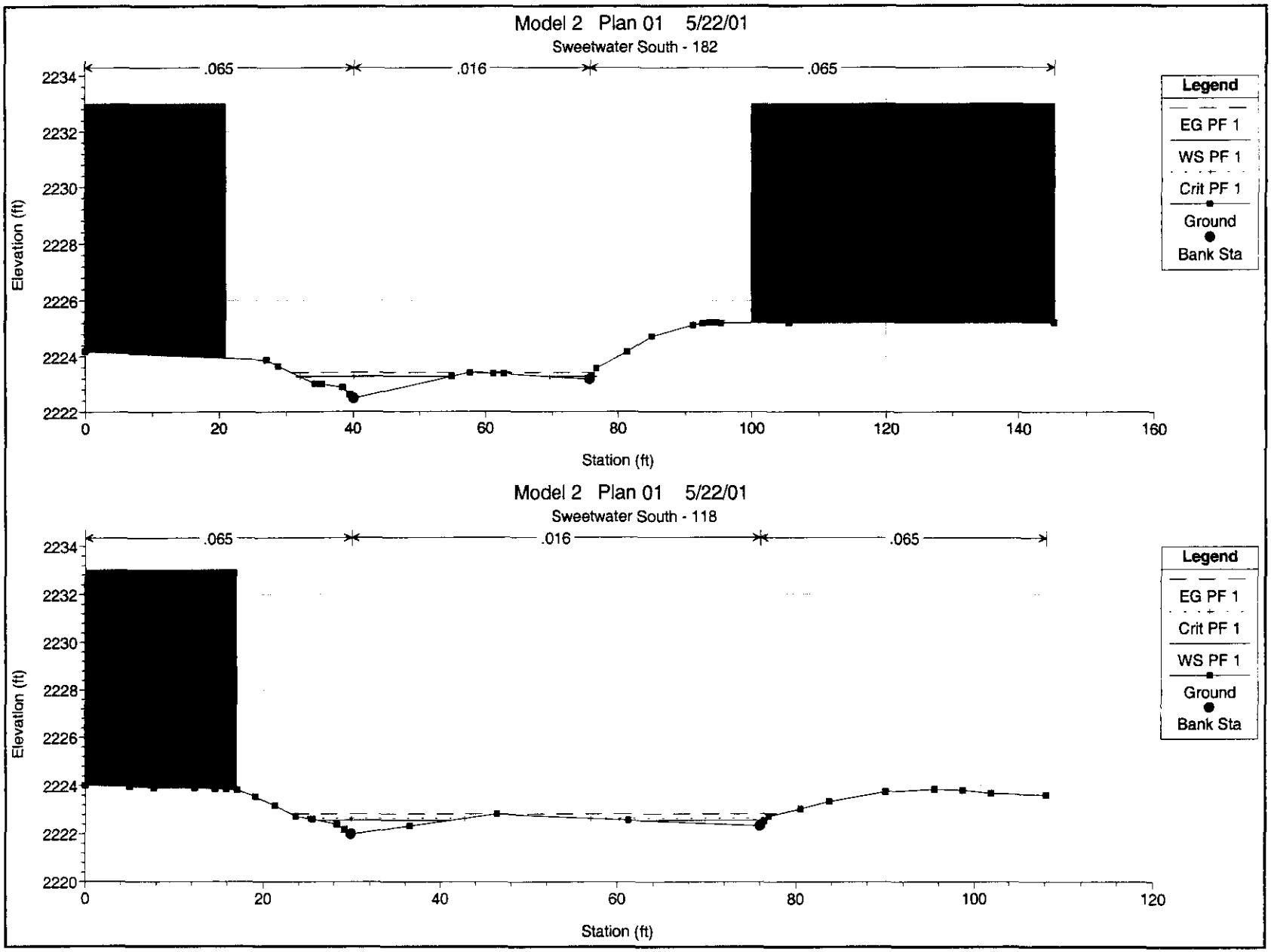

Model 2 Plan 01 5/22/01
Thom below Gilmore - 1531
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 2 Plan 01 5/22/01
Thom below Gilmore - 1431
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)

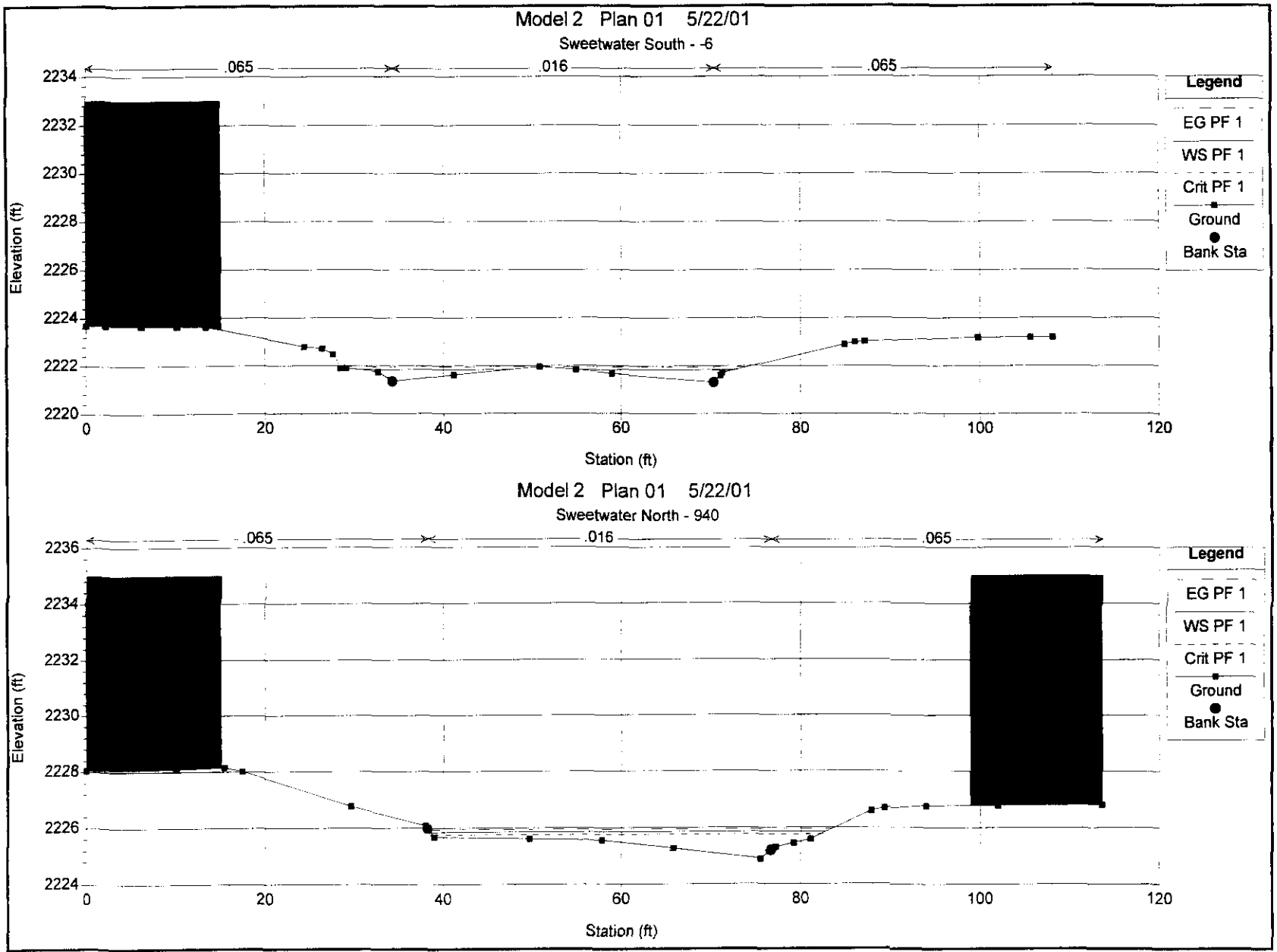

Model 2 Plan 01 5/22/01
Thorn below Gilmore - 1331
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2246
2244
2242
2240
2238
2236
2234
2232
2230
0
50
100
150
200
250
Station (ft)
Model 2 Plan 01 5/22/01
Thorn below Leo - 1231
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2244
2242
2240
2238
2236
2234
2232
2230
0
50
100
150
200
250
Station (ft)

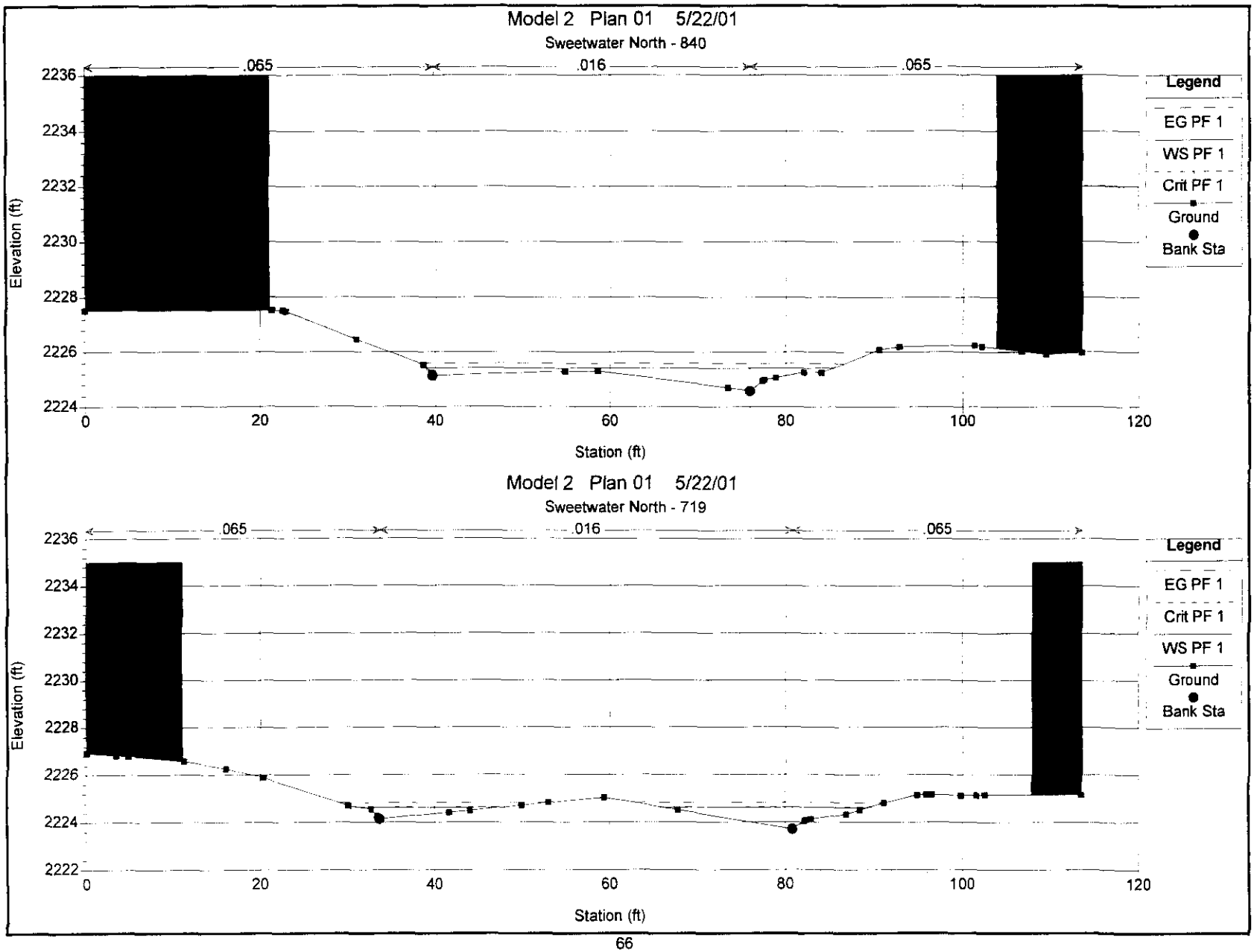

Model 2 Plan 01 5/22/01
Thom below Leo - 1131
.065
.016
.065
Elevation (ft)
2242
2240
2238
2236
2234
2232
2230
2228
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 2 Plan 01 5/22/01
Thom below Leo - 1031
.065
.016
.065
Elevation (ft)
2242
2240
2238
2236
2234
2232
2230
2228
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta

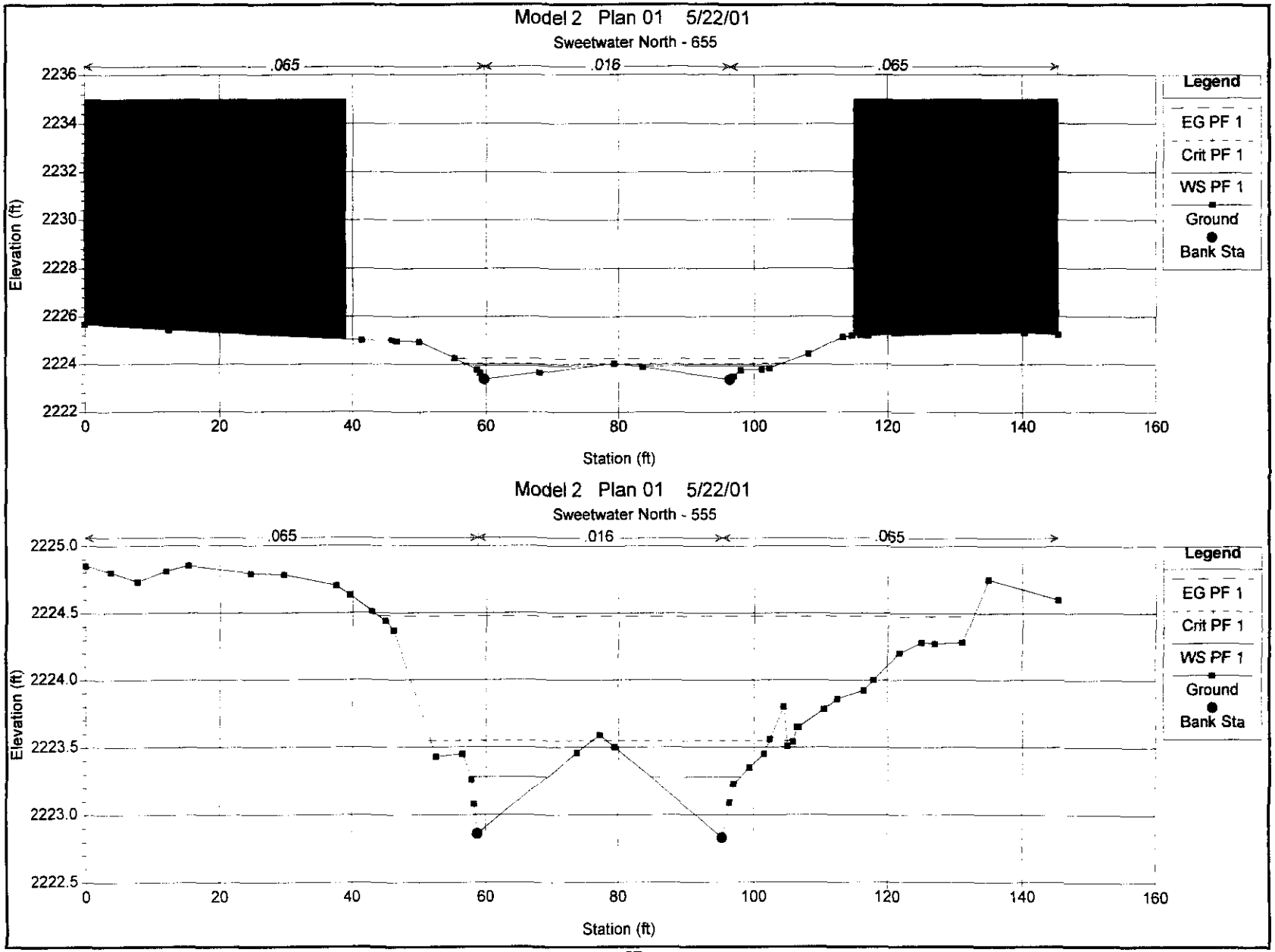

Model 2 Plan 01 5/22/01
Sweetwater South - 552
.065
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 2 Plan 01 5/22/01
Sweetwater South - 482
.065
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

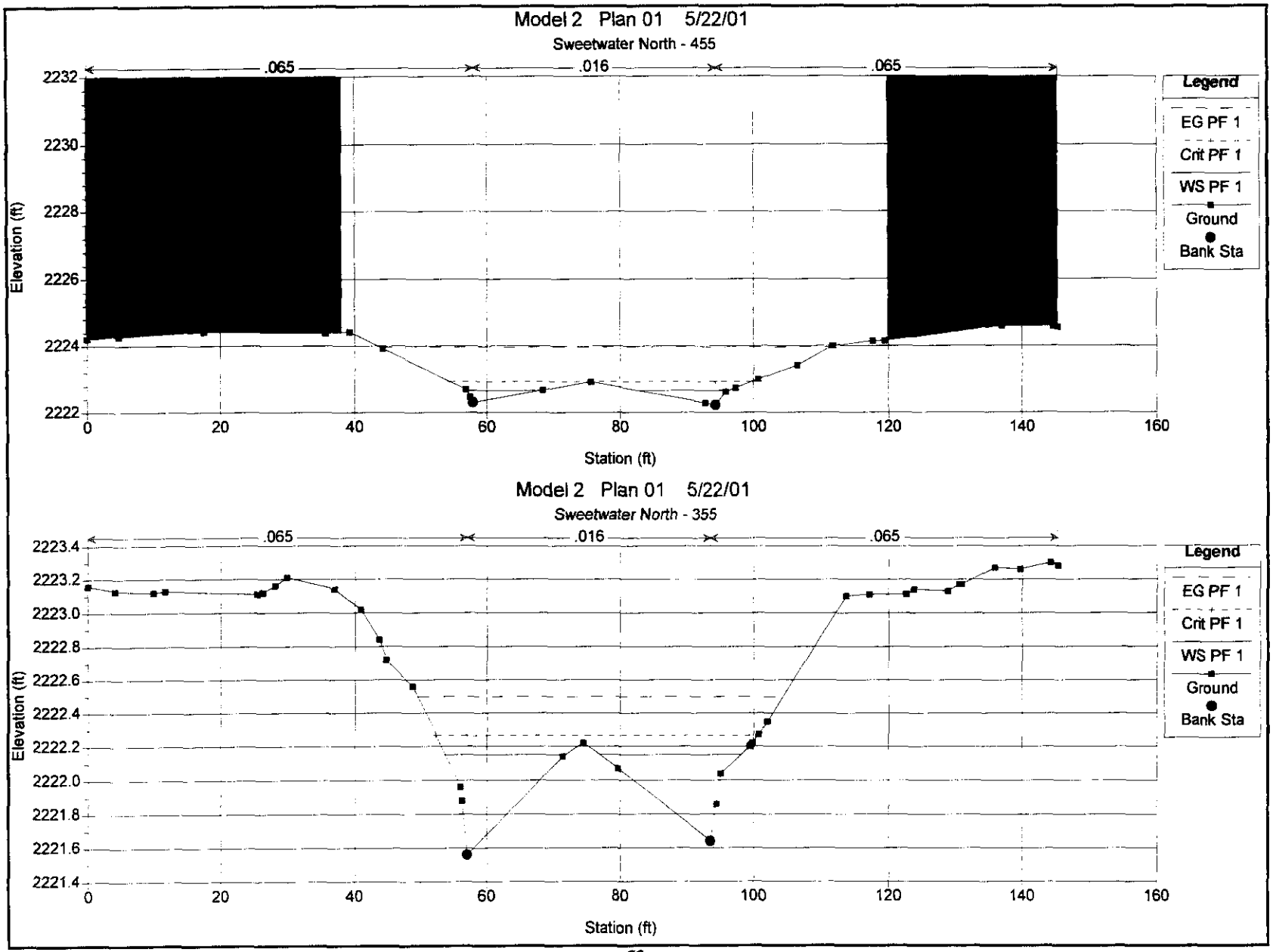

Model 2 Plan 01 5/22/01
Sweetwater South - 382
.065
.016
.065
Elevation (ft)
2236
2234
2232
2230
2228
2226
2224
2222
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 2 Plan 01 5/22/01
Sweetwater South - 282
.065
.016
.065
Elevation (ft)
2234
2232
2230
2228
2226
2224
2222
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

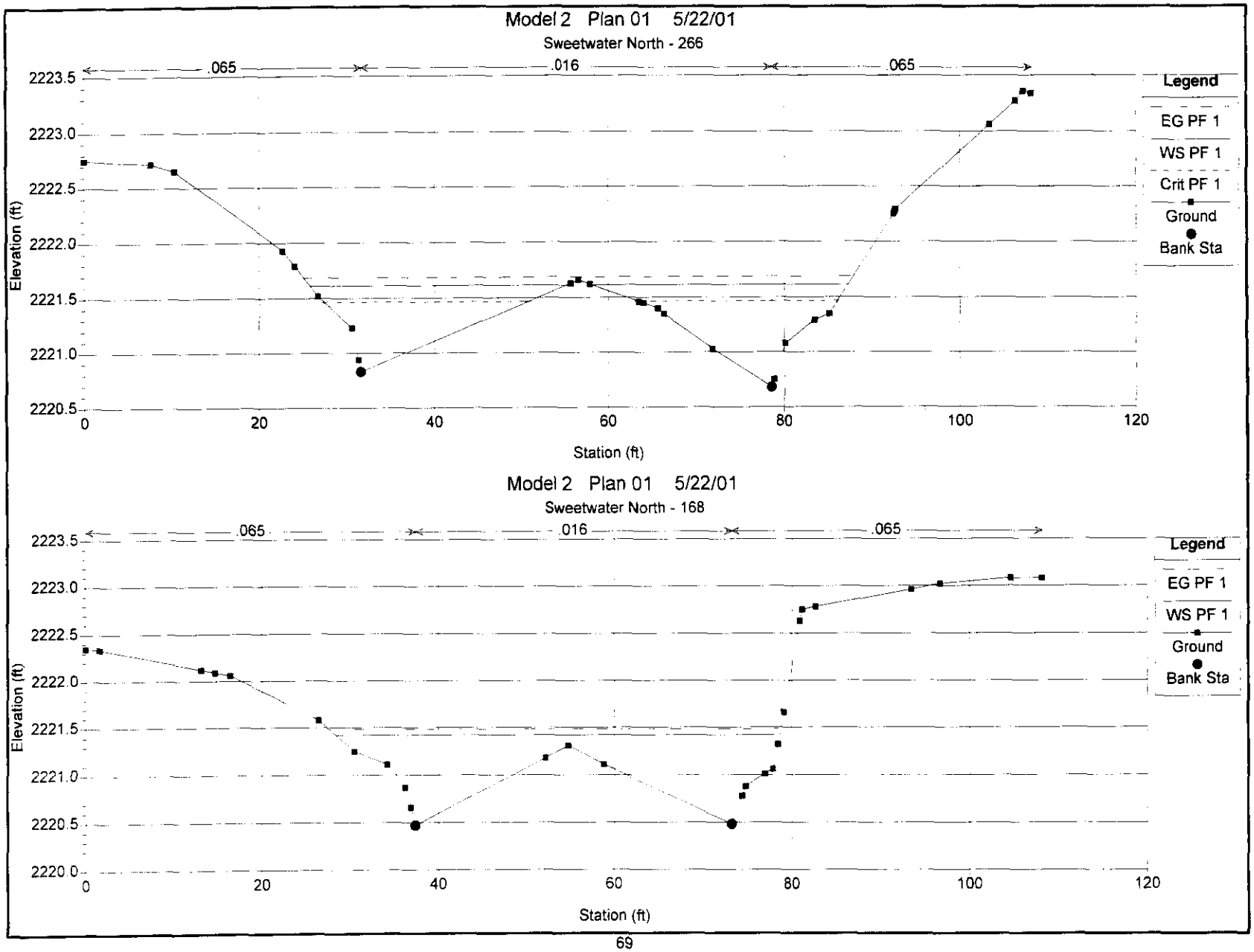

Model 2 Plan 01 5/22/01
Sweetwater South - 182
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 2 Plan 01 5/22/01
Sweetwater South - 118
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

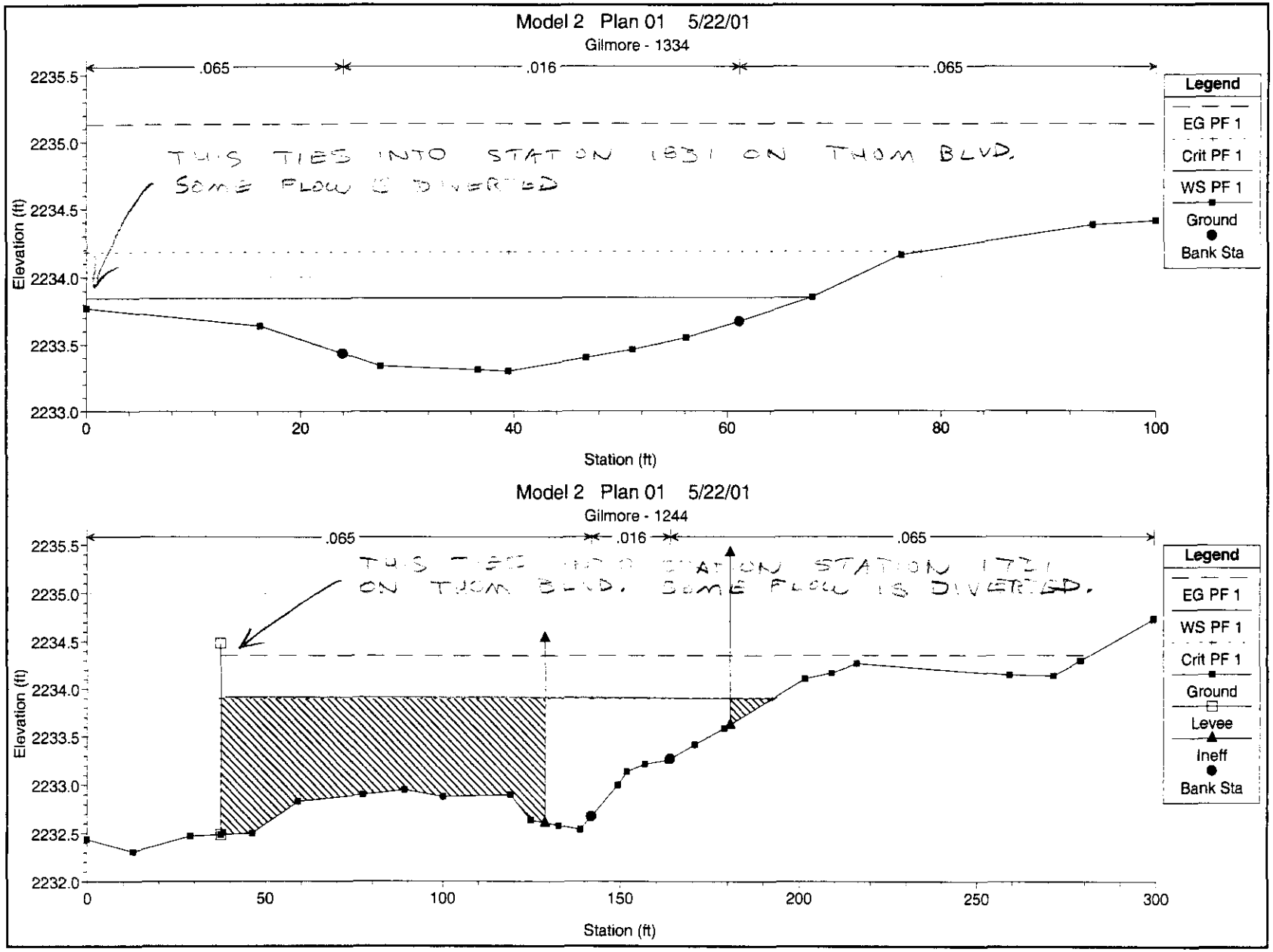

Model 2 Plan 01 5/22/01
Sweetwater South - 6
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 2 Plan 01 5/22/01
Sweetwater North - 940
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

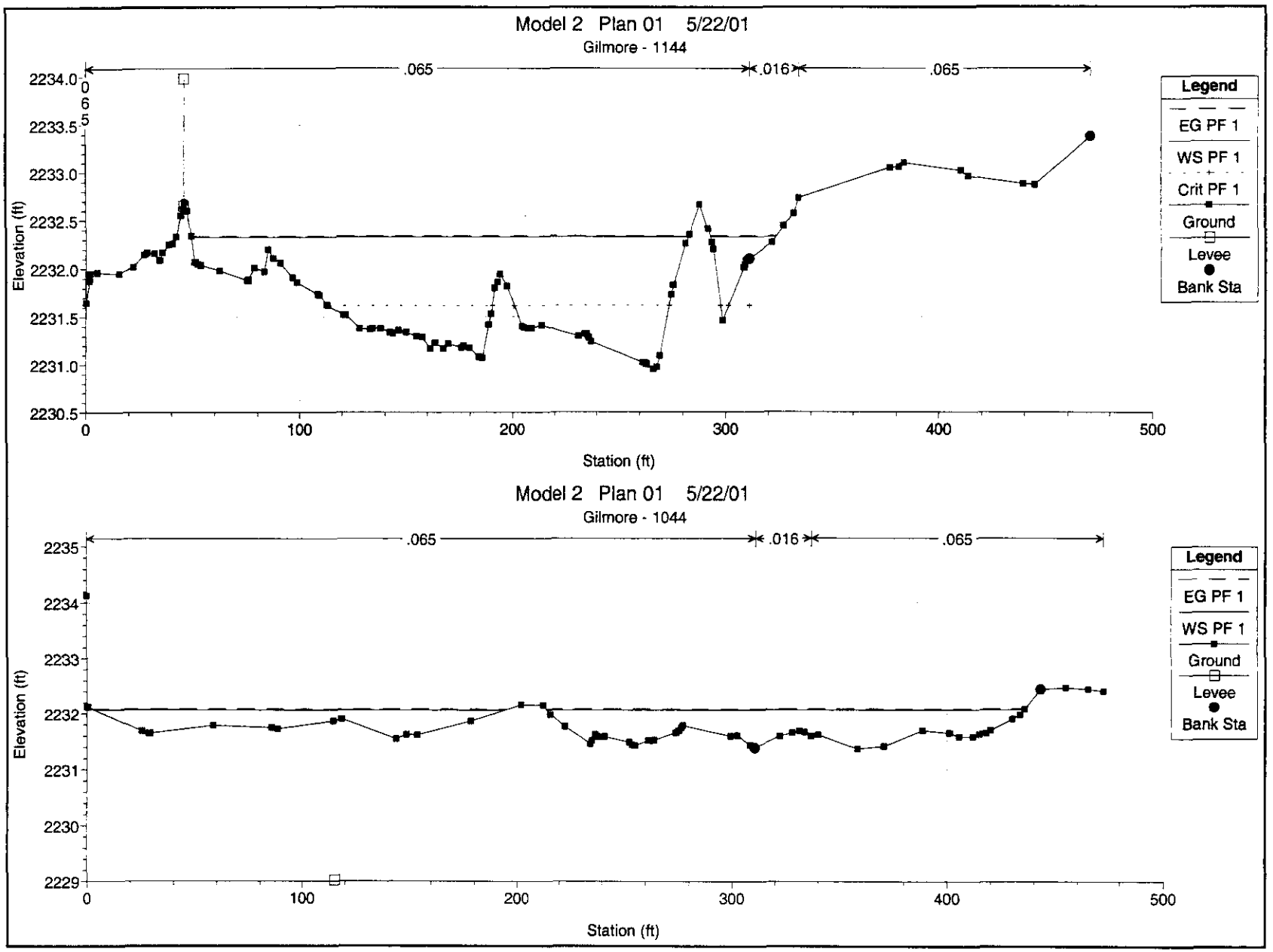

Model 2 Plan 01 5/22/01
Sweetwater North - 840
.065
.016
.065
2236
2234
2232
2230
2228
2226
2224
Elevation (ft)
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Model 2 Plan 01 5/22/01
Sweetwater North - 719
.065
.016
.065
2236
2234
2232
2230
2228
2226
2224
2222
Elevation (ft)
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

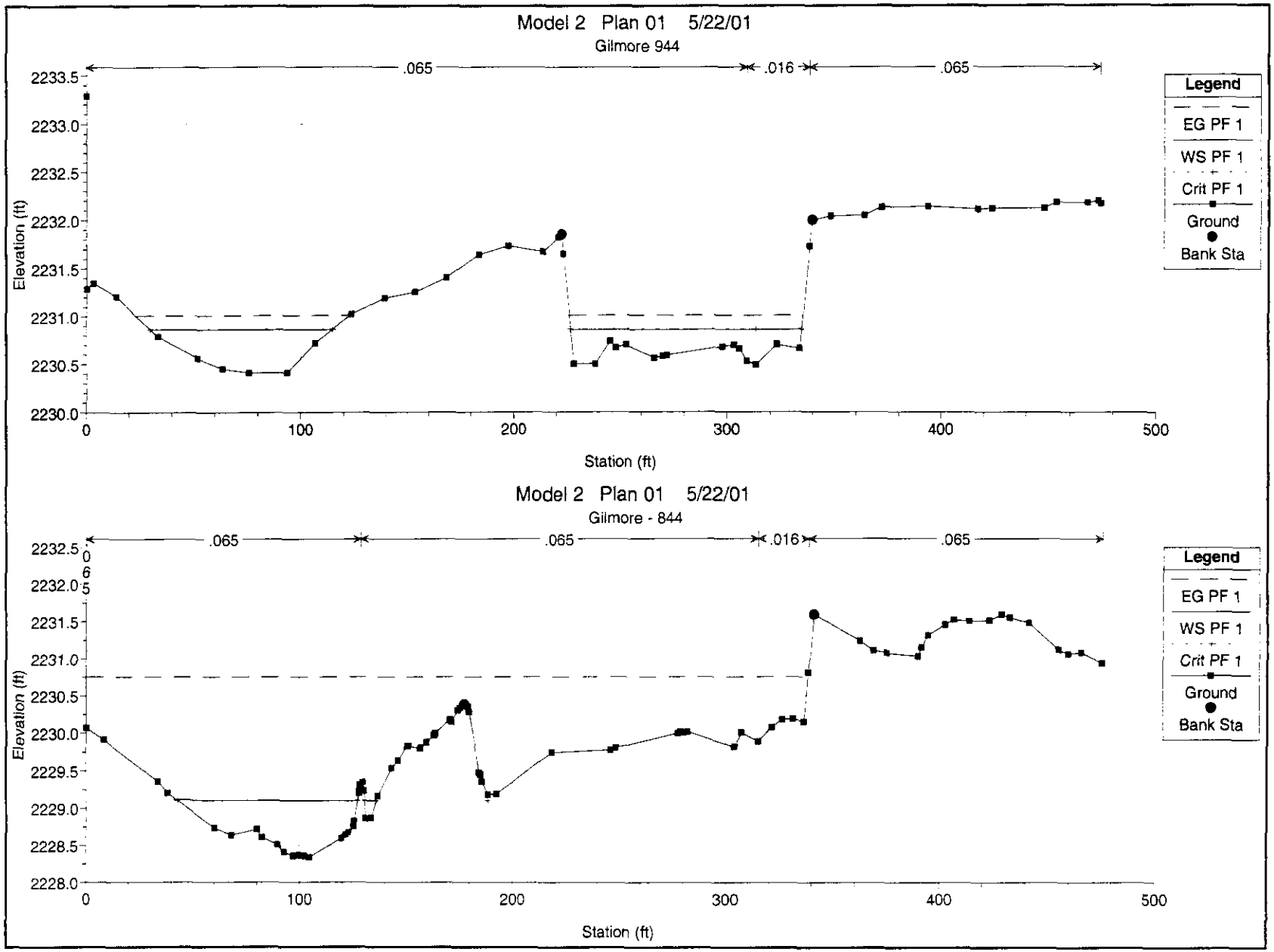

Model 2 Plan 01 5/22/01
Sweetwater North - 655
.065
.016
.065
Elevation (ft)
2236
2234
2232
2230
2228
2226
2224
2222
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 2 Plan 01 5/22/01
Sweetwater North - 555
.065
.016
.065
Elevation (ft)
2225.0
2224.5
2224.0
2223.5
2223.0
2222.5
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

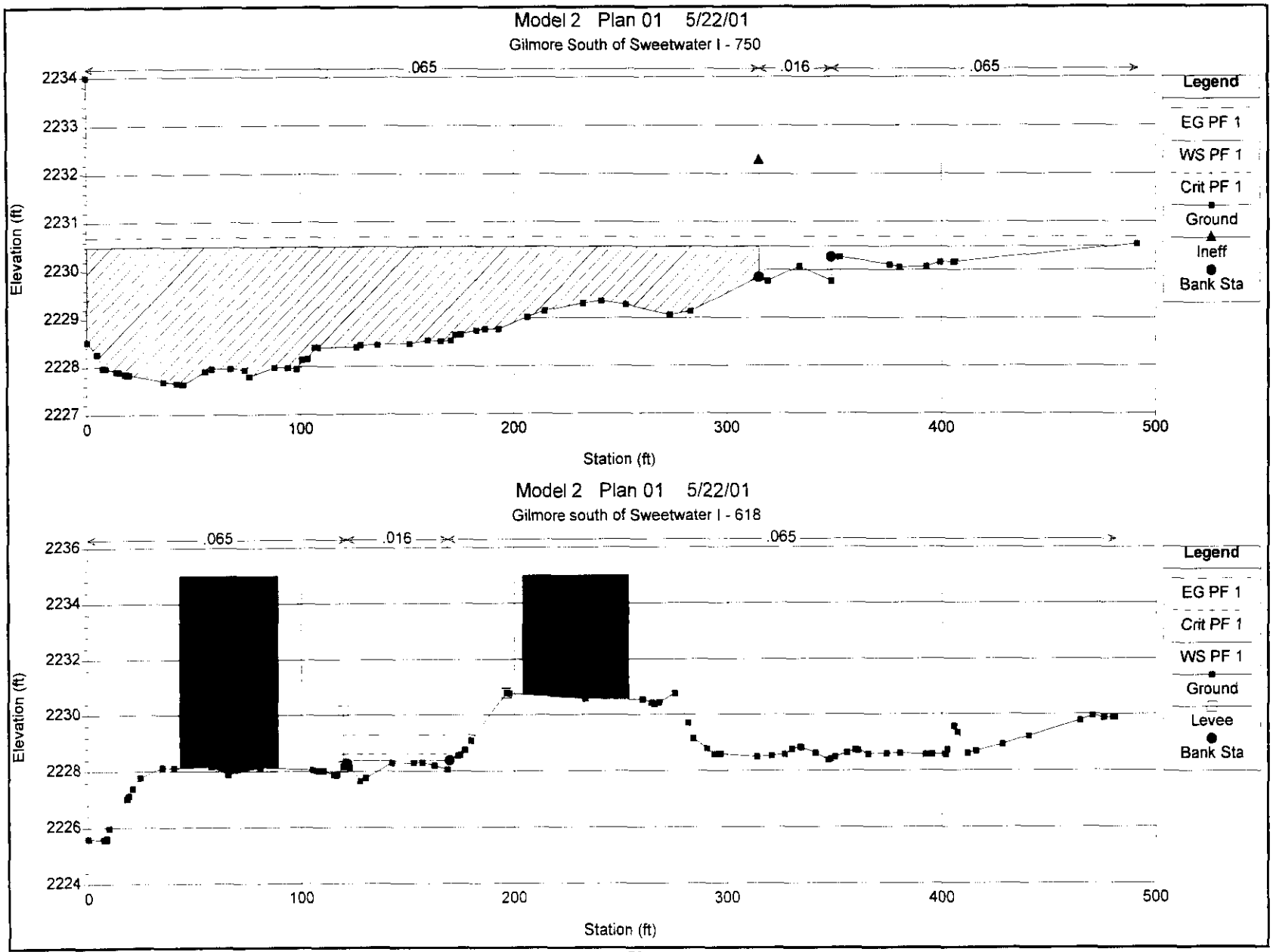

Model 2 Plan 01 5/22/01
Sweetwater North - 455
.065
.016
.065
Elevation (ft)
2232
2230
2228
2226
2224
2222
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 2 Plan 01 5/22/01
Sweetwater North - 355
.065
.016
.065
Elevation (ft)
2223.4
2223.2
2223.0
2222.8
2222.6
2222.4
2222.2
2222.0
2221.8
2221.6
2221.4
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

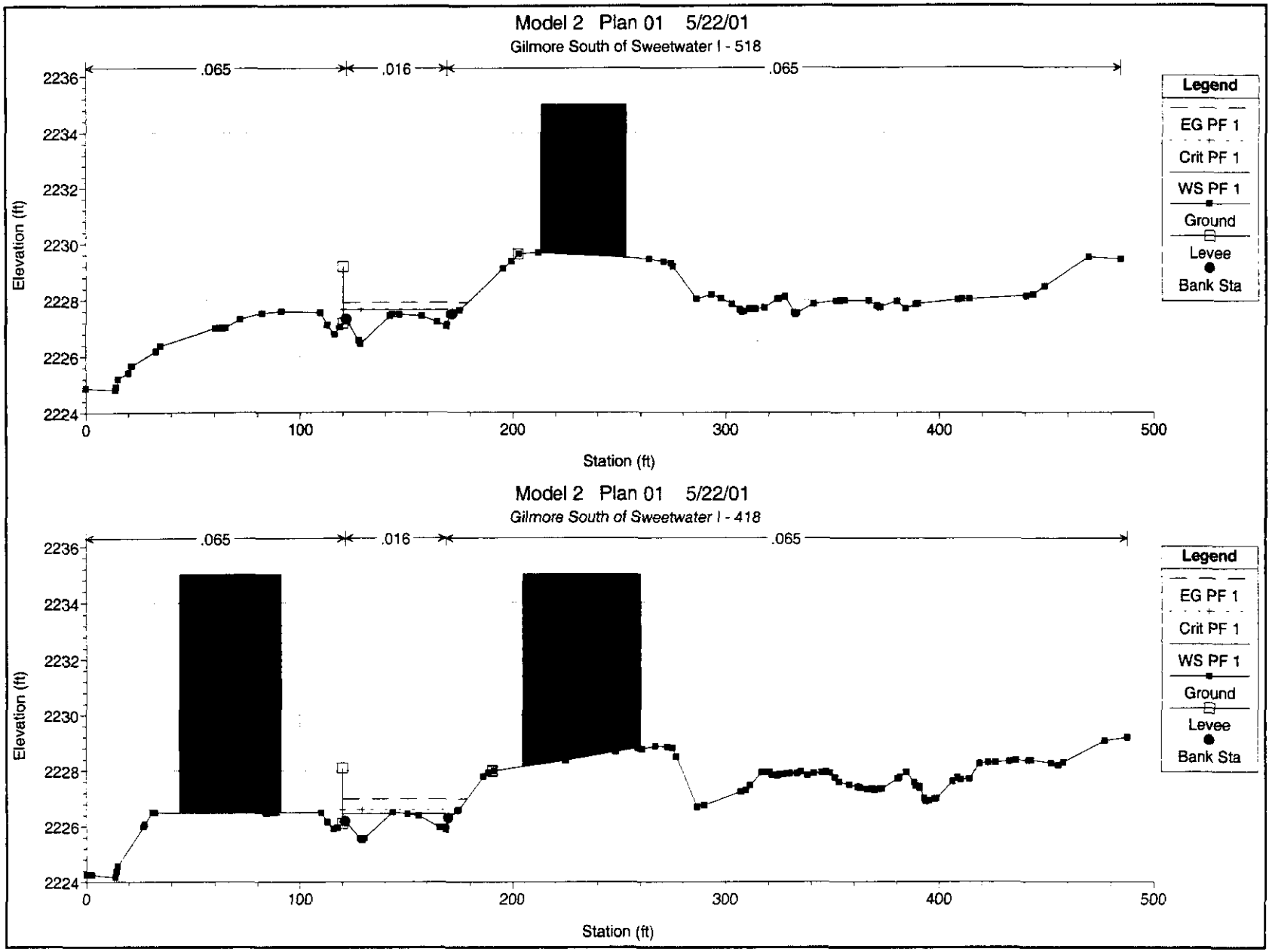

Model 2 Plan 01 5/22/01
Sweetwater North - 266
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2223.5
2223.0
2222.5
2222.0
2221.5
2221.0
2220.5
0
20
40
60
80
100
120
Station (ft)
Model 2 Plan 01 5/22/01
Sweetwater North - 168
.065
.016
.065
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2223.5
2223.0
2222.5
2222.0
2221.5
2221.0
2220.5
2220.0
0
20
40
60
80
100
120
Station (ft)

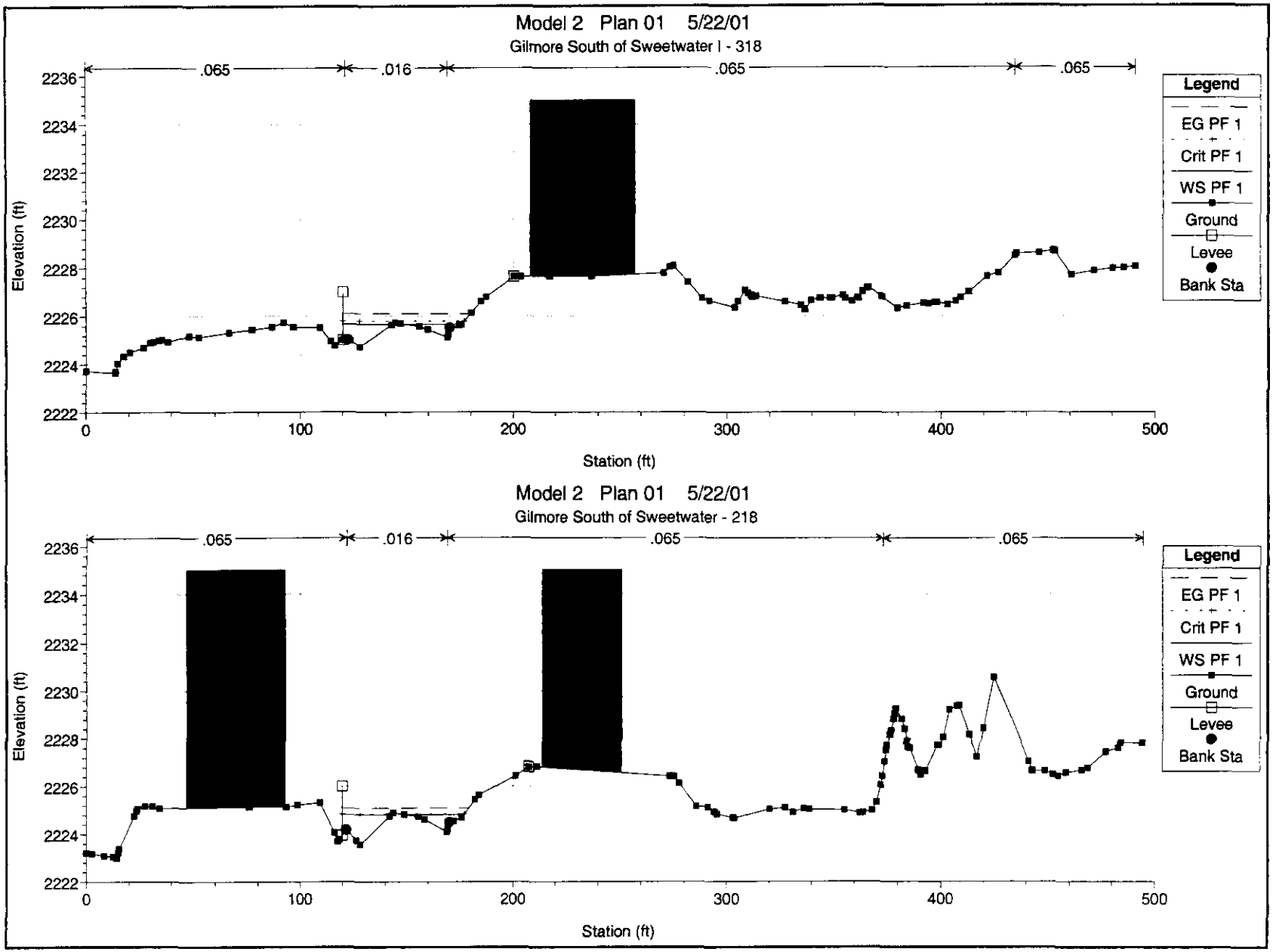

Model 2 Plan 01 5/22/01
Gilmore - 1334
.065
.016
.065
THIS TIES INTO STATION 1831 ON THOM BLVD.
SOME FLOW IS DIVERTED
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 2 Plan 01 5/22/01
Gilmore - 1244
.065
.016
.065
THIS TIES INTO STATION STATION 1731
ON THOM BLVD. SOME FLOW IS DIVERTED.
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)

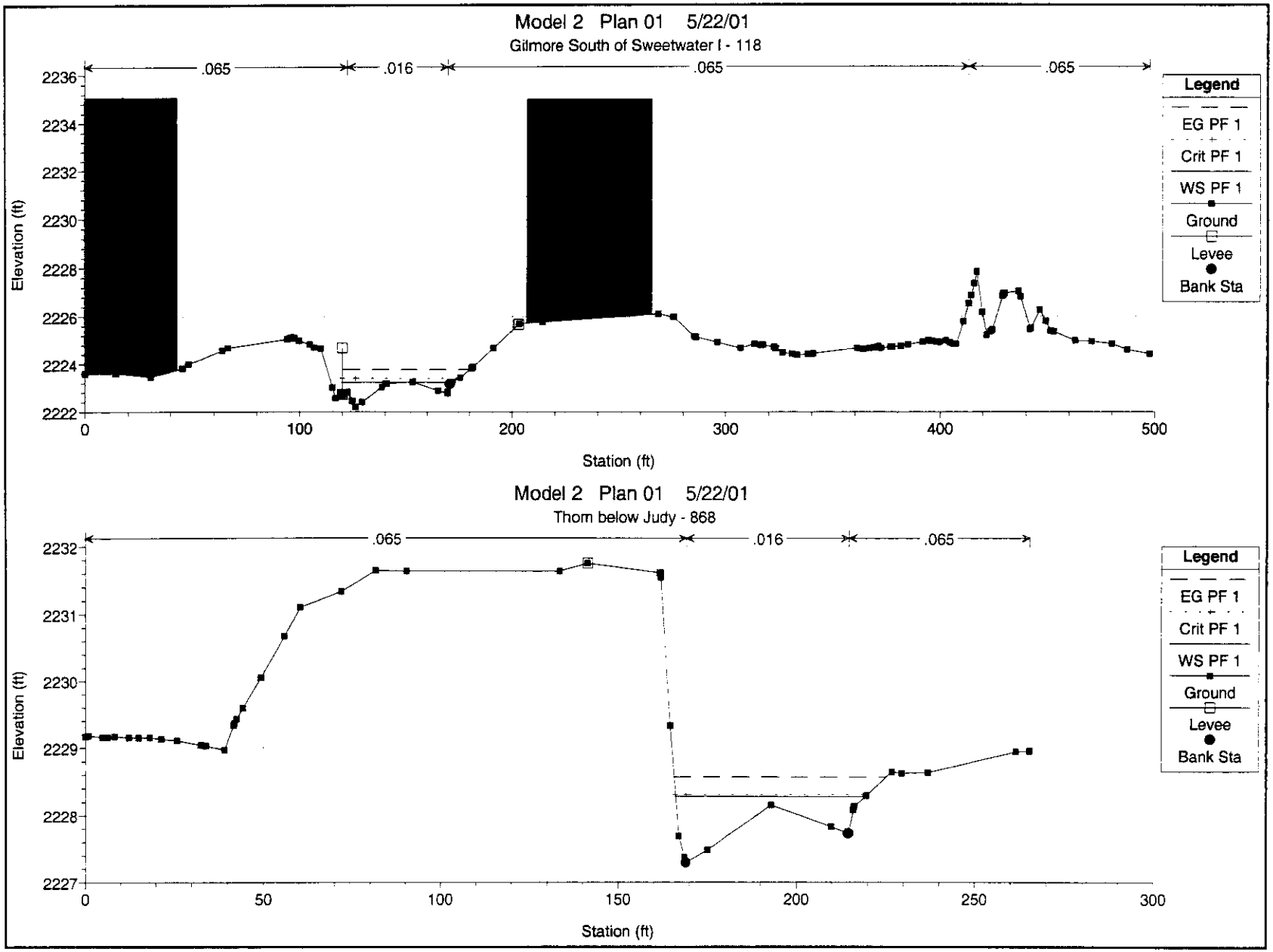

Model 2 Plan 01 5/22/01
Gilmore - 1144
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 2 Plan 01 5/22/01
Gilmore - 1044
.065
.016
.065
Legend
EG PF 1
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

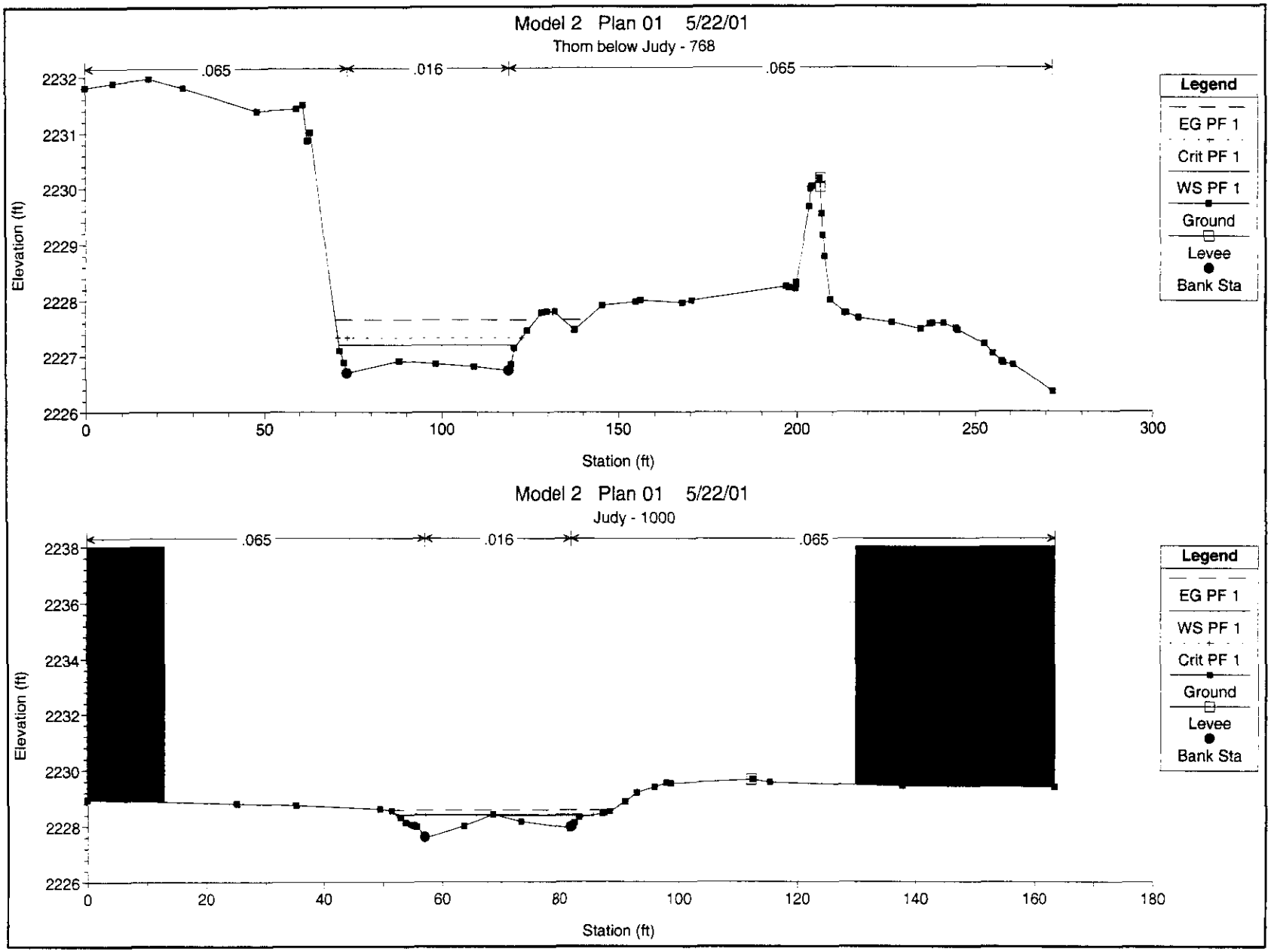

Model 2 Plan 01 5/22/01
Gilmore 944
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 2 Plan 01 5/22/01
Gilmore - 844
.065
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

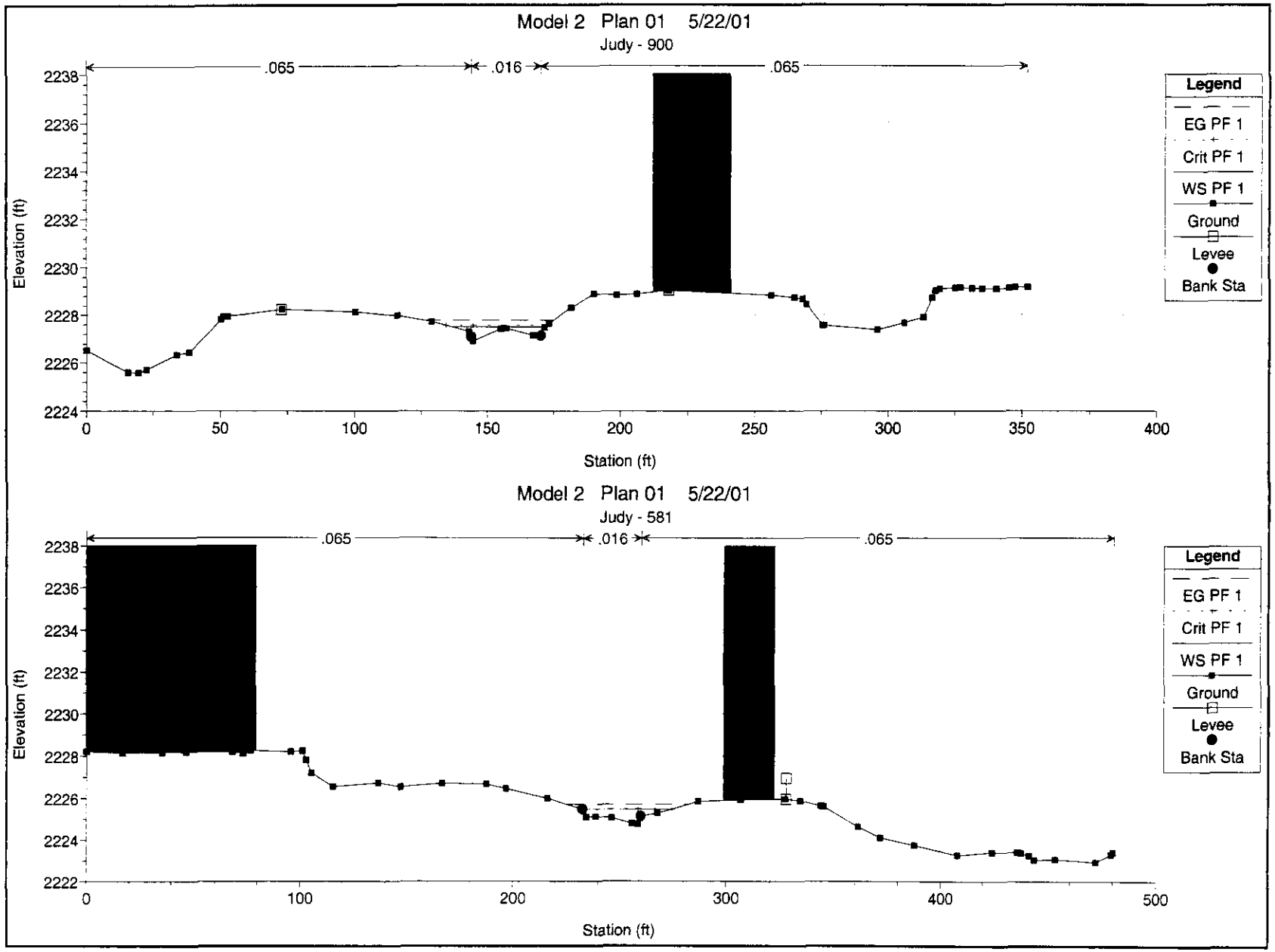

Model 2 Plan 01 5/22/01
Gilmore South of Sweetwater I - 750
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2234
2233
2232
2231
2230
2229
2228
2227
0
100
200
300
400
500
Station (ft)
Model 2 Plan 01 5/22/01
Gilmore south of Sweetwater I - 618
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2236
2234
2232
2230
2228
2226
2224
0
100
200
300
400
500
Station (ft)

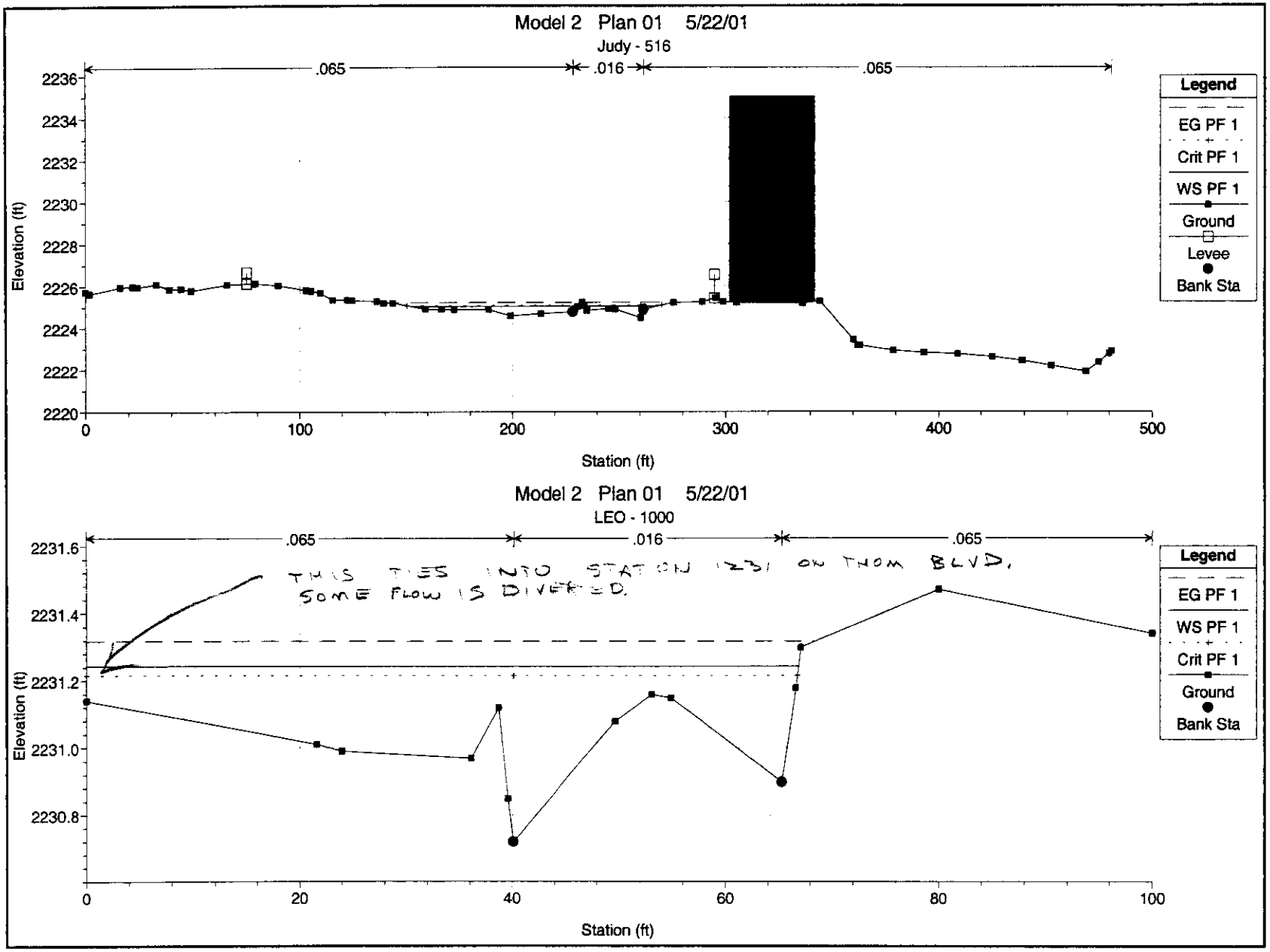

Model 2 Plan 01 5/22/01
Gilmore South of Sweetwater I - 518
.065
.016
.065
2236
2234
2232
2230
2228
2226
2224
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/22/01
Gilmore South of Sweetwater I - 418
.065
.016
.065
2236
2234
2232
2230
2228
2226
2224
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta

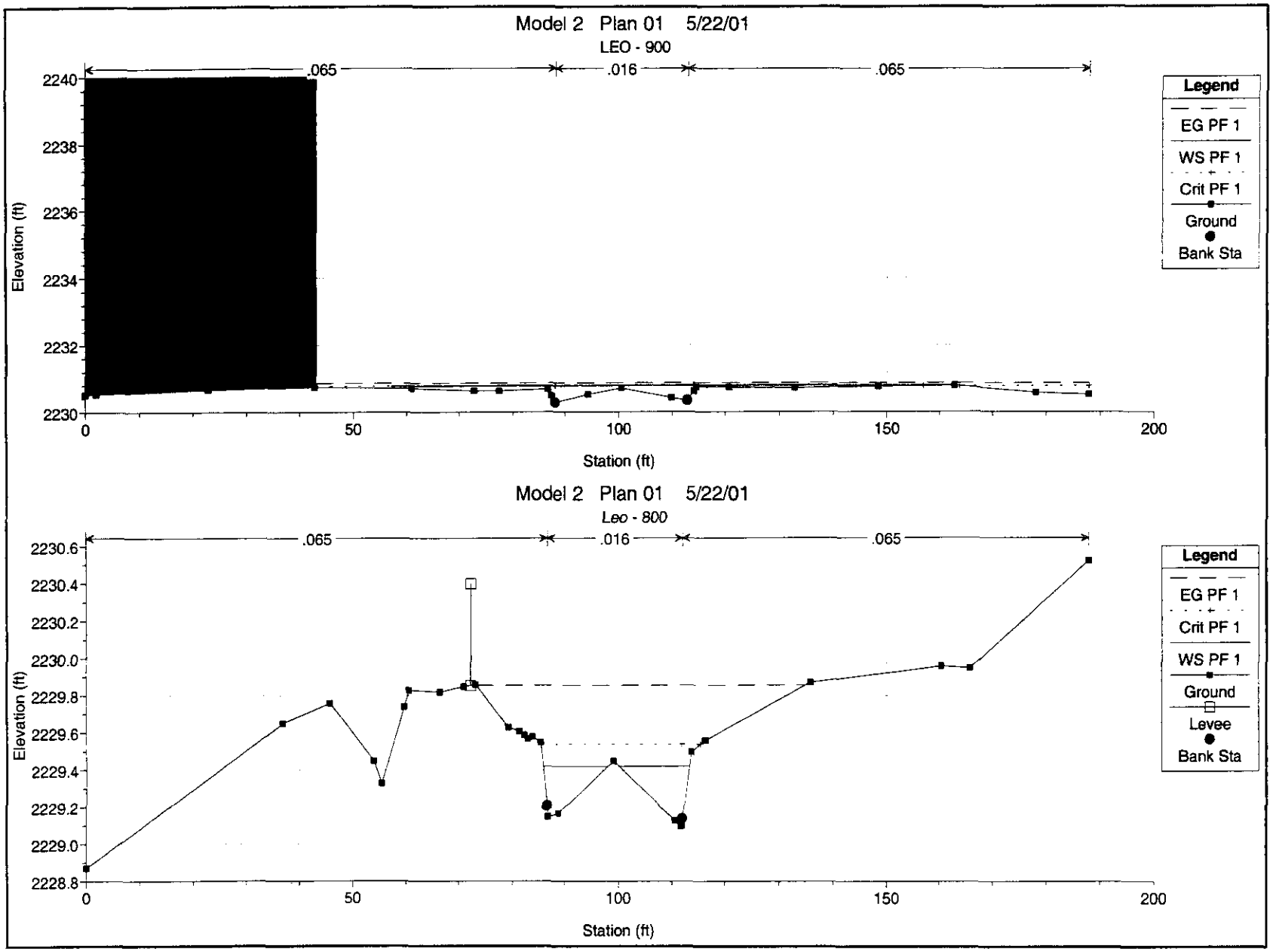

Model 2 Plan 01 5/22/01
Gilmore South of Sweetwater I - 318
.065
.016
.065
.065
2236
2234
2232
2230
2228
2226
2224
2222
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/22/01
Gilmore South of Sweetwater - 218
.065
.016
.065
.065
2236
2234
2232
2230
2228
2226
2224
2222
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta

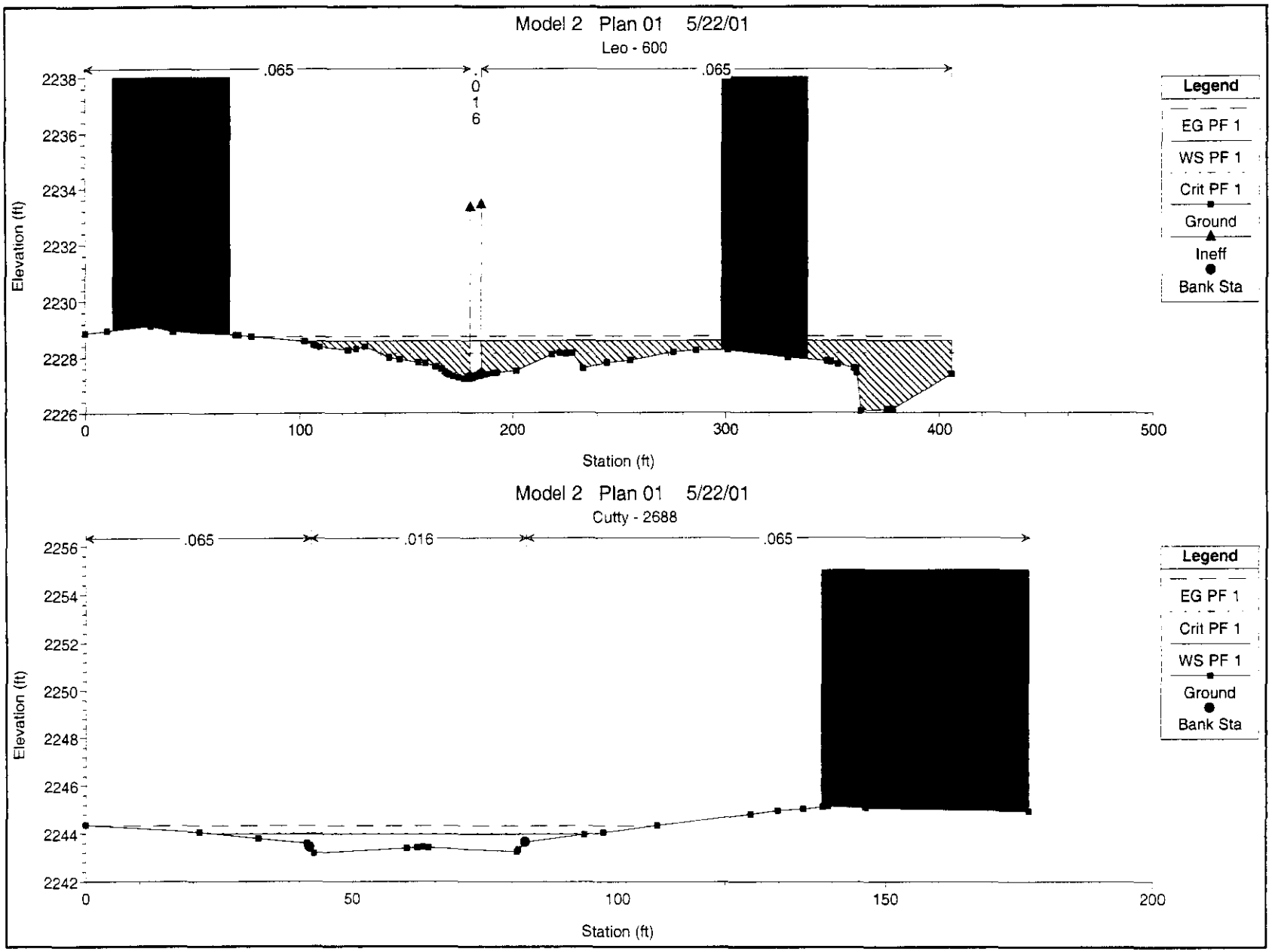

Model 2 Plan 01 5/22/01
Gilmore South of Sweetwater I - 118
.065
.016
.065
.065
2236
2234
2232
2230
2228
2226
2224
2222
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/22/01
Thorn below Judy - 868
.065
.016
.065
2232
2231
2230
2229
2228
2227
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta

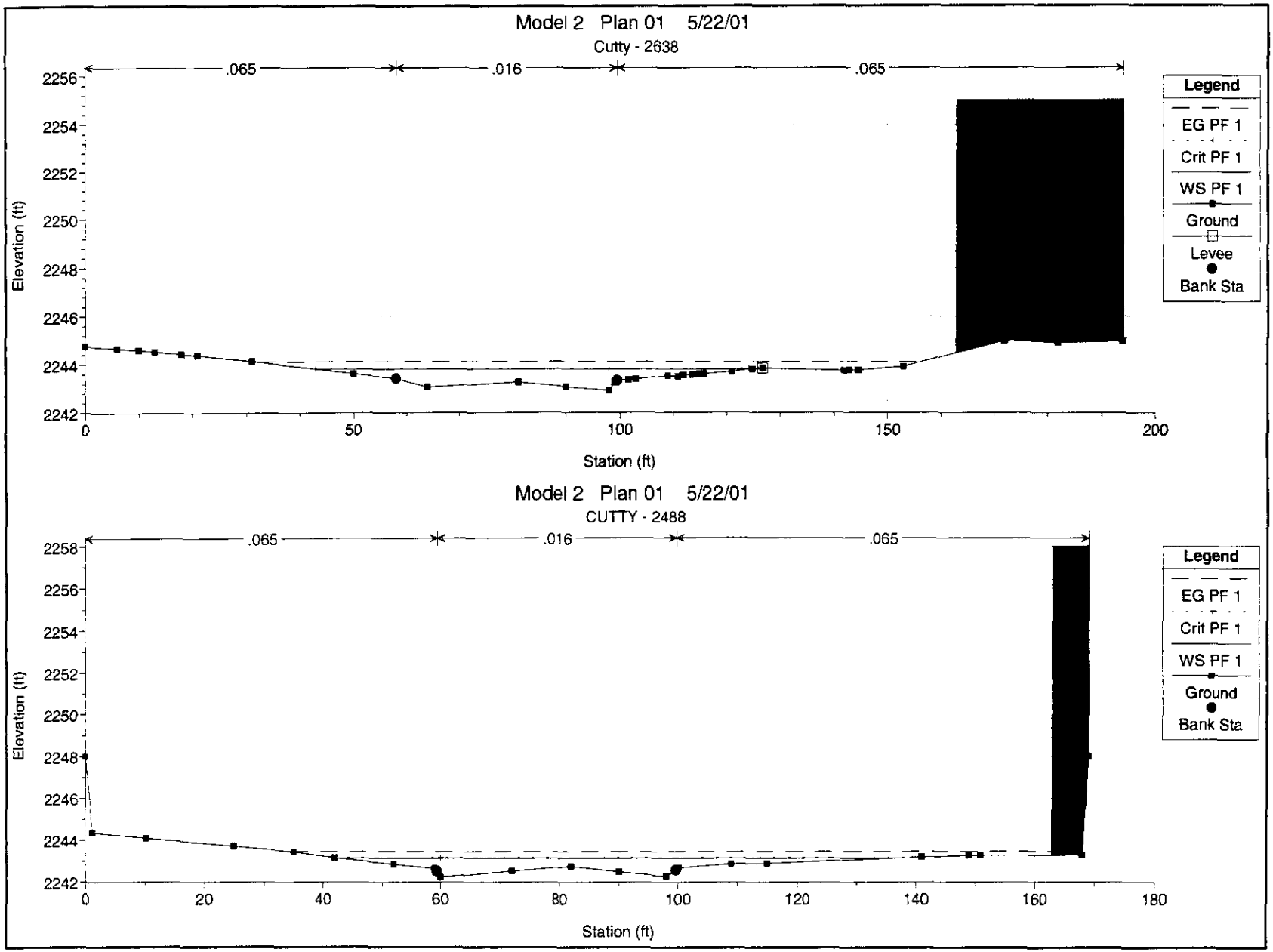

Model 2 Plan 01 5/22/01
Thorn below Judy - 768
.065
.016
.065
Elevation (ft)
2232
2231
2230
2229
2228
2227
2226
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/22/01
Judy - 1000
.065
.016
.065
Elevation (ft)
2238
2236
2234
2232
2230
2228
2226
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

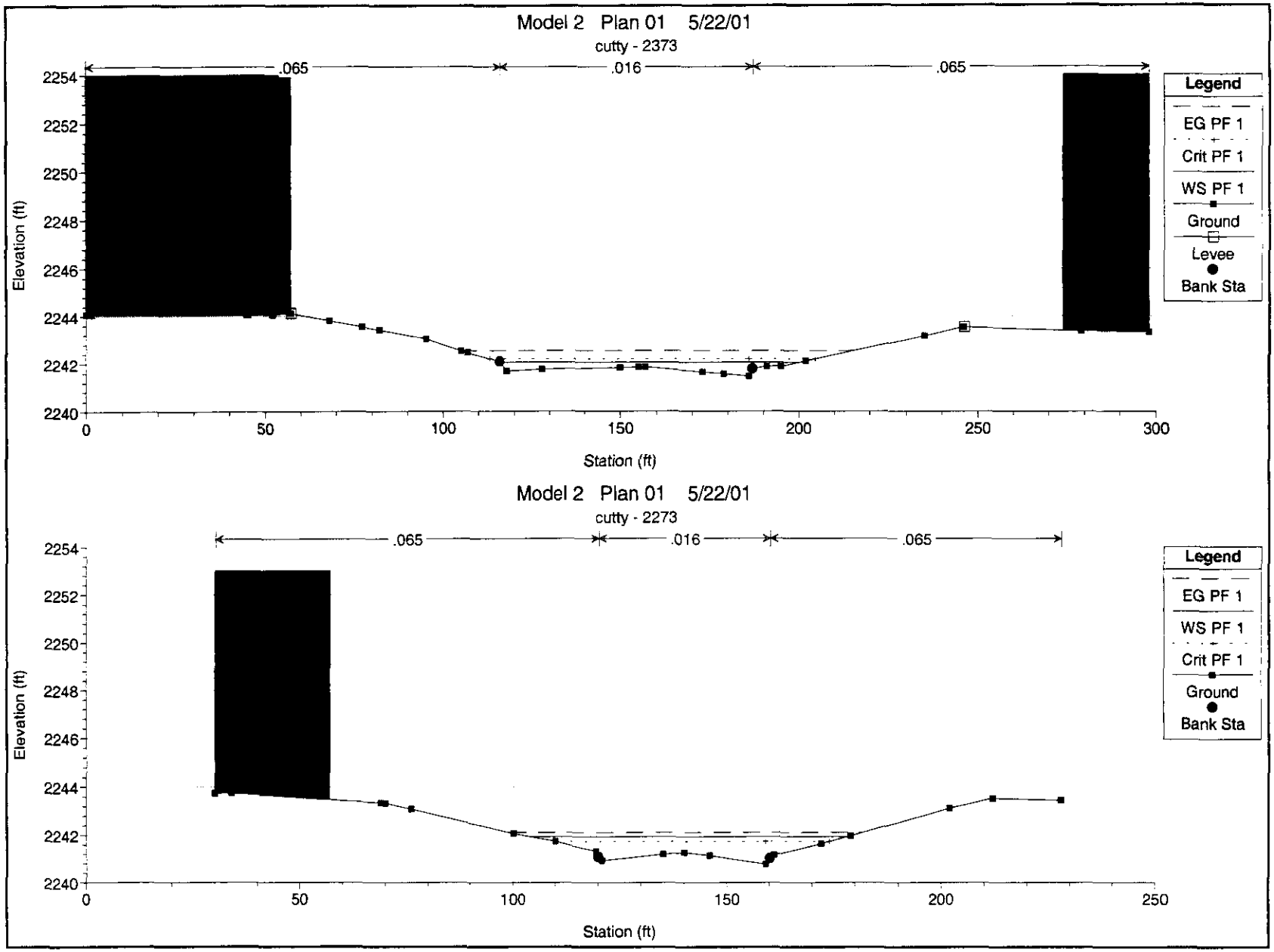

Model 2 Plan 01 5/22/01
Judy - 900
.065
.016
.065
Elevation (ft)
2238
2236
2234
2232
2230
2228
2226
2224
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/22/01
Judy - 581
.065
.016
.065
Elevation (ft)
2238
2236
2234
2232
2230
2228
2226
2224
2222
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta

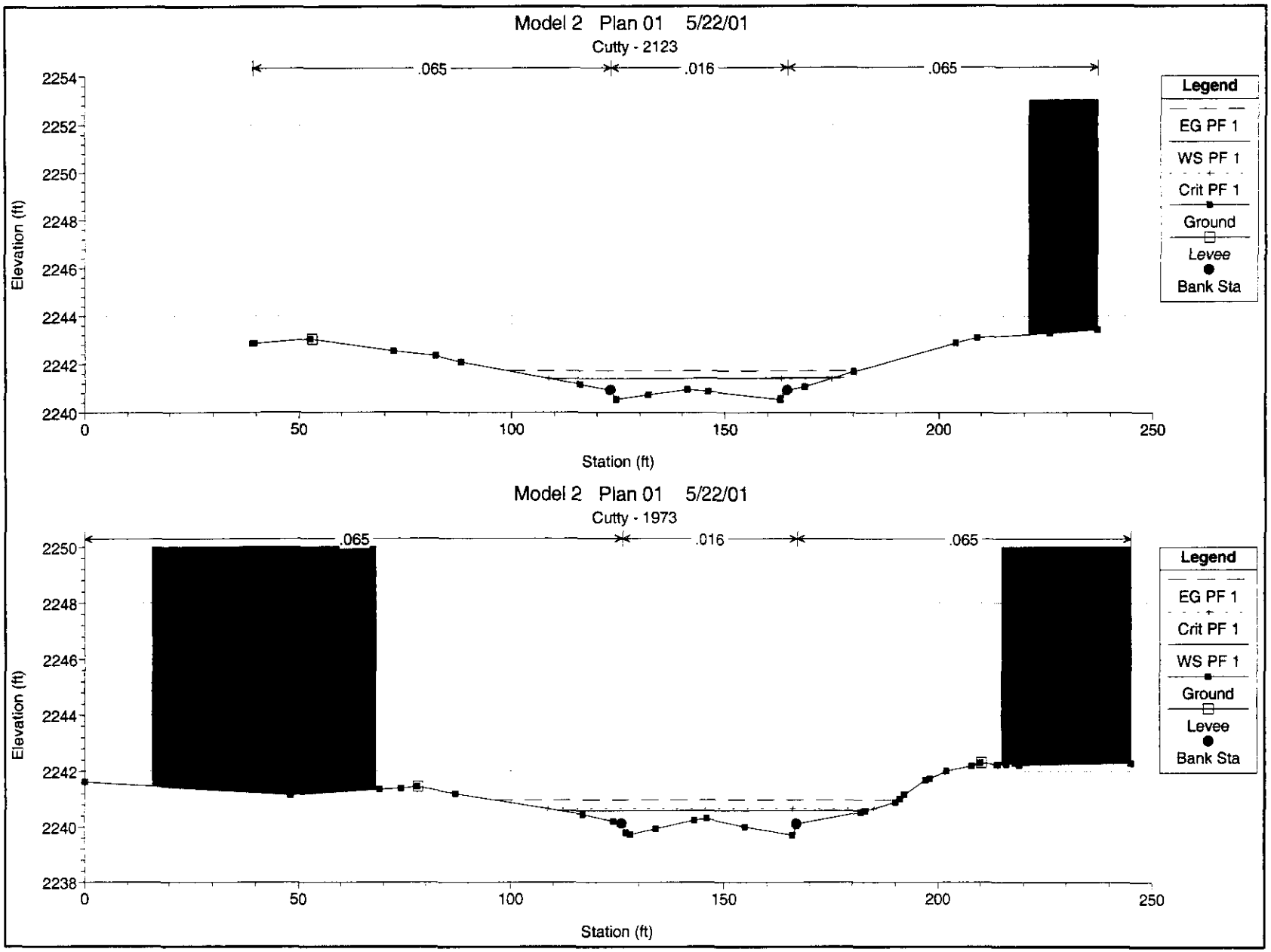

Model 2 Plan 01 5/22/01
Judy - 516
.065
.016
.065
Elevation (ft)
2236
2234
2232
2230
2228
2226
2224
2222
2220
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/22/01
LEO - 1000
.065
.016
.065
THIS TIES INTO STATION 1231 ON THOM BLVD.
SOME FLOW IS DIVERTED.
Elevation (ft)
2231.6
2231.4
2231.2
2231.0
2230.8
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

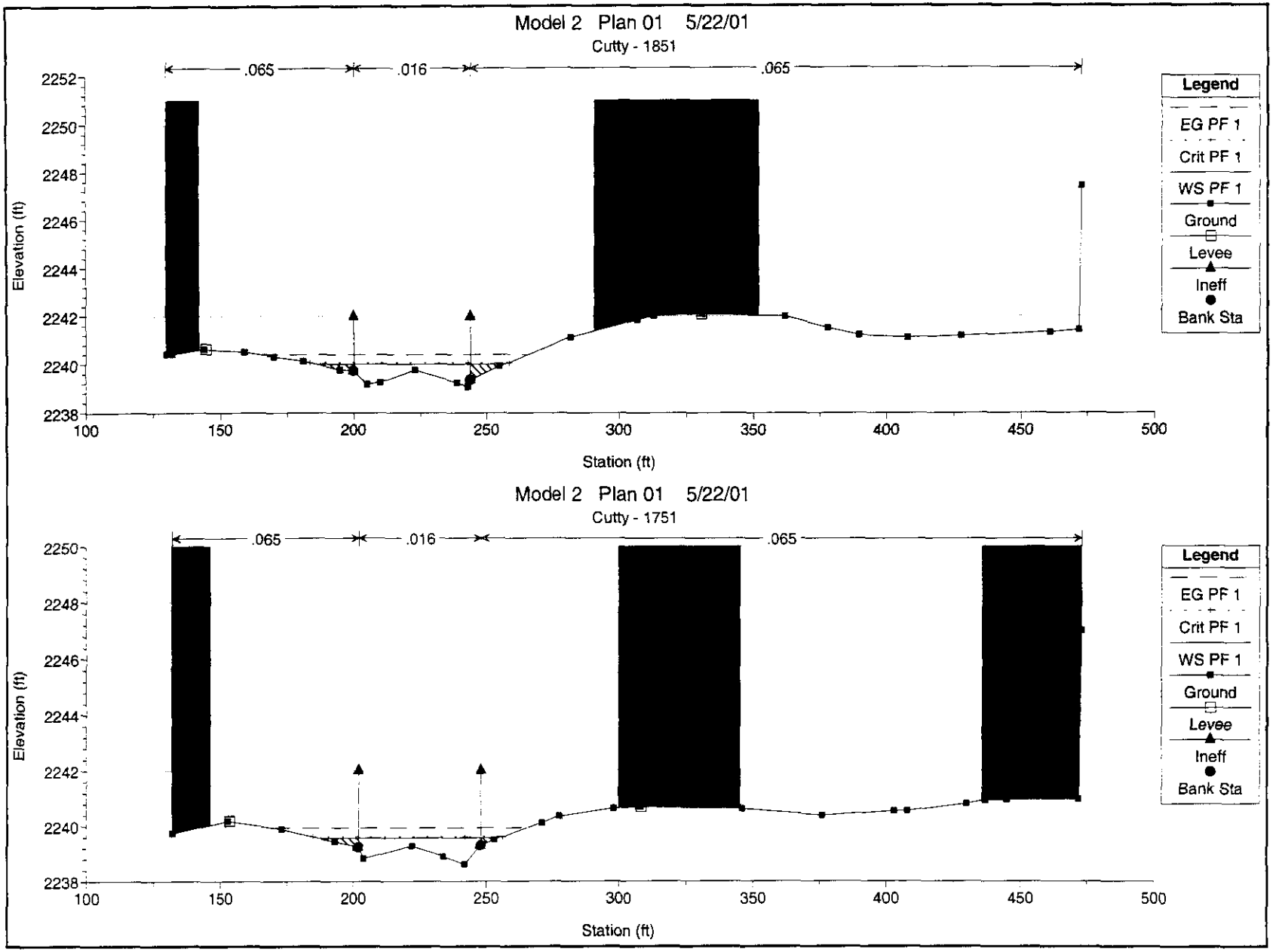

Model 2 Plan 01 5/22/01
LEO - 900
.065
.016
.065
2240
2238
2236
2234
2232
2230
Elevation (ft)
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Model 2 Plan 01 5/22/01
Leo - 800
.065
.016
.065
2230.6
2230.4
2230.2
2230.0
2229.8
2229.6
2229.4
2229.2
2229.0
2228.8
Elevation (ft)
0
50
100
150
200
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta

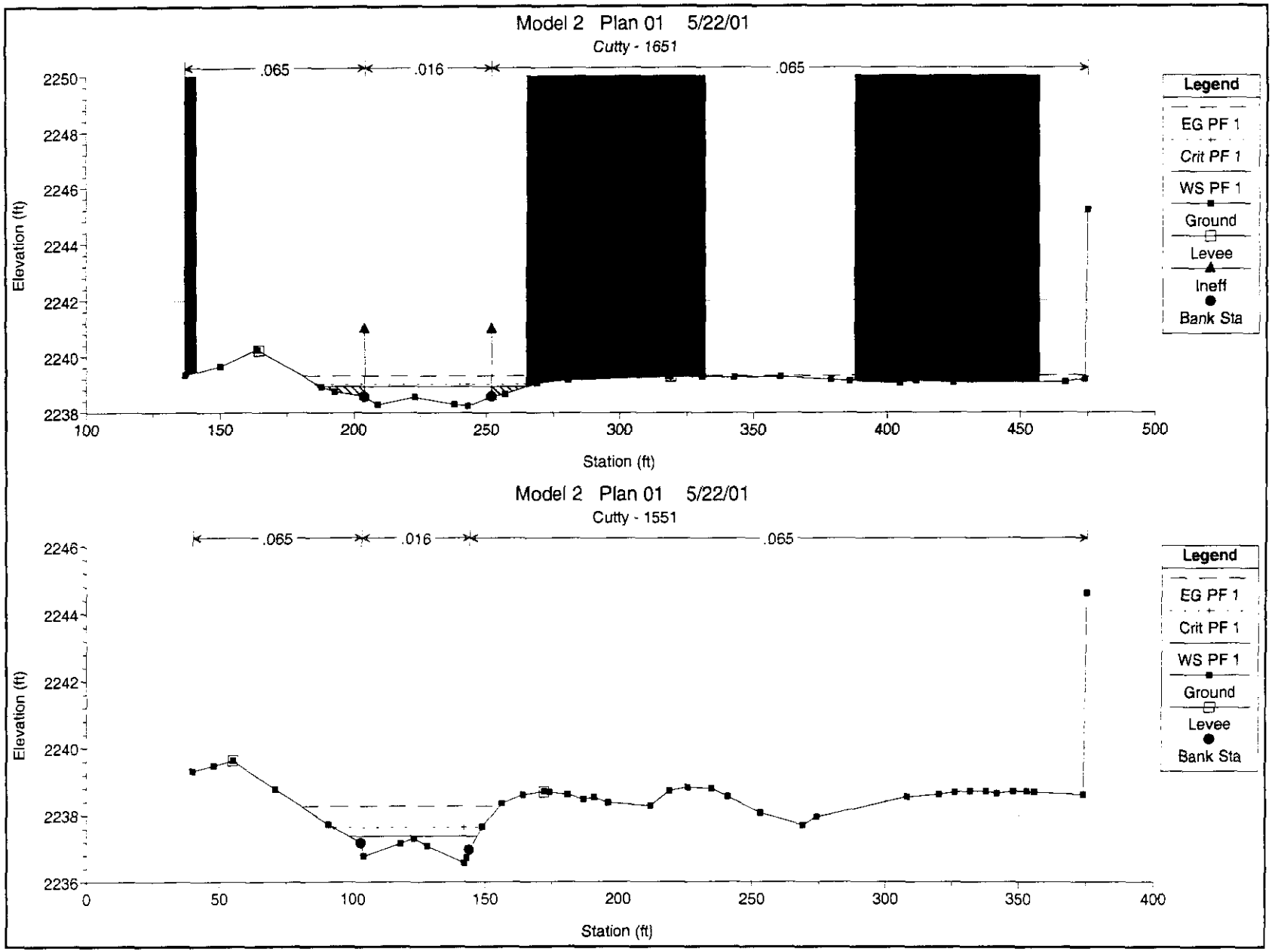

Model 2 Plan 01 5/22/01
Leo - 600
.065
.065
0.16
2238
2236
2234
2232
2230
2228
2226
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Model 2 Plan 01 5/22/01
Cutty - 2688
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
2242
Elevation (ft)
0
50
100
150
200
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

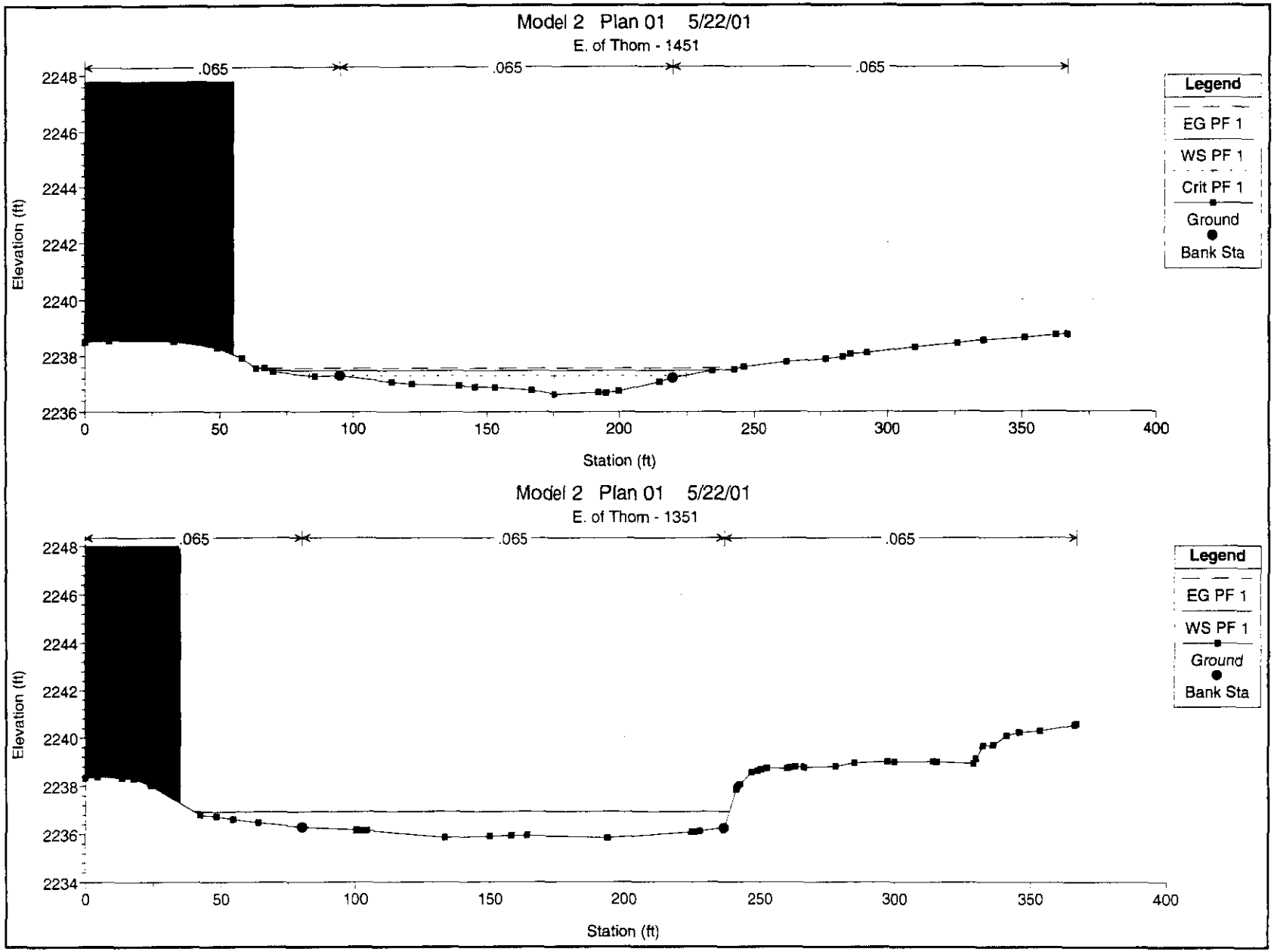

Model 2 Plan 01 5/22/01
Cutty - 2638
.065
.016
.065
Elevation (ft)
2256
2254
2252
2250
2248
2246
2244
2242
0
50
100
150
200
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/22/01
CUTTY - 2488
.065
.016
.065
Elevation (ft)
2258
2256
2254
2252
2250
2248
2246
2244
2242
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

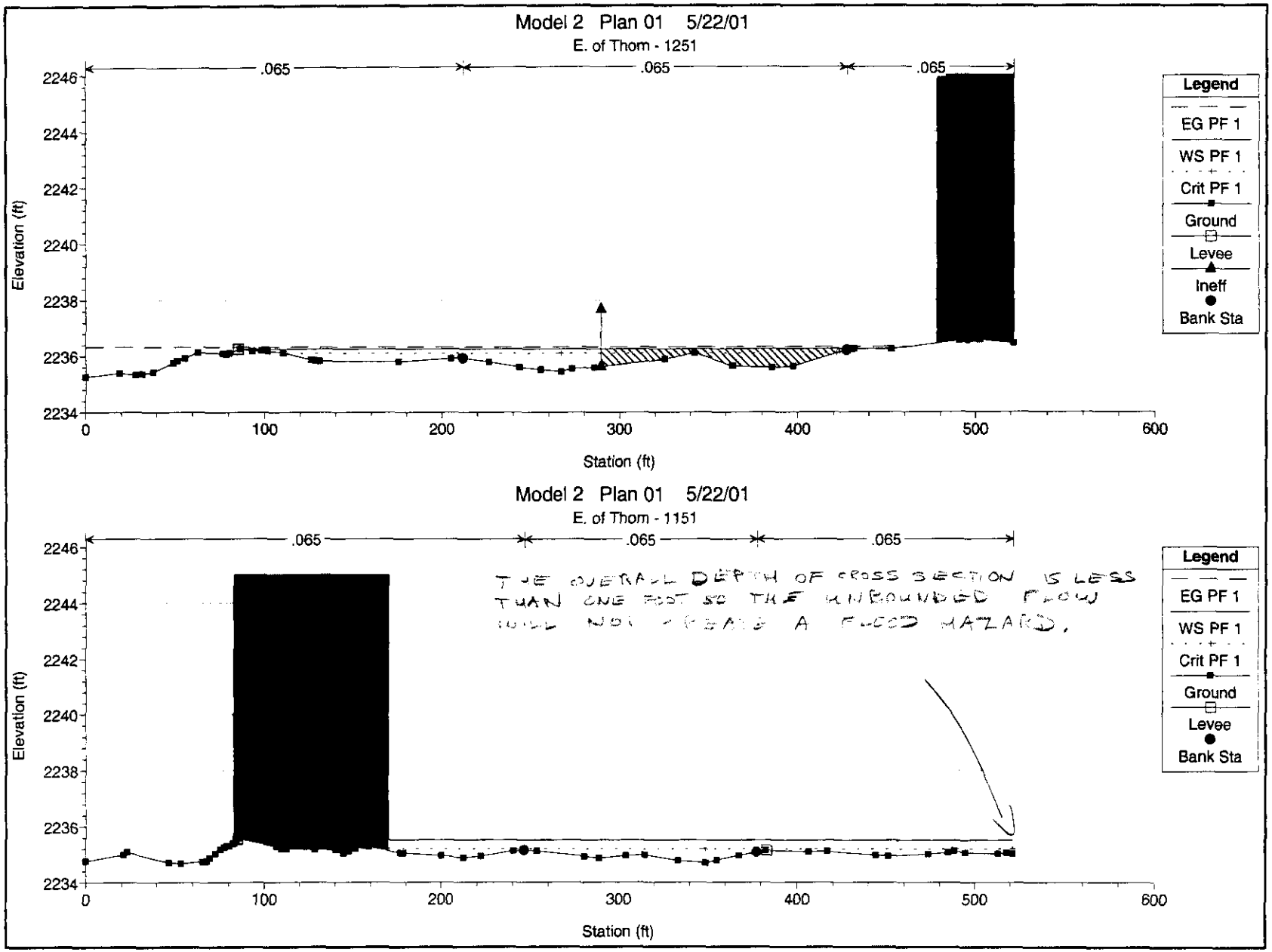

Model 2 Plan 01 5/22/01
cutty - 2373
.065
.016
.065
Elevation (ft)
2254
2252
2250
2248
2246
2244
2242
2240
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/22/01
cutty - 2273
.065
.016
.065
Elevation (ft)
2254
2252
2250
2248
2246
2244
2242
2240
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

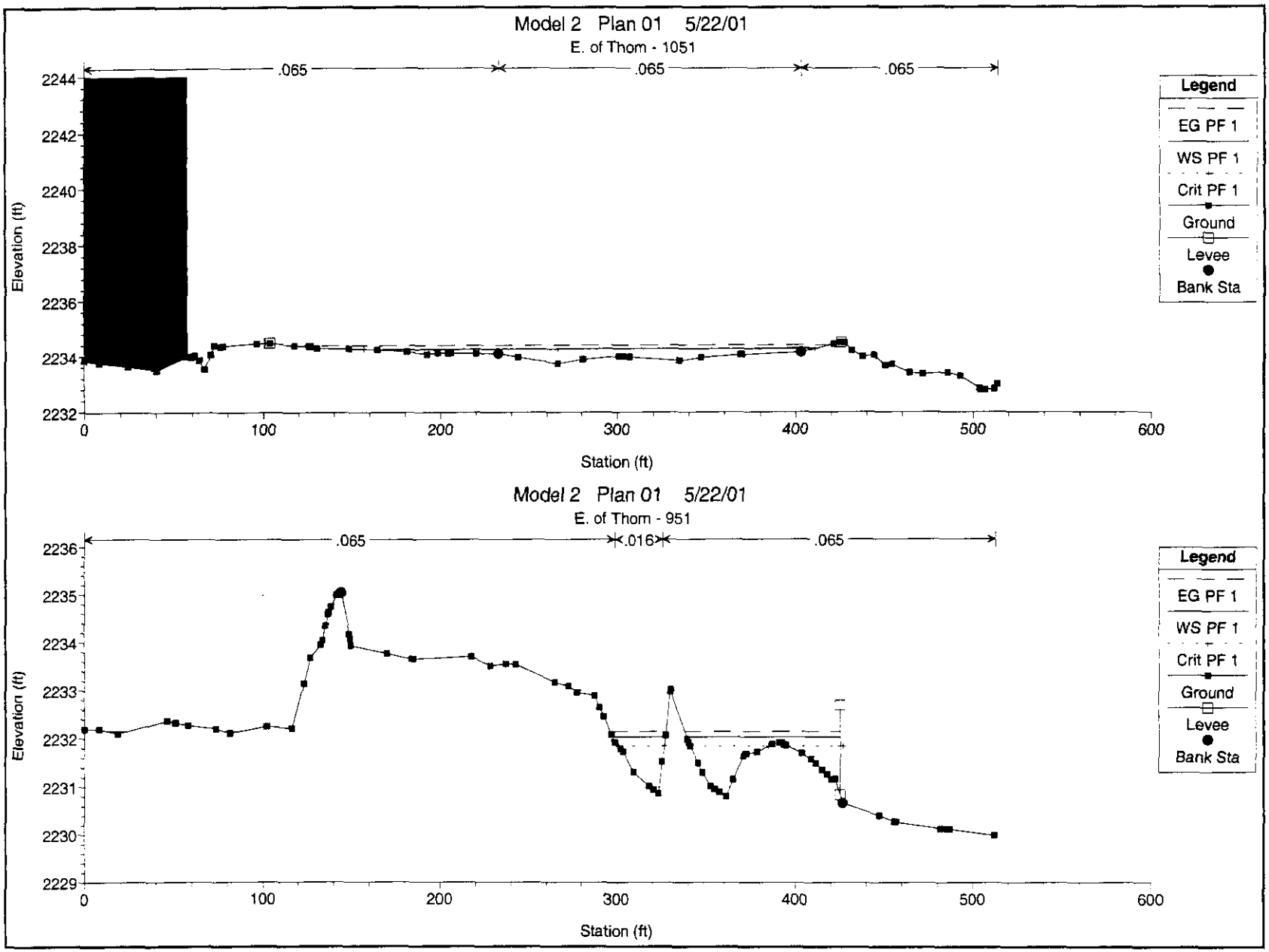

Model 2 Plan 01 5/22/01
Cutty - 2123
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 2 Plan 01 5/22/01
Cutty - 1973
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

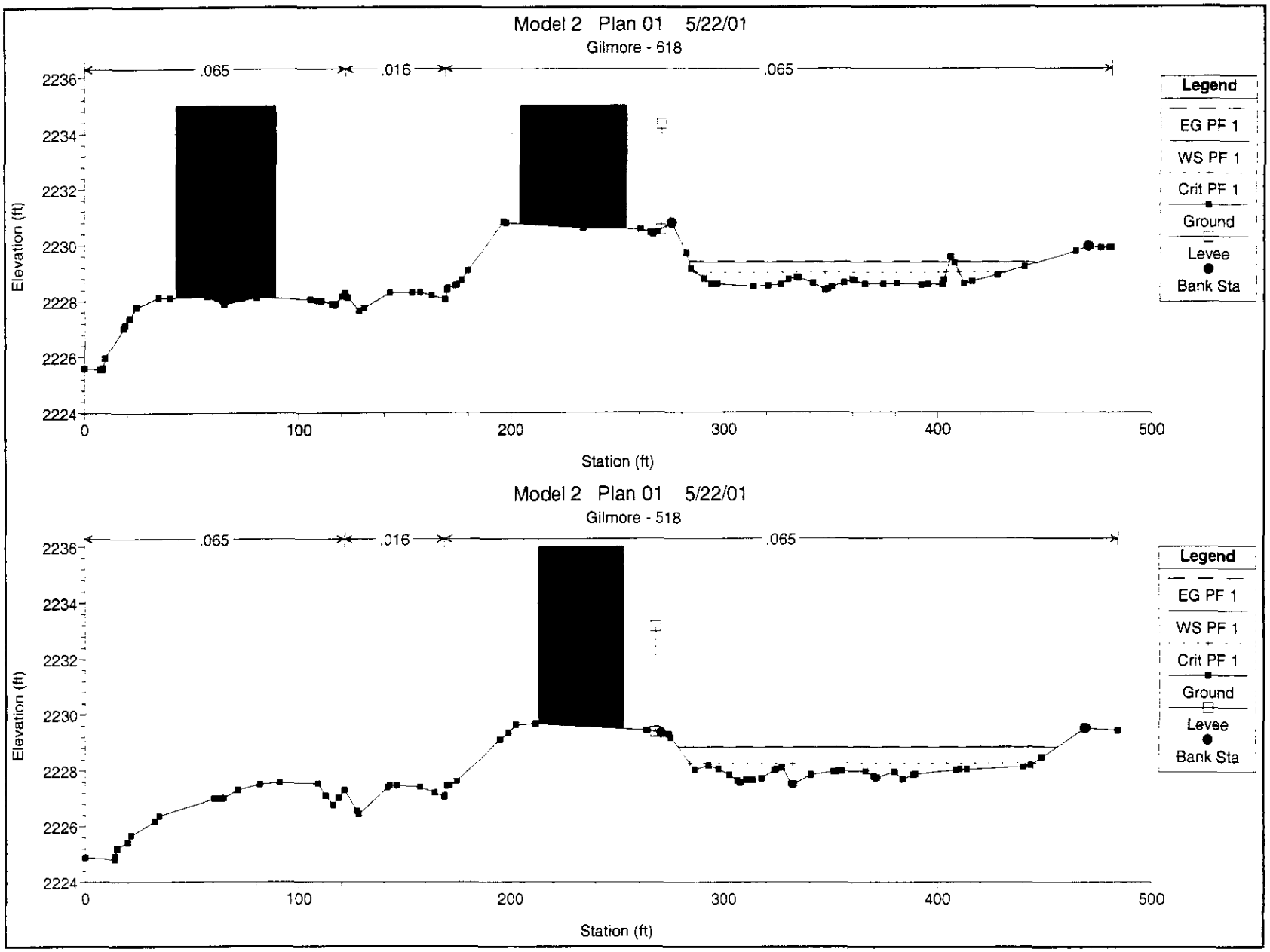

Model 2 Plan 01 5/22/01
Cutty - 1851
.065
.016
.065
2252
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
100
150
200
250
300
350
400
450
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Model 2 Plan 01 5/22/01
Cutty - 1751
.065
.016
.065
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
100
150
200
250
300
350
400
450
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta

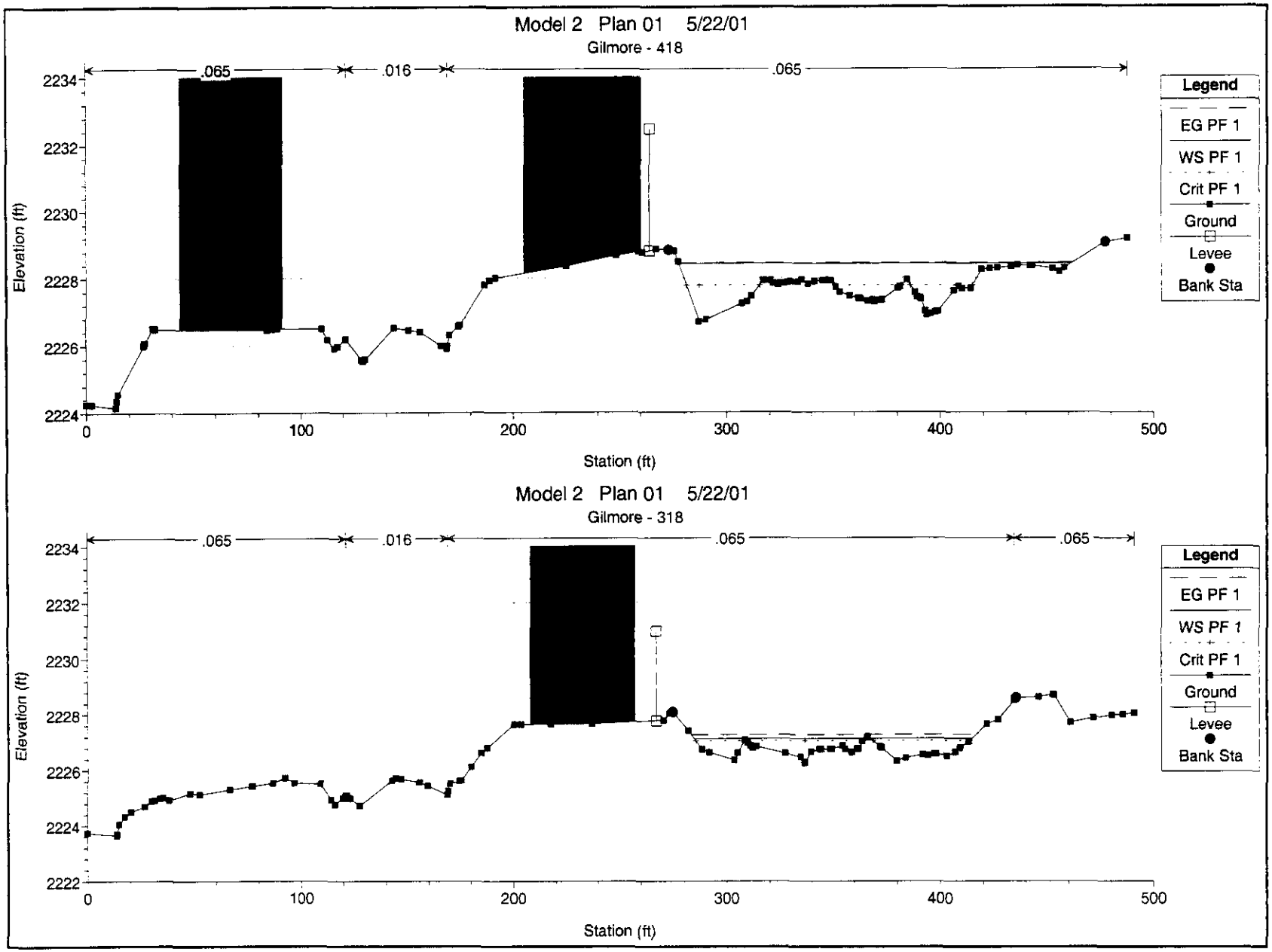

Model 2 Plan 01 5/22/01
Cutty - 1651
.065
.016
.065
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
100
150
200
250
300
350
400
450
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Model 2 Plan 01 5/22/01
Cutty - 1551
.065
.016
.065
2246
2244
2242
2240
2238
2236
Elevation (ft)
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta

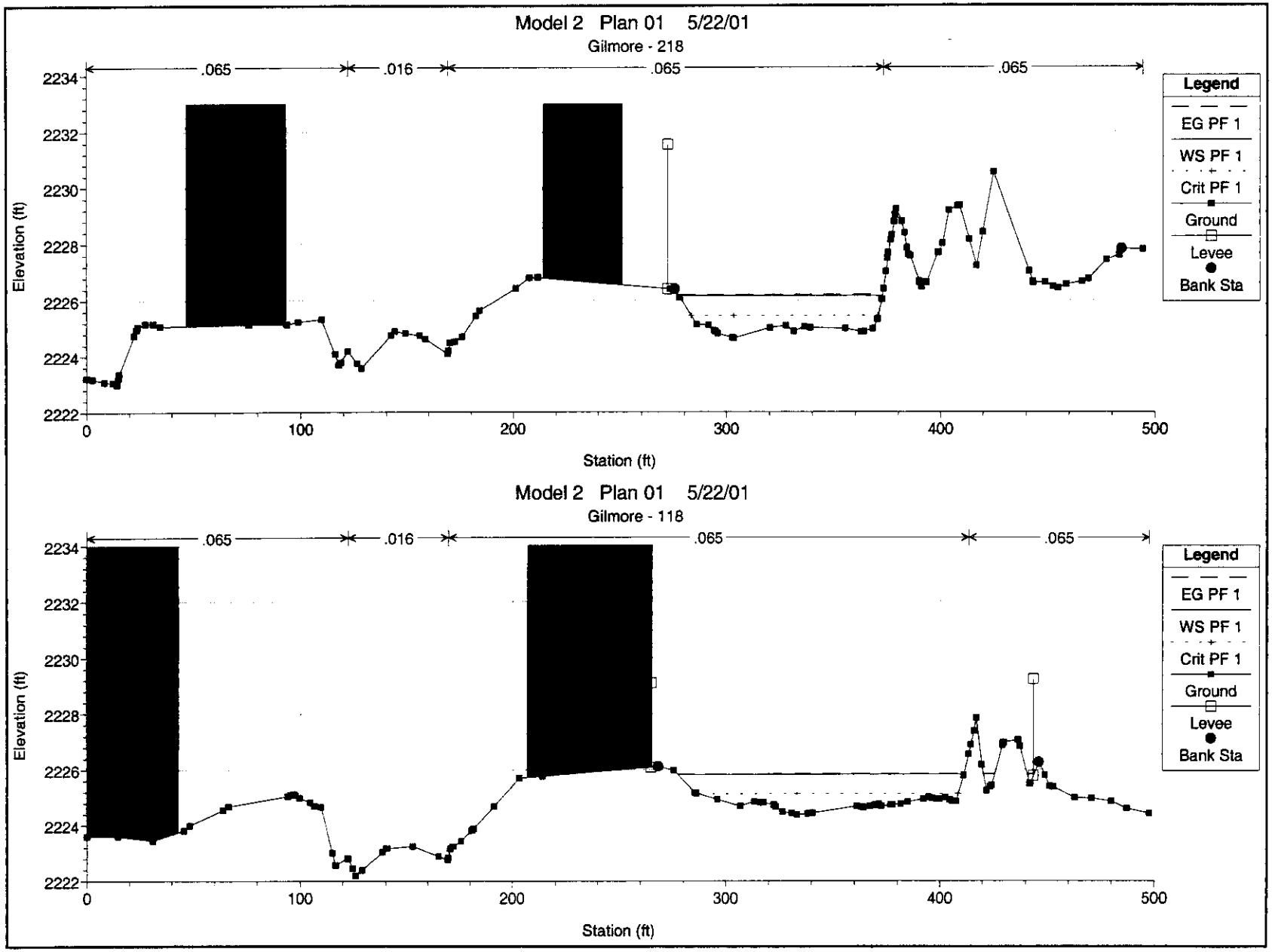

Model 2 Plan 01 5/22/01
E. of Thom - 1451
.065
.065
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 2 Plan 01 5/22/01
E. of Thom - 1351
.065
.065
.065
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

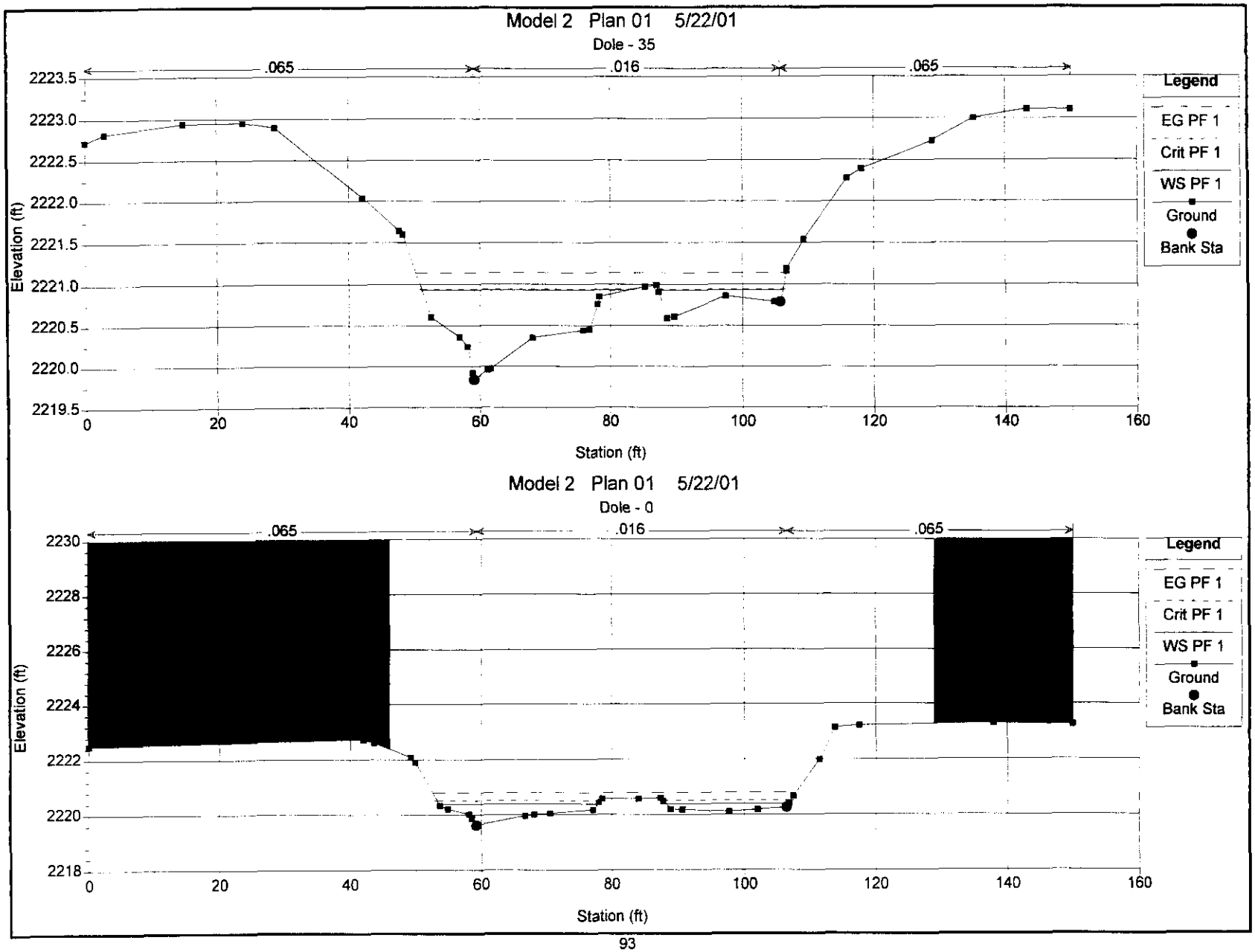

Model 2 Plan 01 5/22/01
E. of Thom - 1251
.065
.065
.065
Elevation (ft)
2246
2244
2242
2240
2238
2236
2234
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 2 Plan 01 5/22/01
E. of Thom - 1151
.065
.065
.065
THE OVERALL DEPTH OF CROSS SECTION IS LESS THAN ONE FOOT SO THE UNBOUNDED FLOW WILL NOT CREATE A FLOOD HAZARD.
Elevation (ft)
2246
2244
2242
2240
2238
2236
2234
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta


Model 2 Plan 01 5/22/01
E. of Thom - 1051
.065
.065
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2244
2242
2240
2238
2236
2234
2232
0
100
200
300
400
500
600
Station (ft)
Model 2 Plan 01 5/22/01
E. of Thom - 951
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2236
2235
2234
2233
2232
2231
2230
2229
0
100
200
300
400
500
600
Station (ft)


Model 2 Plan 01 5/22/01
Gilmore - 618
.065
.016
.065
2236
2234
2232
2230
2228
2226
2224
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/22/01
Gilmore - 518
.065
.016
.065
2236
2234
2232
2230
2228
2226
2224
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta


Model 2 Plan 01 5/22/01
Gilmore - 418
.065
.016
.065
2234
2232
2230
2228
2226
2224
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/22/01
Gilmore - 318
.065
.016
.065
.065
2234
2232
2230
2228
2226
2224
2222
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta


Model 2 Plan 01 5/22/01
Gilmore - 218
.065
.016
.065
.065
2234
2232
2230
2228
2226
2224
2222
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 2 Plan 01 5/22/01
Gilmore - 118
.065
.016
.065
.065
2234
2232
2230
2228
2226
2224
2222
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta


Model 2 Plan 01 5/22/01
Dole - 35
.065
.016
.065
2223.5
2223.0
2222.5
2222.0
2221.5
2221.0
2220.5
2220.0
2219.5
Elevation (ft)
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 2 Plan 01 5/22/01
Dole - 0
.065
.016
.065
2230
2228
2226
2224
2222
2220
2218
Elevation (ft)
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

Model 3
Without Walls, Southwest Portion

MODEL B - WITHOUT WALLS

HEC-RAS Plan: GB1

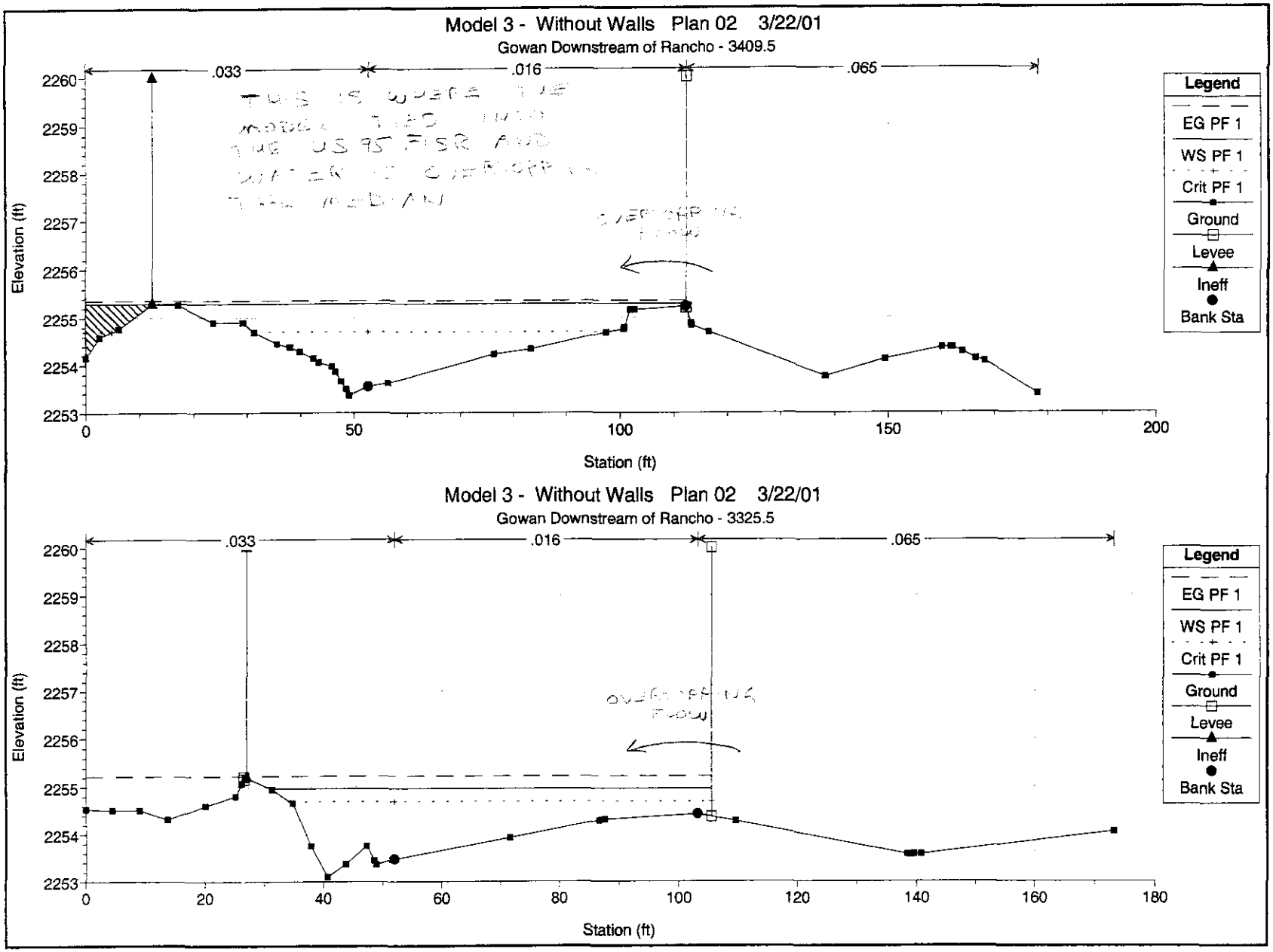
Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
G. below Rancho	3495	150.00	2253.55	2255.29	2254.70	2255.36	0.000627	2.21	85.54	112.29	0.40
G. below Rancho	3325.5	273.00	2253.48	2254.96	2254.69	2255.22	0.002537	4.45	73.30	74.57	0.81
G. below Rancho	3304	273.00	2253.26	2255.04	2254.47	2255.16	0.000764	2.93	105.35	86.43	0.46
G. below Rancho	3278	380.00	2253.25	2254.71	2254.71	2255.09	0.004337	5.22	81.68	100.13	1.04
G. below Rancho	3226	380.00	2252.38	2253.73	2254.01	2254.64	0.014914	7.86	51.96	105.32	1.82
G. below Rancho	3147	380.00	2251.17	2252.67	2252.93	2253.50	0.011739	7.56	59.48	109.78	1.65
G. below Rancho	3041	380.00	2250.60	2251.78	2251.98	2252.49	0.008251	6.98	66.42	106.90	1.42
G. below Rancho	2985	380.00	2249.81	2250.80	2251.09	2251.78	0.017867	8.27	53.91	108.43	1.98
G. below Rancho	2935	380.00	2249.16	2250.28	2250.50	2251.06	0.010490	7.13	55.02	88.98	1.56
G. below Rancho	2891	380.00	2247.86	2248.96	2249.20	2249.79	0.014182	7.72	60.99	125.53	1.78
G. below Rancho	2878	380.00	2247.01	2248.05	2248.26	2248.80	0.011205	6.97	54.76	92.32	1.59
G. below Bradley	2860	275.00	2246.55	2247.87	2247.87	2248.23	0.004229	4.85	57.62	86.65	1.01
G. below Bradley	2582	275.00	2246.42	2247.51	2247.52	2247.91	0.004117	5.05	58.59	91.95	1.01
G. below Bradley	2482	275.00	2245.95	2246.86	2246.97	2247.40	0.006699	5.88	49.09	78.98	1.26
G. below Bradley	2382	275.00	2245.37	2246.36	2246.40	2246.80	0.004966	5.35	52.77	75.13	1.10
G. below Bradley	2307	275.00	2244.63	2245.87	2245.97	2246.38	0.006623	5.77	52.27	87.07	1.24
Bradley below Go	4237	105.00	2247.36	2248.08	2247.98	2248.22	0.002370	3.09	38.83	88.05	0.72
Bradley below Go	4159	105.00	2247.12	2247.94	2247.62	2248.02	0.002307	2.56	52.77	97.81	0.68
Bradley below Go	4088	105.00	2246.66	2247.66	2247.60	2247.80	0.004048	3.34	48.91	107.75	0.90
Bradley below Go	4033	105.00	2246.49	2247.42	2247.36	2247.59	0.003567	3.43	38.76	88.55	0.87
Bradley below Go	3977	105.00	2246.30	2247.16	2247.14	2247.37	0.004376	3.72	31.09	75.43	0.95
Bradley below Go	3918	105.00	2246.11	2246.92	2246.90	2247.10	0.004312	3.59	39.62	106.54	0.94
Bradley below Go	3818	105.00	2245.56	2246.54	2246.48	2246.72	0.003394	3.41	37.61	86.38	0.85
RBP	1213	682.00	2250.30	2251.89	2251.89	2252.17	0.025514	4.19	162.78	451.01	1.00
RBP	1143	682.00	2248.78	2250.73	2250.01	2250.79	0.001845	1.82	376.92	336.95	0.30
RBP	1073	682.00	2248.41	2250.41		2250.50	0.004884	2.39	300.05	405.82	0.46
RBP	947	682.00	2248.22	2249.91	2249.55	2250.05	0.008259	3.09	237.74	348.07	0.60
RBP	874	682.00	2247.89	2249.71	2249.12	2249.76	0.002284	1.86	401.29	424.30	0.33
RBP	808	646.00	2247.44	2249.53		2249.59	0.003364	1.99	340.81	413.78	0.39
RBP	730	646.00	2247.53	2249.05	2248.76	2249.15	0.006230	2.72	293.46	436.49	0.52
RBP	636	646.00	2246.99	2248.35		2248.45	0.008368	3.17	284.42	376.78	0.61
RBP	536	646.00	2246.41	2247.43		2247.49	0.010863	2.82	333.51	544.61	0.65
RBP	508	167.00	2245.28	2246.26	2245.92	2246.28	0.002601	1.27	131.78	268.05	0.32
RBP	487	167.00	2244.78	2245.38	2245.38	2245.58	0.032211	3.60	46.39	126.00	1.05
RBP	431	283.00	2243.19	2243.97	2244.20	2244.73	0.032215	7.03	40.26	109.58	2.04
G. b. Waterhole	2984	231.00	2244.49	2245.32	2245.51	2245.98	0.012107	6.49	36.65	75.90	1.61
G. b. Waterhole	2907	231.00	2244.06	2244.90	2245.17	2245.79	0.020367	7.58	31.36	75.66	2.03
G. b. Waterhole	2907	231.00	2243.23	2244.40	2244.43	2244.76	0.004785	4.88	53.44	90.93	1.06

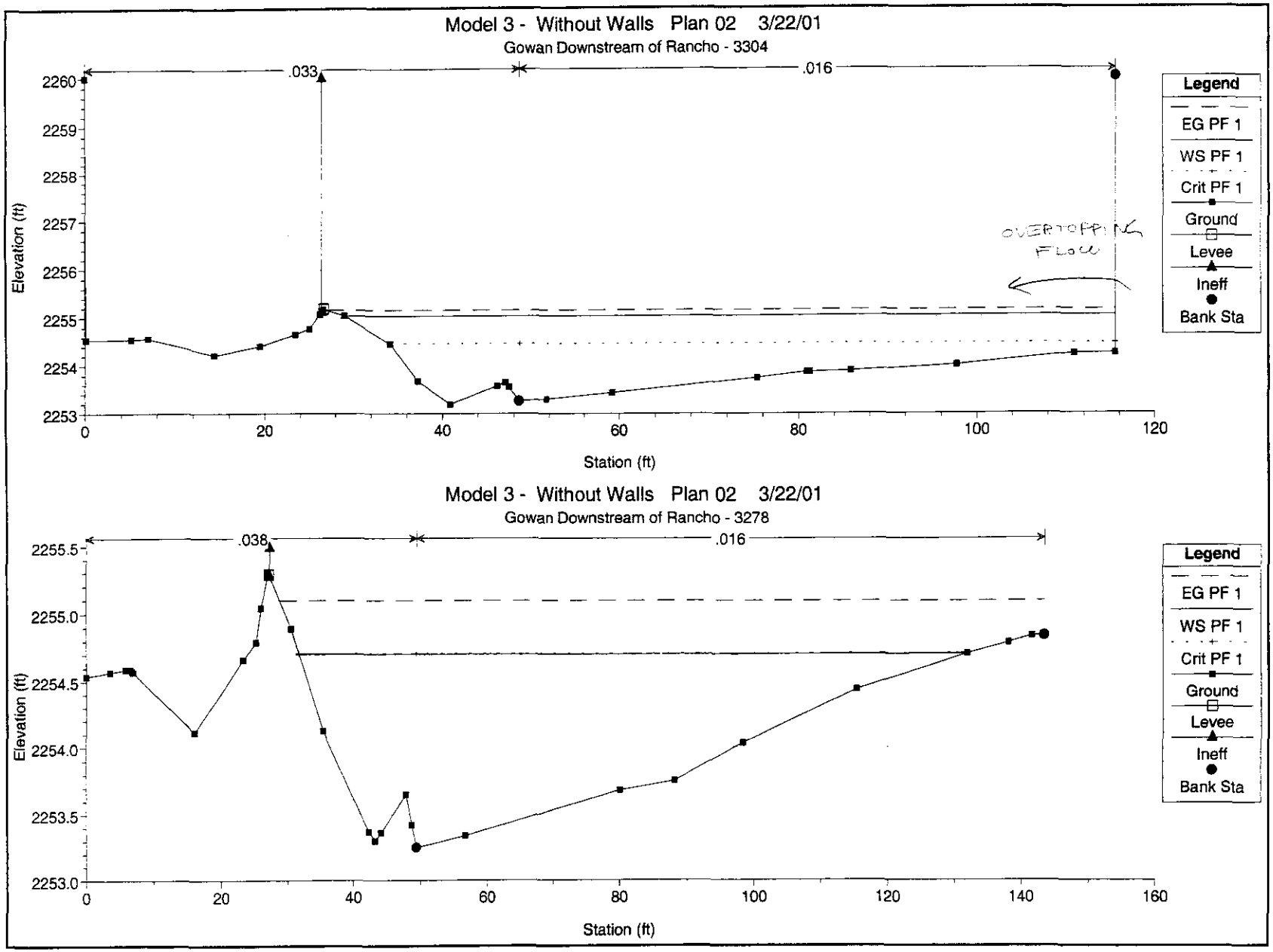
HEC-RAS Plan: GB1 (Continued)

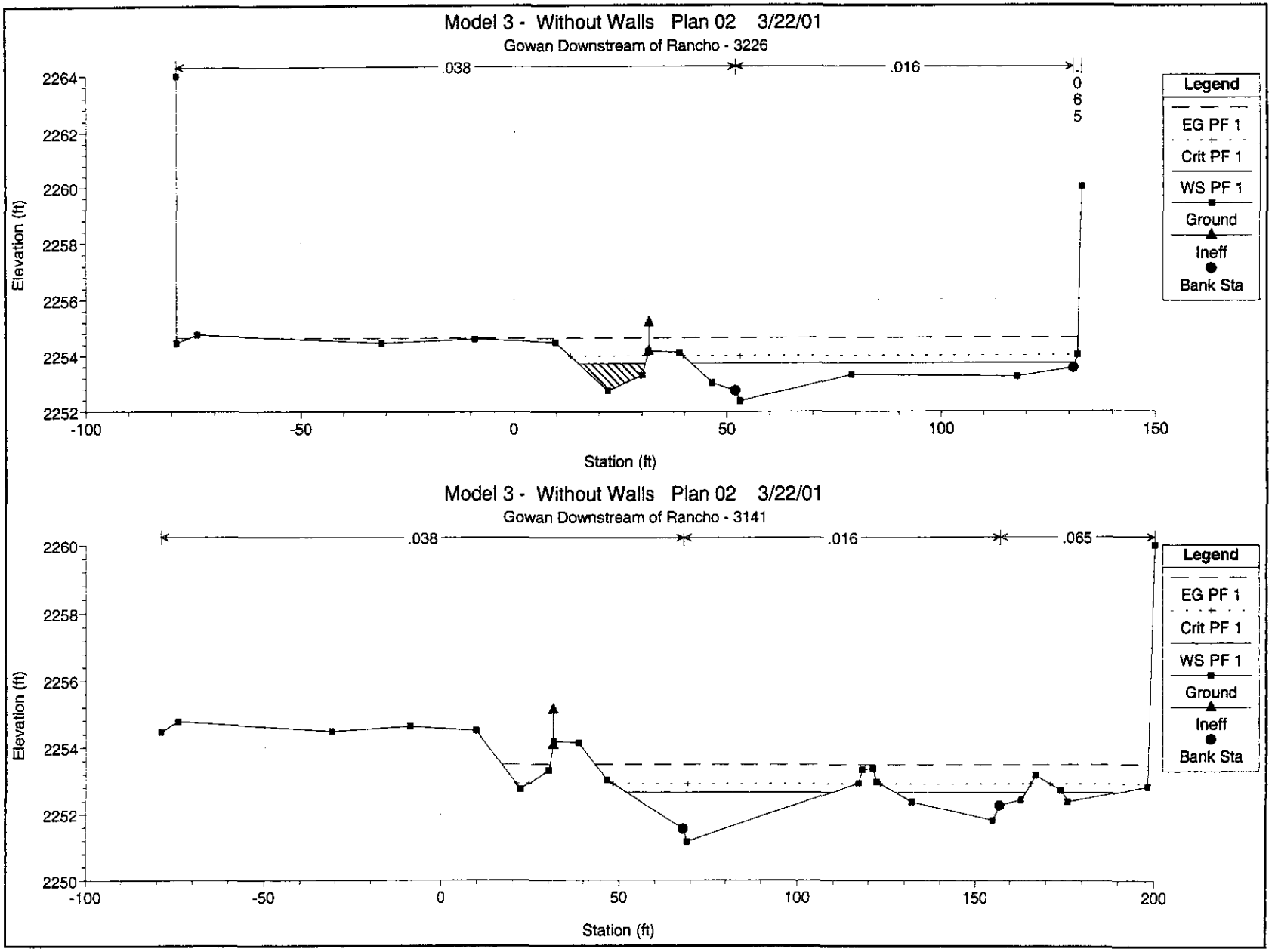
Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
G. b. Waterhole	1907	231.00	2242.41	2243.34	2243.53	2244.01	0.012758	6.58	36.75	78.38	1.64
G. b. Waterhole	1855	231.00	2242.24	2243.19	2243.20	2243.54	0.004731	4.75	48.66	75.70	1.04
G. b. Waterhole	1755	231.00	2241.32	2242.31	2242.45	2242.87	0.009598	6.02	41.36	82.55	1.45
G. b. Waterhole	1655	231.00	2240.83	2242.16	2242.15	2242.50	0.004256	4.75	51.25	76.60	1.00
G. b. Waterhole	1555	231.00	2240.42	2241.82	2241.75	2242.10	0.003154	4.33	57.95	119.19	0.88
G. b. Waterhole	1455	231.00	2240.02	2241.40	2241.40	2241.73	0.004211	4.71	54.78	84.04	1.00
G. b. Waterhole	1322	231.00	2239.18	2239.78	2239.96	2240.42	0.034080	6.45	36.55	167.63	2.37
G. b. Waterhole	1252	226.00	2238.78	2240.01	2239.75	2240.08	0.008639	2.05	110.07	186.96	0.47
G. b. Waterhole	1152	55.00	2238.51	2239.33	2239.24	2239.36	0.003744	1.74	54.21	186.08	0.61
G. b. Waterhole	1052	55.00	2238.12	2238.80	2238.67	2238.84	0.008178	1.51	36.54	117.39	0.48
G. b. Waterhole	981	55.00	2236.97	2238.20	2238.20	2238.32	0.006957	2.79	19.74	82.40	1.00
G. b. Waterhole	909	55.00	2236.72	2237.26	2237.36	2237.56	0.015528	4.40	12.63	55.33	1.60
G. b. Waterhole	809	55.00	2236.16	2236.55	2236.80	2237.77	0.092633	8.88	6.20	35.13	3.72
G. b. Waterhole	709	55.00	2234.85	2235.48	2235.51	2235.67	0.007390	3.47	19.74	89.52	1.14
G. b. Waterhole	609	55.00	2233.43	2233.89	2234.03	2234.35	0.026820	5.49	10.04	47.24	2.08
G. b. Waterhole	509	55.00	2231.66	2232.27	2232.35	2232.55	0.012561	4.23	13.68	57.01	1.46
G. b. Waterhole	409	55.00	2230.03	2230.60	2230.73	2230.99	0.019463	5.01	10.98	45.55	1.80
G. b. Waterhole	309	55.00	2228.76	2229.38	2229.42	2229.58	0.010155	3.76	20.63	91.73	1.31
G. b. Waterhole	209	55.00	2227.49	2228.15	2228.23	2228.42	0.013286	4.17	13.19	54.35	1.49
G. b. Waterhole	109	55.00	2225.73	2226.25	2226.38	2226.65	0.025234	5.07	10.89	54.86	1.99
Bradley b. Chloe	3661	0.10	2245.34	2246.34	2245.43	2246.34	0.000000	0.00	43.48	114.92	0.00
Bradley b. Chloe	3561	116.00	2245.13	2246.12	2246.01	2246.27	0.002209	3.13	46.60	116.20	0.71
Bradley b. Chloe	3461	116.00	2244.96	2245.79	2245.76	2245.99	0.003564	3.62	38.00	124.17	0.88
Bradley b. Chloe	3330	116.00	2244.43	2245.28	2245.26	2245.48	0.004013	3.74	38.14	109.19	0.92
Bradley b. Chloe	3185	116.00	2243.67	2244.53	2244.53	2244.77	0.004702	3.98	33.63	80.93	1.00
Chloe	415	105.00	2245.05	2245.82	2245.82	2246.11	0.004321	4.31	26.63	55.61	0.98
Chloe	315	105.00	2244.57	2245.39	2245.39	2245.65	0.004709	4.10	25.72	50.17	1.01
Chloe	215	105.00	2244.25	2244.94	2244.94	2245.16	0.004634	3.77	30.38	92.84	0.98
Chloe	115	105.00	2243.80	2244.74		2244.86	0.001799	2.84	37.71	70.37	0.64
Chloe	65	105.00	2243.68	2244.49	2244.48	2244.73	0.003305	3.97	35.58	99.10	0.87
Waterhole	3245	44.00	2245.34	2245.90	2245.80	2245.98	0.002195	2.30	20.64	61.18	0.65
Waterhole	3145	44.00	2244.99	2245.53	2245.52	2245.67	0.004591	3.01	15.28	56.59	0.92
Waterhole	3045	44.00	2244.43	2245.05	2245.05	2245.19	0.005154	3.13	17.07	68.23	0.97
Waterhole	2945	44.00	2244.02	2244.52	2244.65	2244.93	0.023117	5.11	8.72	41.79	1.93
Waterhole	2845	44.00	2243.82	2244.38	2244.35	2244.52	0.003906	3.03	17.24	68.42	0.87
RBPE	4178	80.00	2252.42	2253.48	2253.23	2253.58	0.006369	2.85	30.98	46.82	0.54
RBPE	4078	80.00	2251.81	2252.18	2252.18	2252.28	0.039706	2.49	32.08	196.75	1.03
RBPE	3978	80.00	2249.96	2250.44	2250.31	2250.48	0.007178	1.54	52.35	176.77	0.48

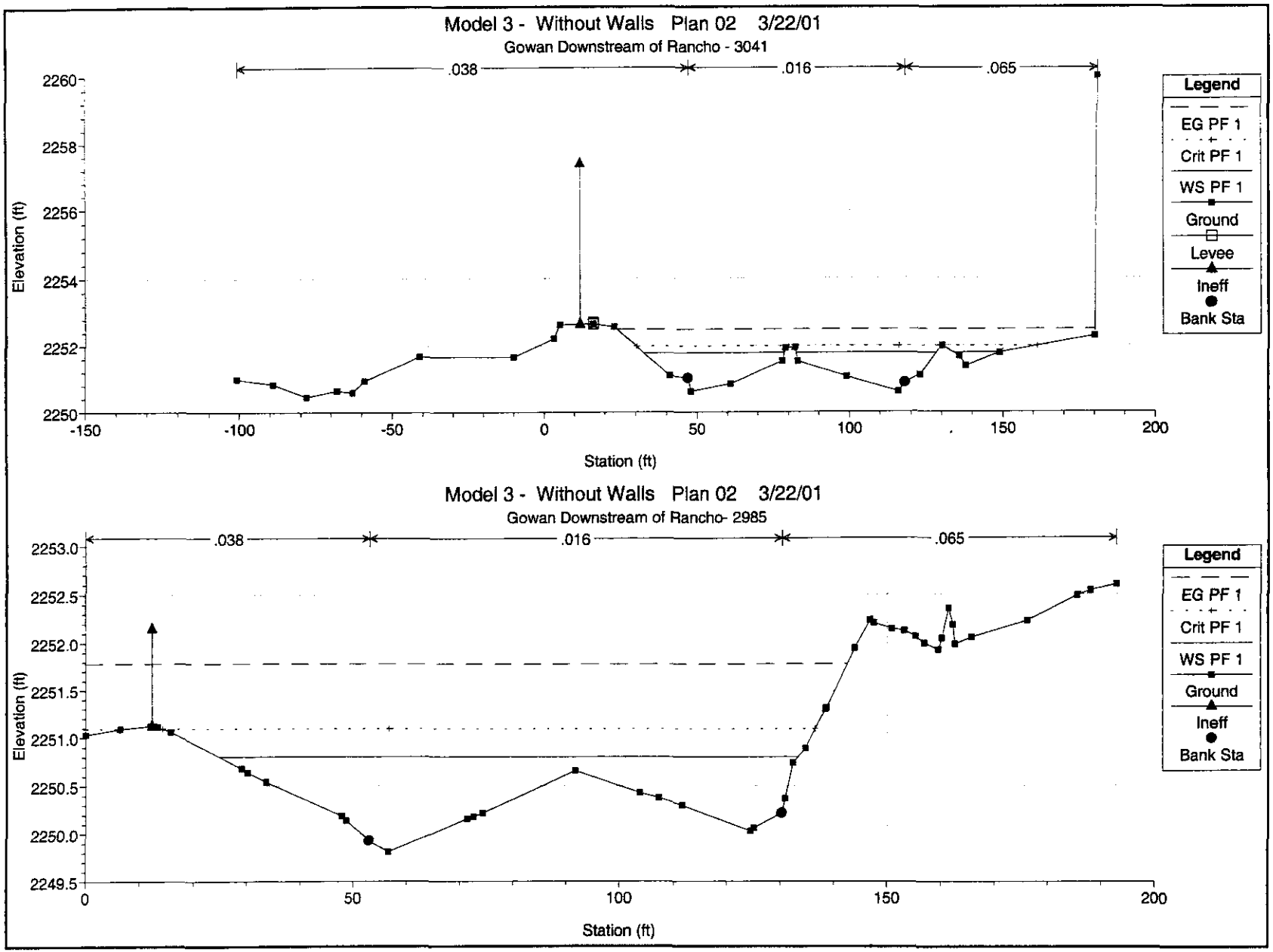
HEC-RAS Plan: GB1 (Continued)

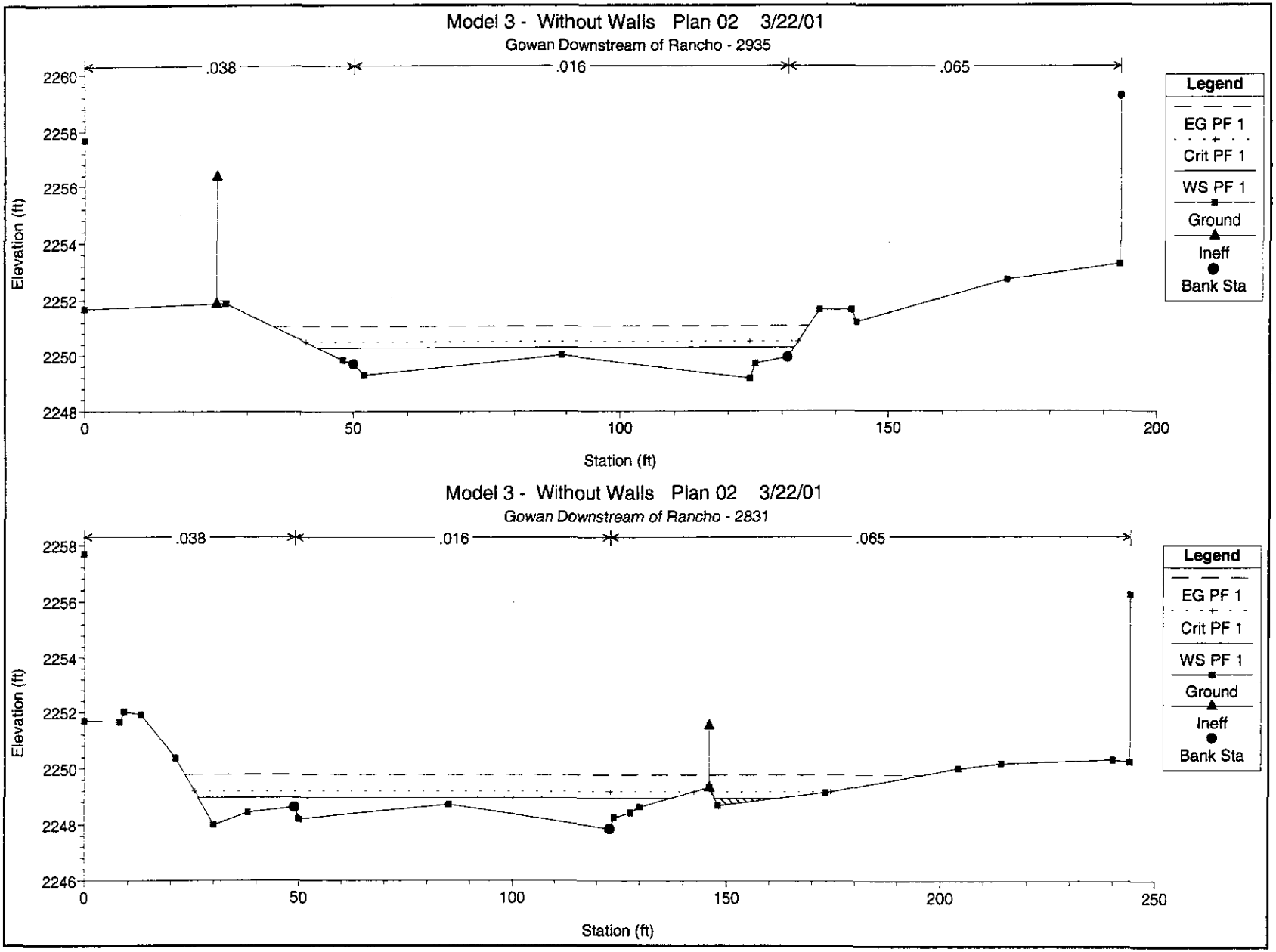
Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
RBPE	3918	80.00	2248.96	2249.71	2249.66	2249.85	0.017642	2.93	27.34	67.35	0.79
RBPE	3818	80.00	2247.36	2247.72	2247.72	2247.90	0.020351	1.97	24.75	63.91	0.76
RBPE	3651	80.00	2246.00	2246.84	2246.79	2246.98	0.020761	2.98	26.83	69.80	0.85
RBPE	3551	116.00	2245.76	2245.99	2245.98	2246.18	0.005003	0.66	34.33	98.73	0.34
North of Gowan	1368	5.00	2239.39	2239.54	2239.54	2239.59	0.163108	1.76	2.84	34.19	1.07
North of Gowan	1268	176.00	2237.57	2238.91	2238.23	2238.93	0.005027	1.33	132.57	178.52	0.27
North of Gowan	1168	176.00	2237.36	2238.34	2237.97	2238.36	0.006468	1.11	158.56	337.46	0.29
North of Gowan	1098	176.00	2236.97	2237.84	2237.54	2237.87	0.007518	1.23	142.65	301.25	0.32
North of Gowan	1026	176.00	2236.66	2237.05		2237.09	0.016859	1.68	104.96	396.90	0.57
North of Gowan	942	176.00	2235.57	2235.98	2235.89	2236.01	0.010372	1.48	124.03	487.90	0.50
North of Gowan	711	176.00	2231.72	2232.24		2232.28	0.033393	1.69	106.96	447.00	0.59
North of Gowan	611	176.00	2230.71	2231.24	2231.00	2231.26	0.005003	0.93	200.75	519.00	0.25
Gilmore	2675	104.00	2242.32	2243.21	2243.21	2243.50	0.004518	4.34	25.51	48.99	1.00
Gilmore	2575	104.00	2241.59	2242.44	2242.54	2242.87	0.008809	5.30	20.78	50.39	1.35
Br. b. Gilmore	2833	179.00	2242.03	2243.17	2243.17	2243.50	0.004122	4.63	40.74	67.67	0.99
Br. b. Gilmore	2733	179.00	2241.22	2242.25	2242.41	2242.83	0.012736	6.10	29.58	68.38	1.61
Br. b. Gilmore	2633	179.00	2240.87	2241.73	2242.01	2242.66	0.010641	7.83	26.91	46.98	1.60

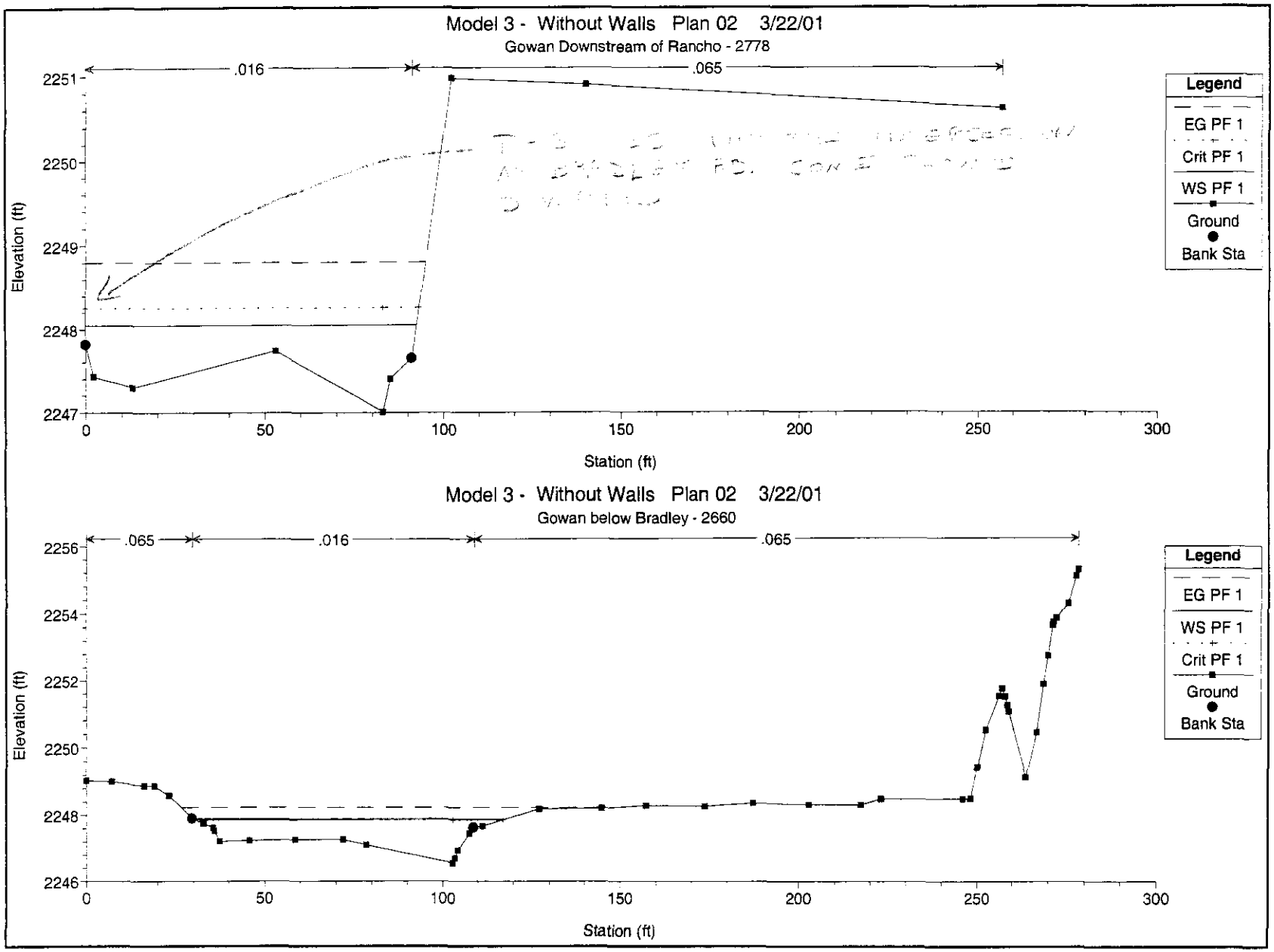

Model 3 - Without Walls Plan 02 3/22/01
Gowan Downstream of Rancho - 3409.5
.033
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Gowan Downstream of Rancho - 3325.5
.033
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta

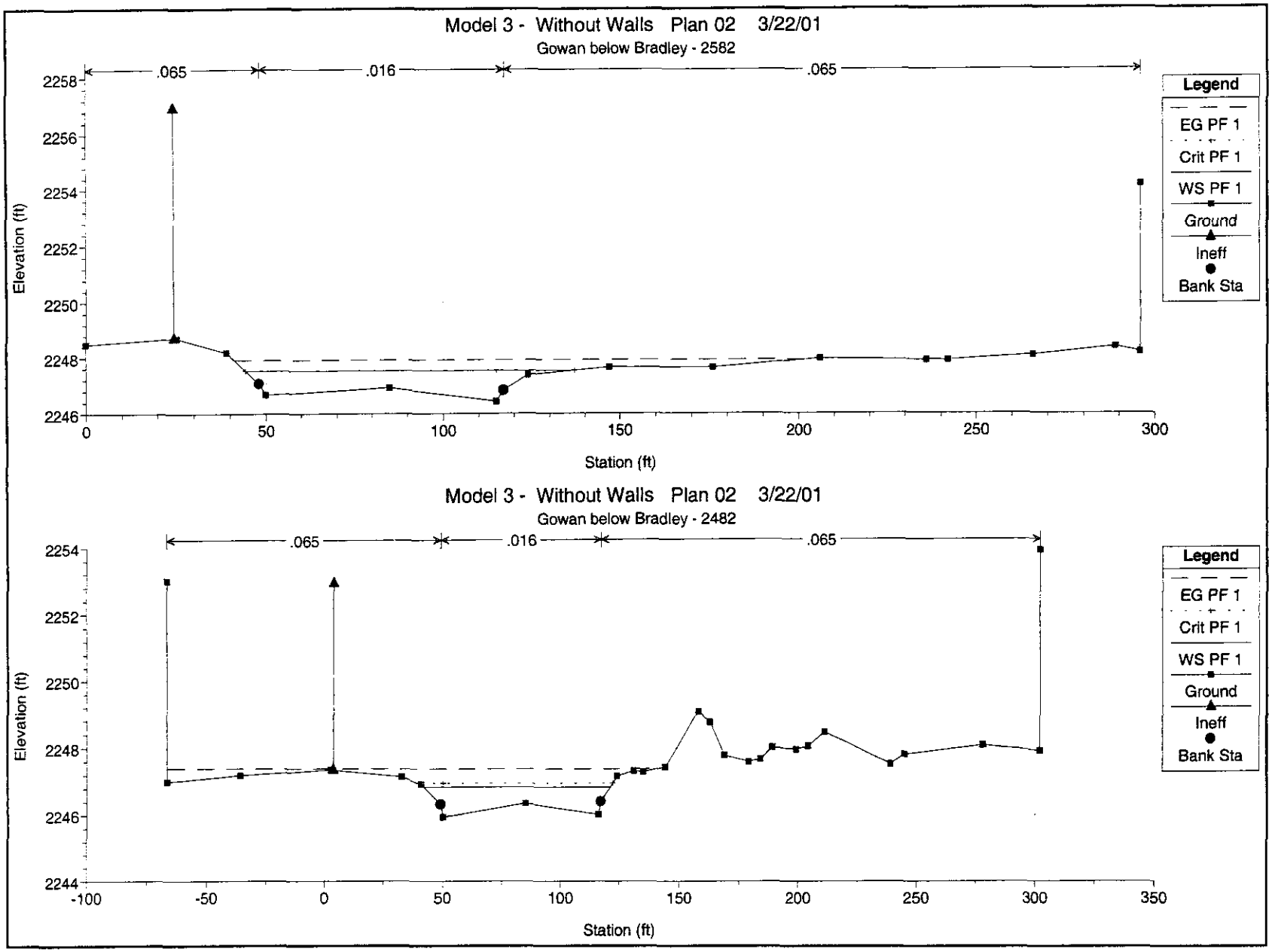

Model 3 - Without Walls Plan 02 3/22/01
Gowan Downstream of Rancho - 3304
.033
.016
OVERTOPPING FLOW
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Gowan Downstream of Rancho - 3278
.038
.016
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)

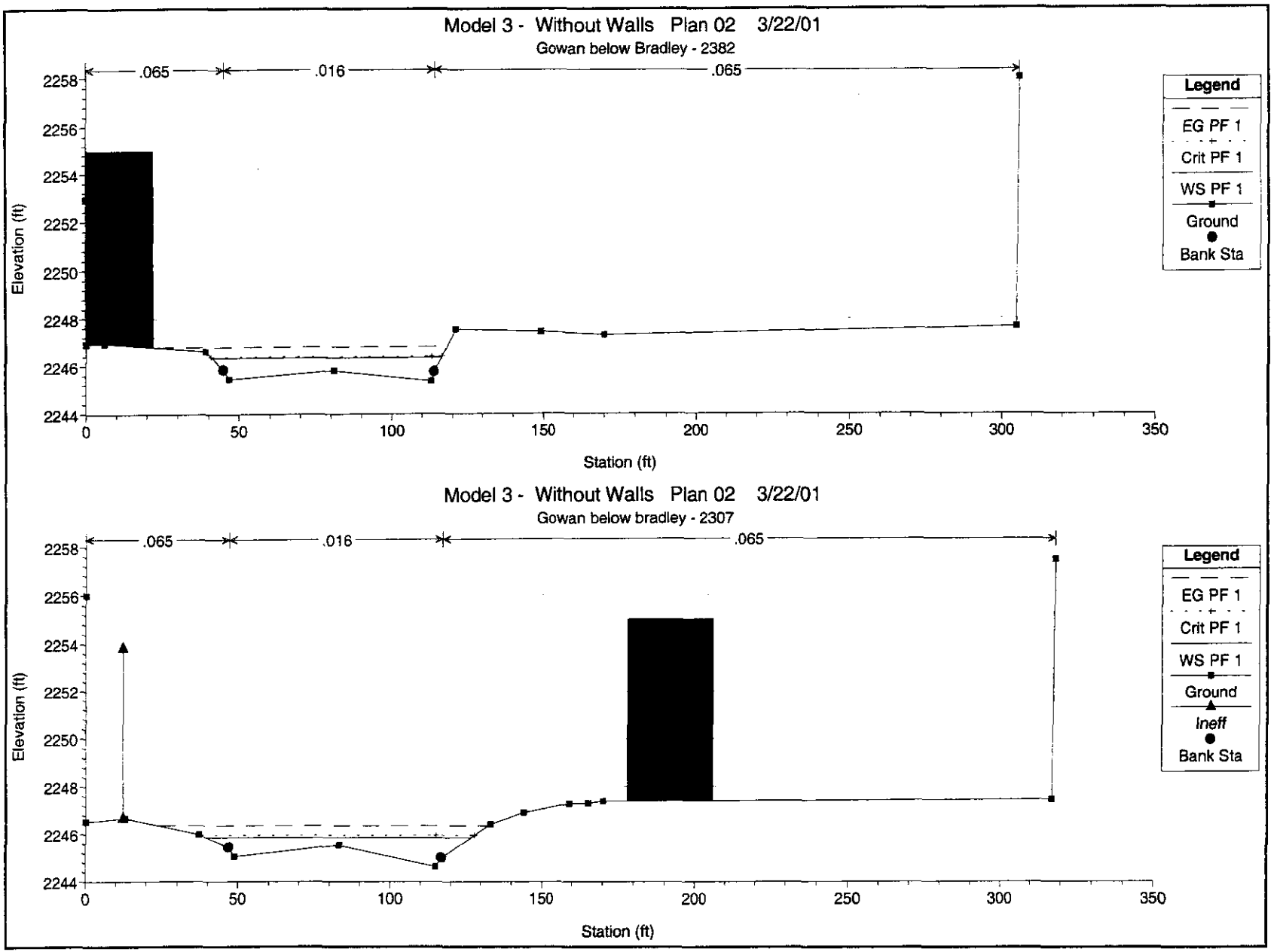

Model 3 - Without Walls Plan 02 3/22/01
Gowan Downstream of Rancho - 3226
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2264
2262
2260
2258
2256
2254
2252
-100
-50
0
50
100
150
Model 3 - Without Walls Plan 02 3/22/01
Gowan Downstream of Rancho - 3141
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2260
2258
2256
2254
2252
2250
-100
-50
0
50
100
150
200

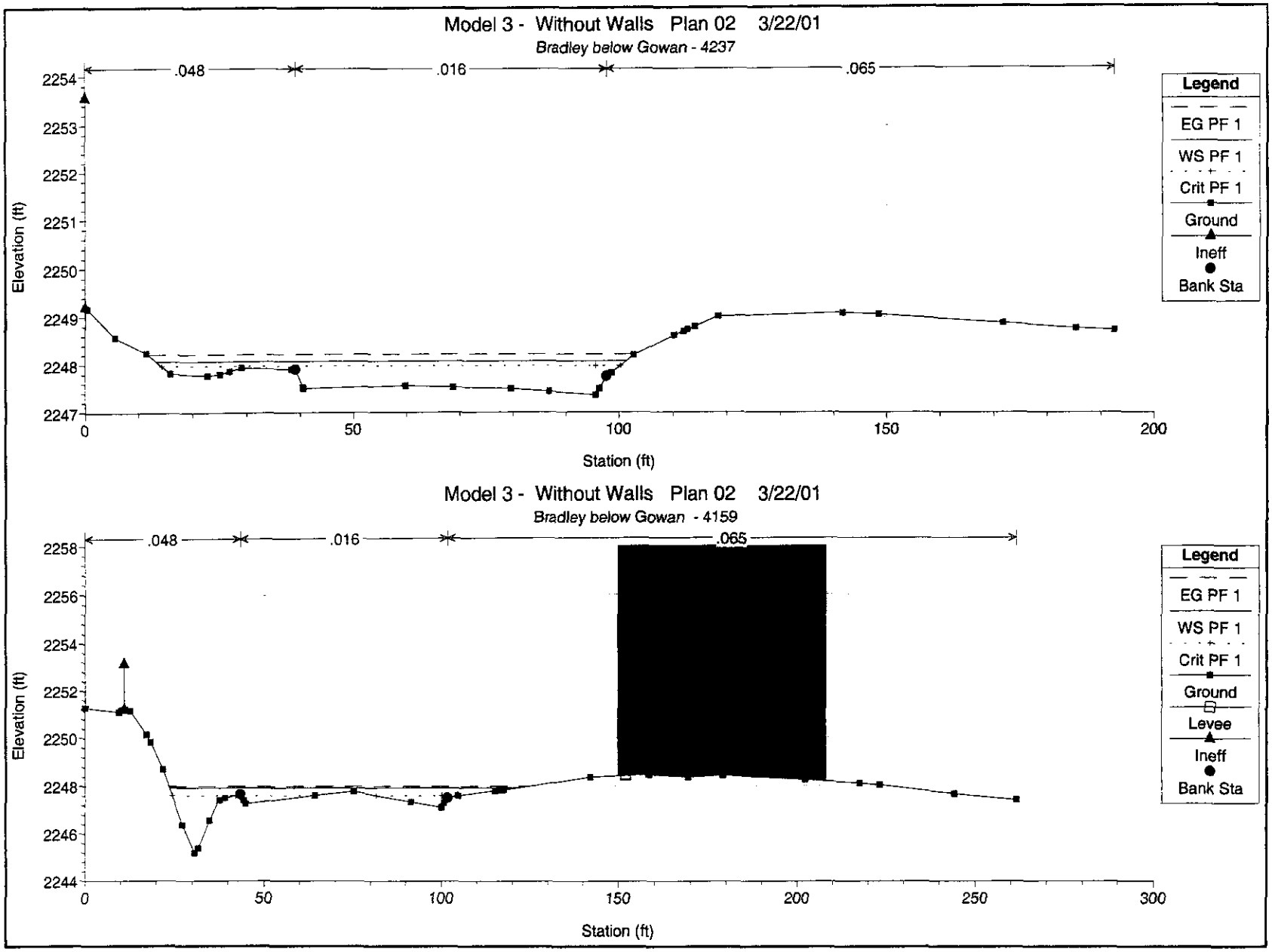

Model 3 - Without Walls Plan 02 3/22/01
Gowan Downstream of Rancho - 3041
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Gowan Downstream of Rancho- 2985
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

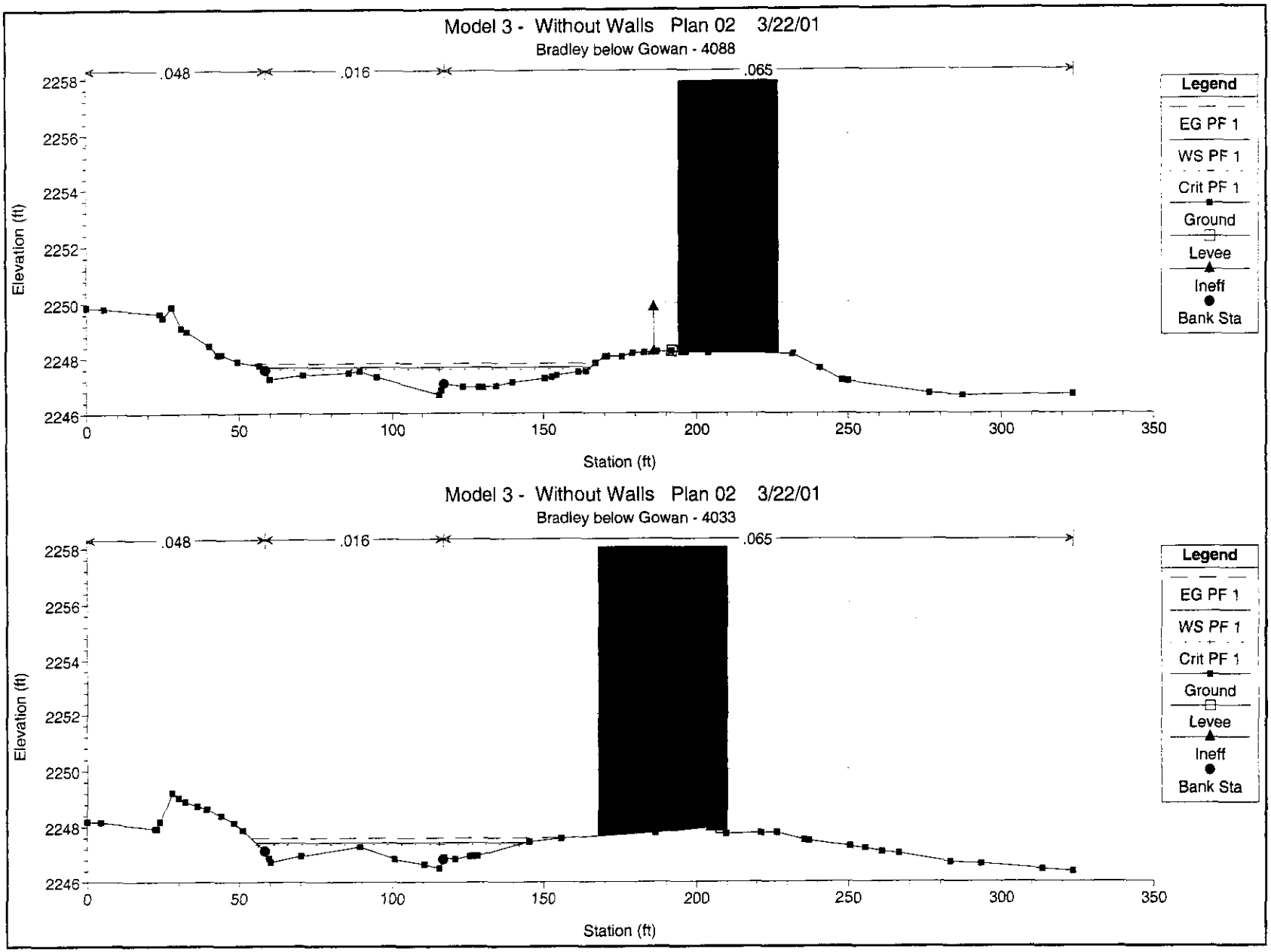

Model 3 - Without Walls Plan 02 3/22/01
Gowan Downstream of Rancho - 2935
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Gowan Downstream of Rancho - 2831
.038
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

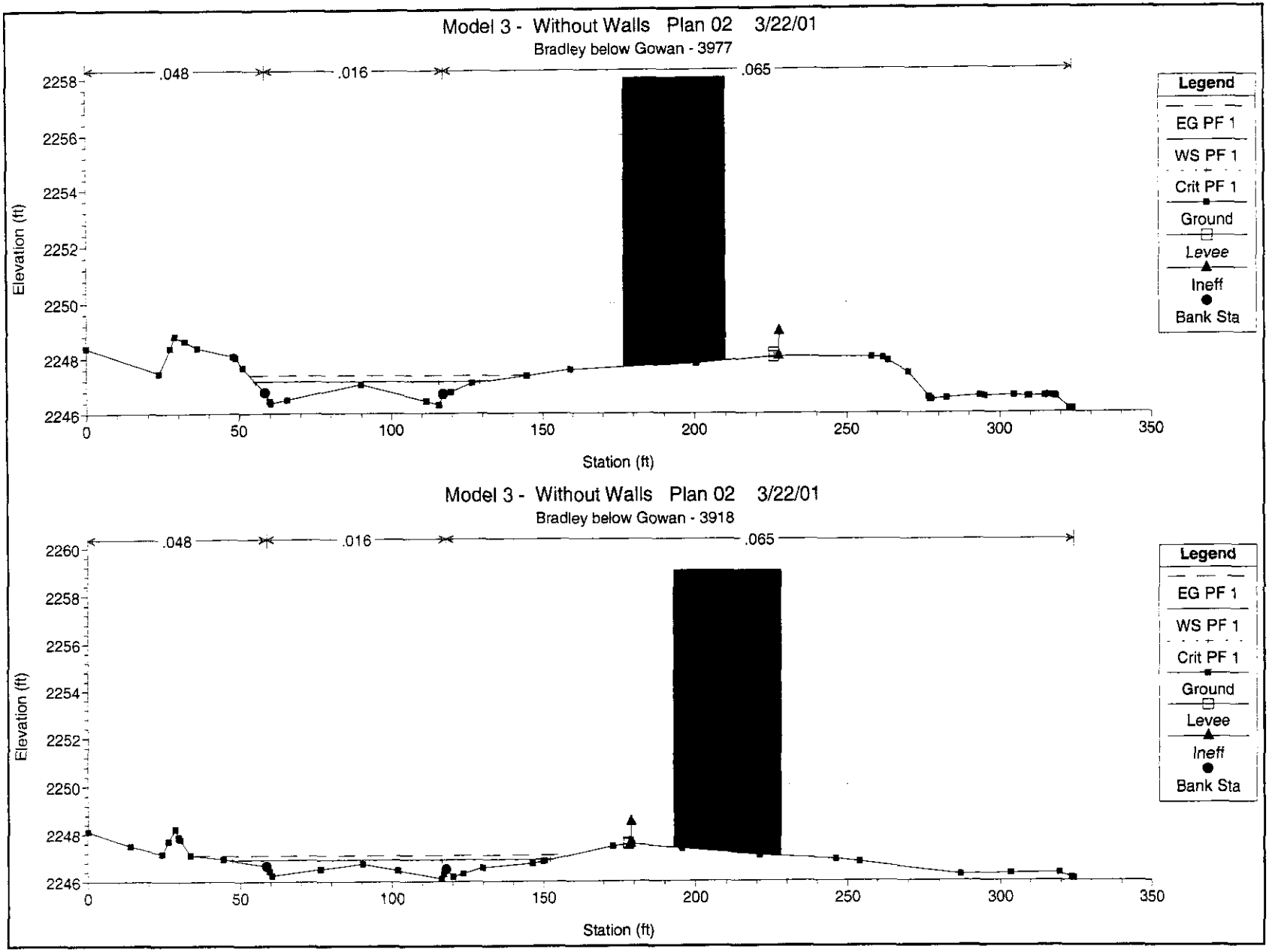

Model 3 - Without Walls Plan 02 3/22/01
Gowan Downstream of Rancho - 2778
.016
.065
2251
2250
2249
2248
2247
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Bradley - 2660
.065
.016
.065
2256
2254
2252
2250
2248
2246
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

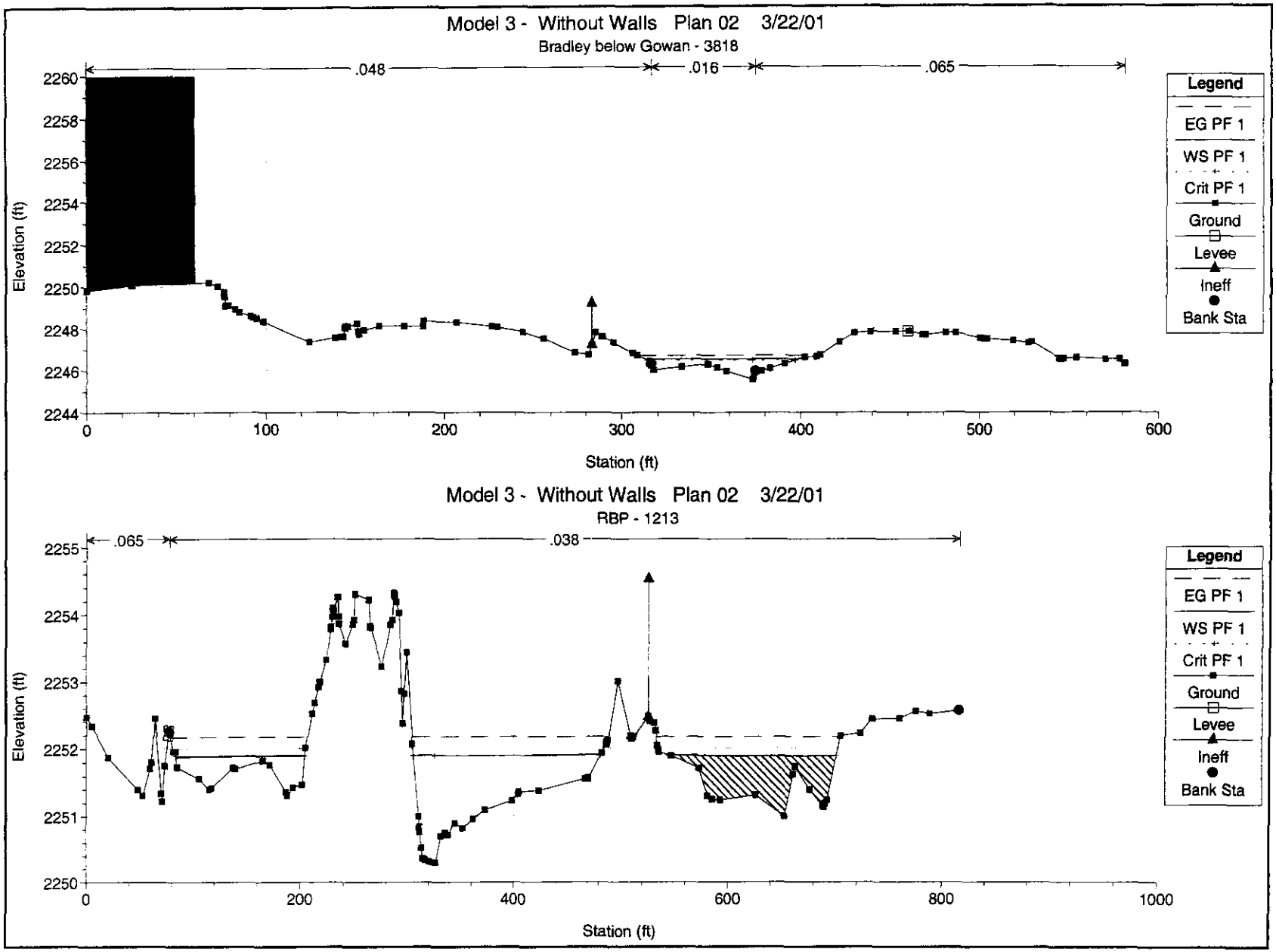

Model 3 - Without Walls Plan 02 3/22/01
Gowan below Bradley - 2582
.065
.016
.065
Elevation (ft)
2258
2256
2254
2252
2250
2248
2246
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Bradley - 2482
.065
.016
.065
Elevation (ft)
2254
2252
2250
2248
2246
2244
-100
-50
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

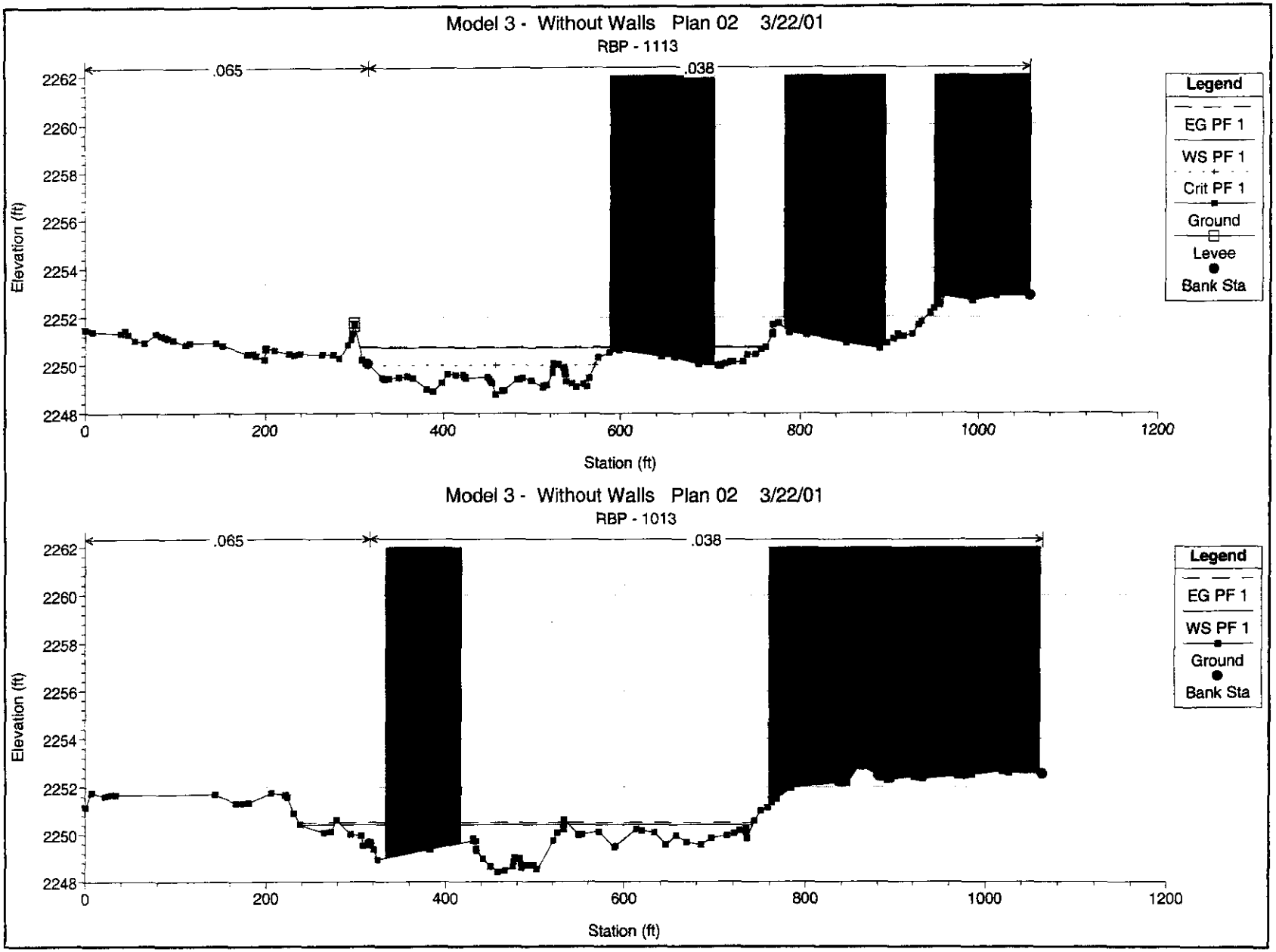

Model 3 - Without Walls Plan 02 3/22/01
Gowan below Bradley - 2382
.065
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Gowan below bradley - 2307
.065
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

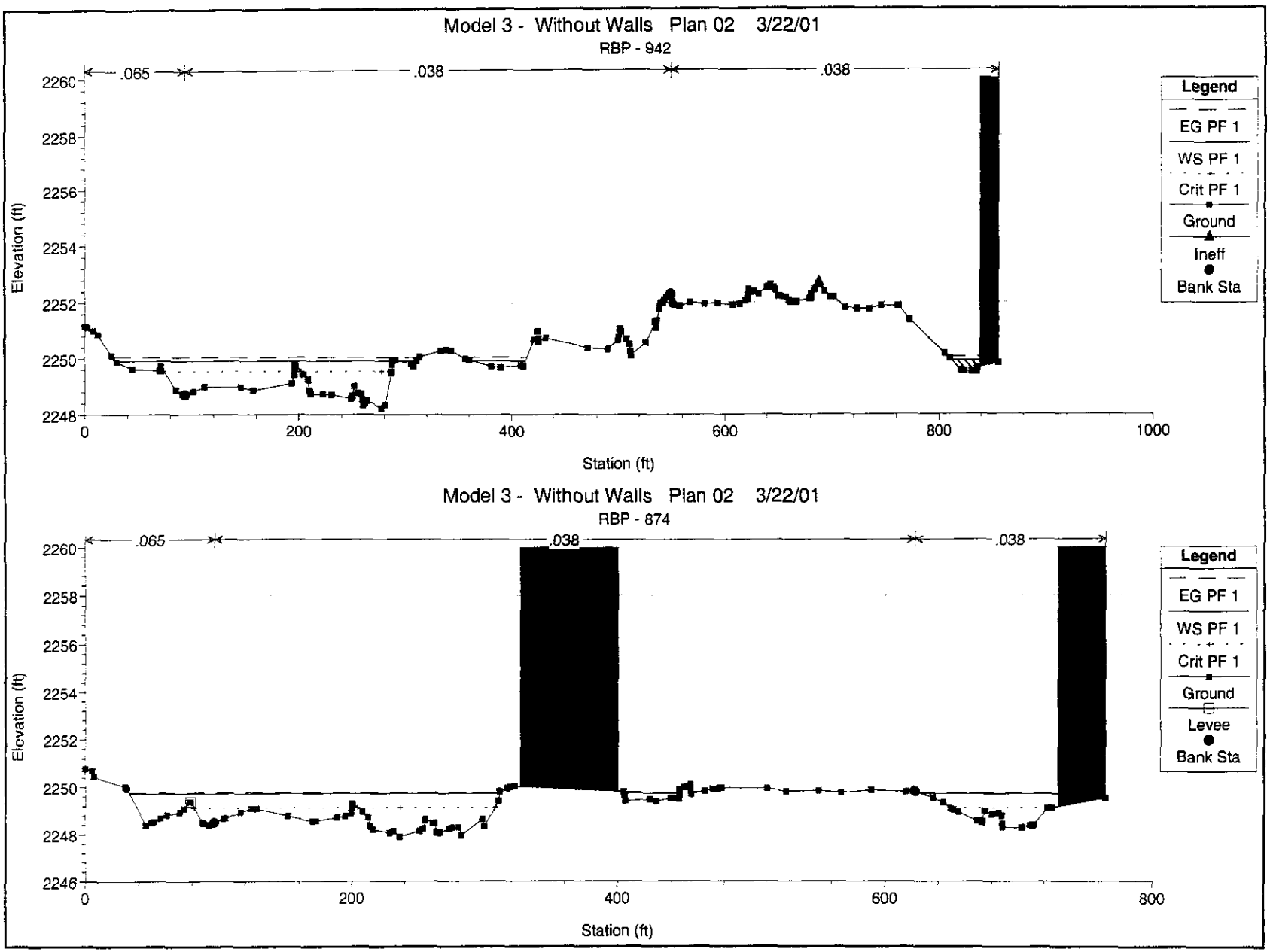

Model 3 - Without Walls Plan 02 3/22/01
Bradley below Gowan - 4237
.048
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Bradley below Gowan - 4159
.048
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)

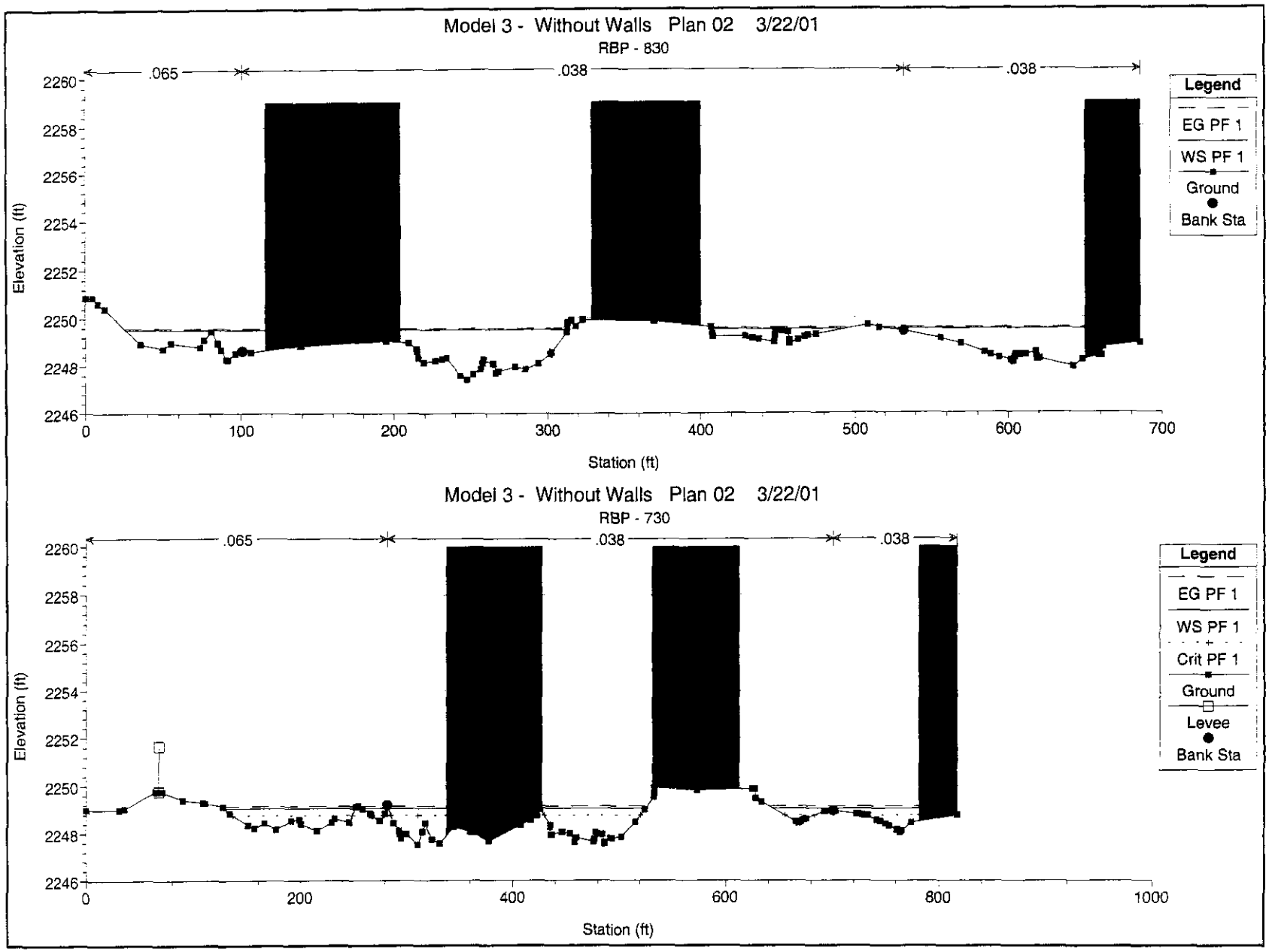

Model 3 - Without Walls Plan 02 3/22/01
Bradley below Gowan - 4088
.048
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Bradley below Gowan - 4033
.048
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta

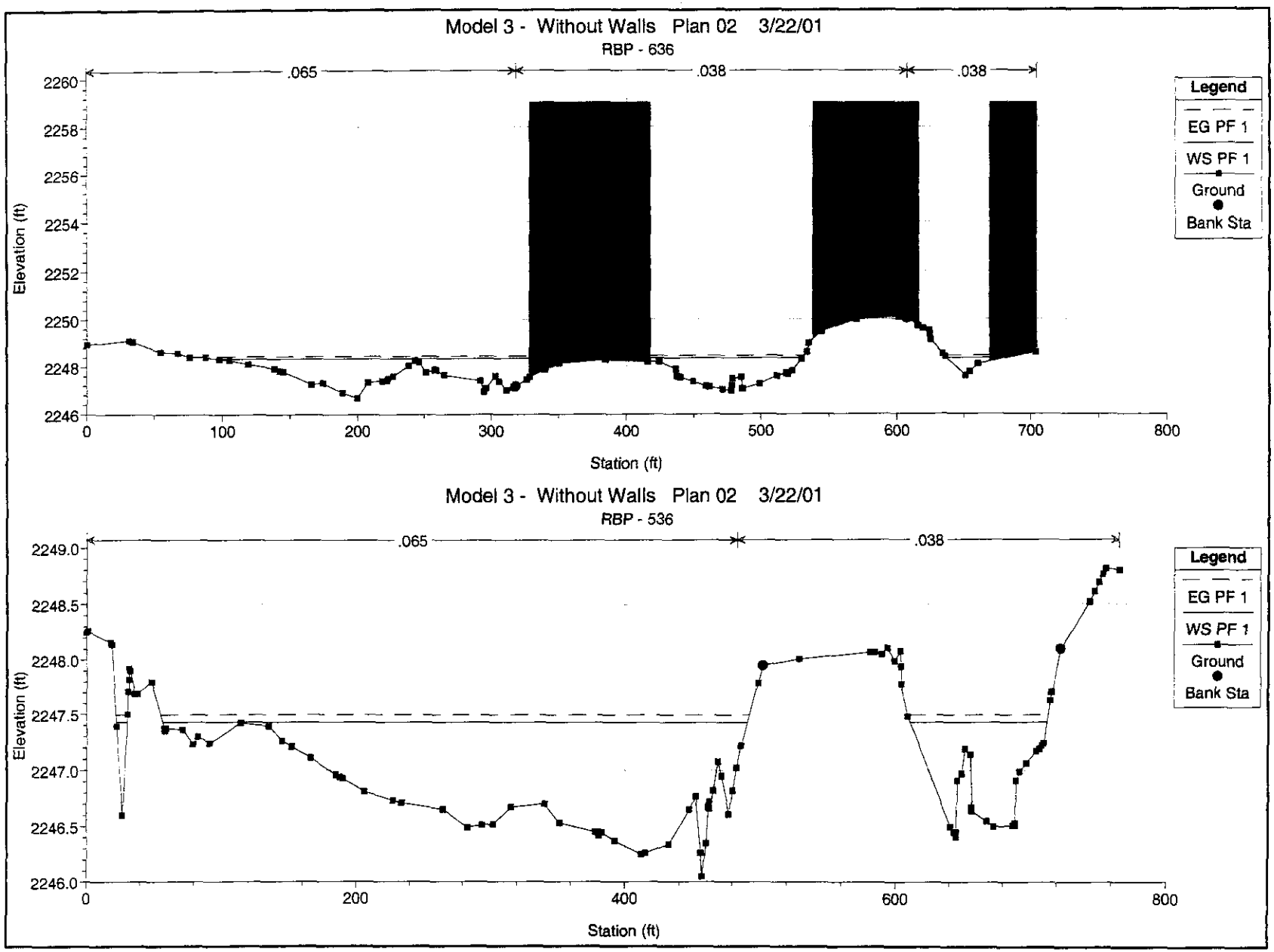

Model 3 - Without Walls Plan 02 3/22/01
Bradley below Gowan - 3977
.048
.016
.065
Elevation (ft)
2258
2256
2254
2252
2250
2248
2246
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Bradley below Gowan - 3918
.048
.016
.065
Elevation (ft)
2260
2258
2256
2254
2252
2250
2248
2246
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta

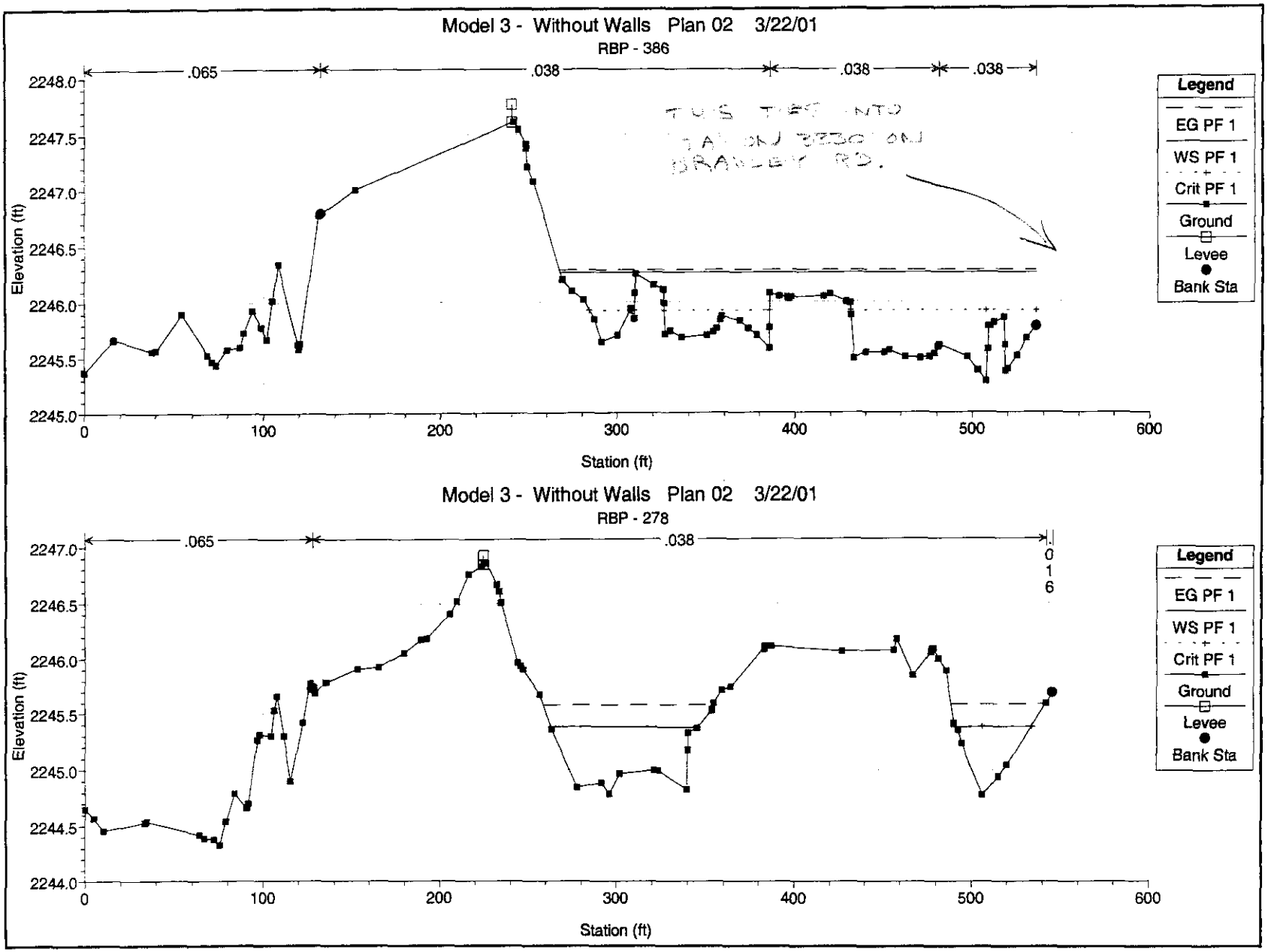

Model 3 - Without Walls Plan 02 3/22/01
Bradley below Gowan - 3818
.048
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
RBP - 1213
.065
.038
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)

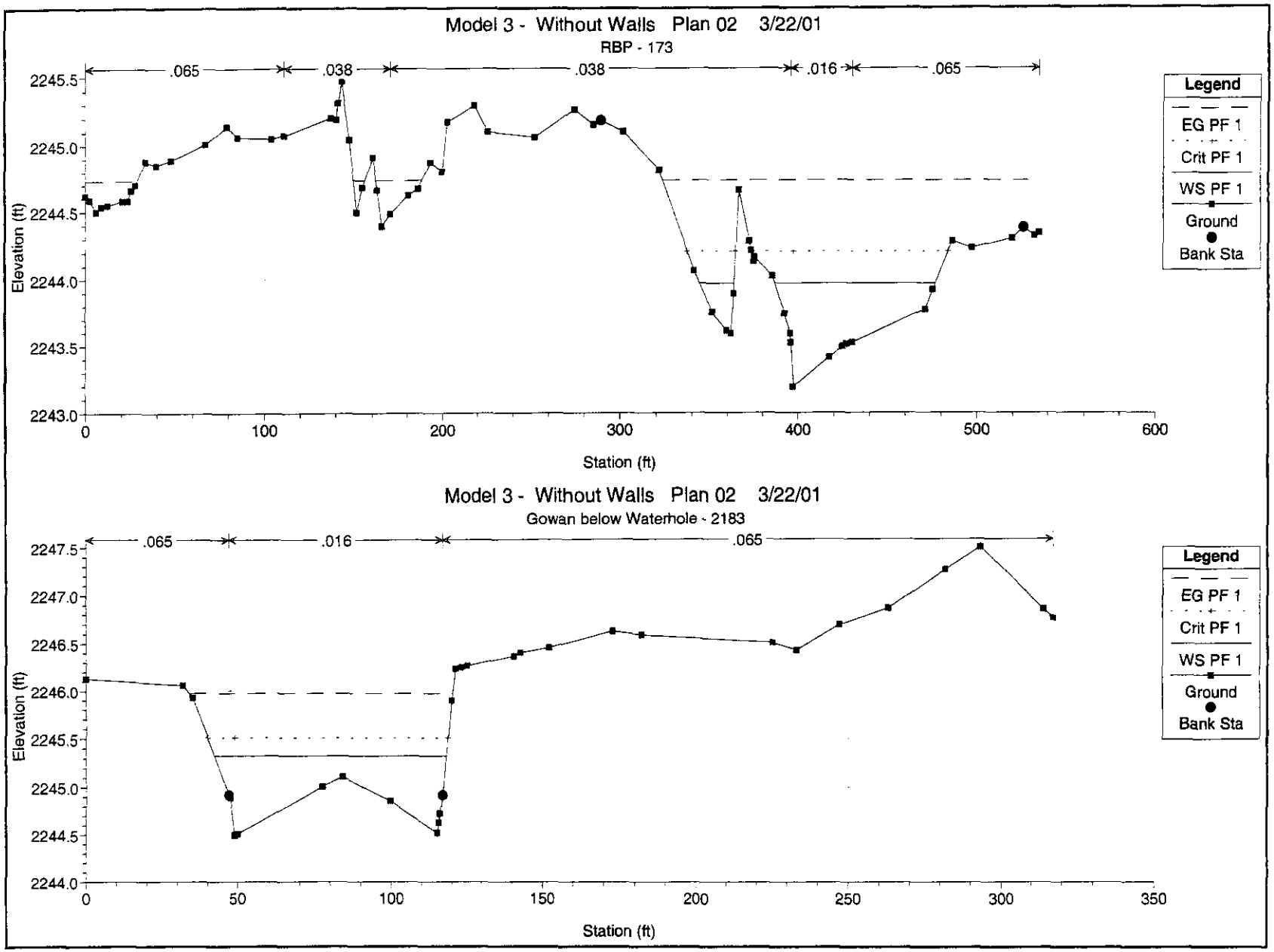

Model 3 - Without Walls Plan 02 3/22/01
RBP - 1113
.065
.038
Elevation (ft)
2262
2260
2258
2256
2254
2252
2250
2248
0
200
400
600
800
1000
1200
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
RBP - 1013
.065
.038
Elevation (ft)
2262
2260
2258
2256
2254
2252
2250
2248
0
200
400
600
800
1000
1200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

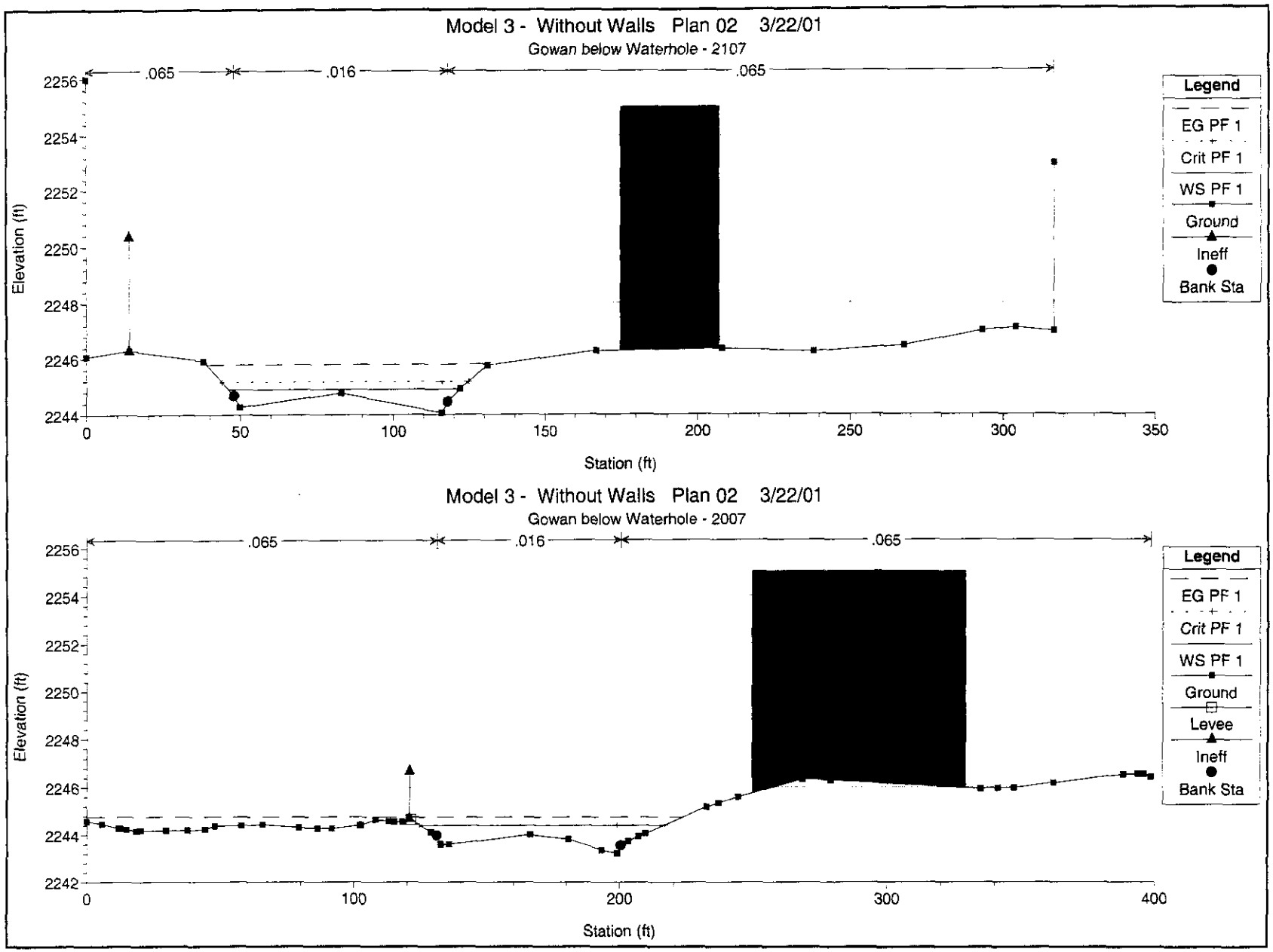

Model 3 - Without Walls Plan 02 3/22/01
RBP - 942
.065
.038
.038
2260
2258
2256
2254
2252
2250
2248
Elevation (ft)
0
200
400
600
800
1000
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
RBP - 874
.065
.038
.038
2260
2258
2256
2254
2252
2250
2248
2246
Elevation (ft)
0
200
400
600
800
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

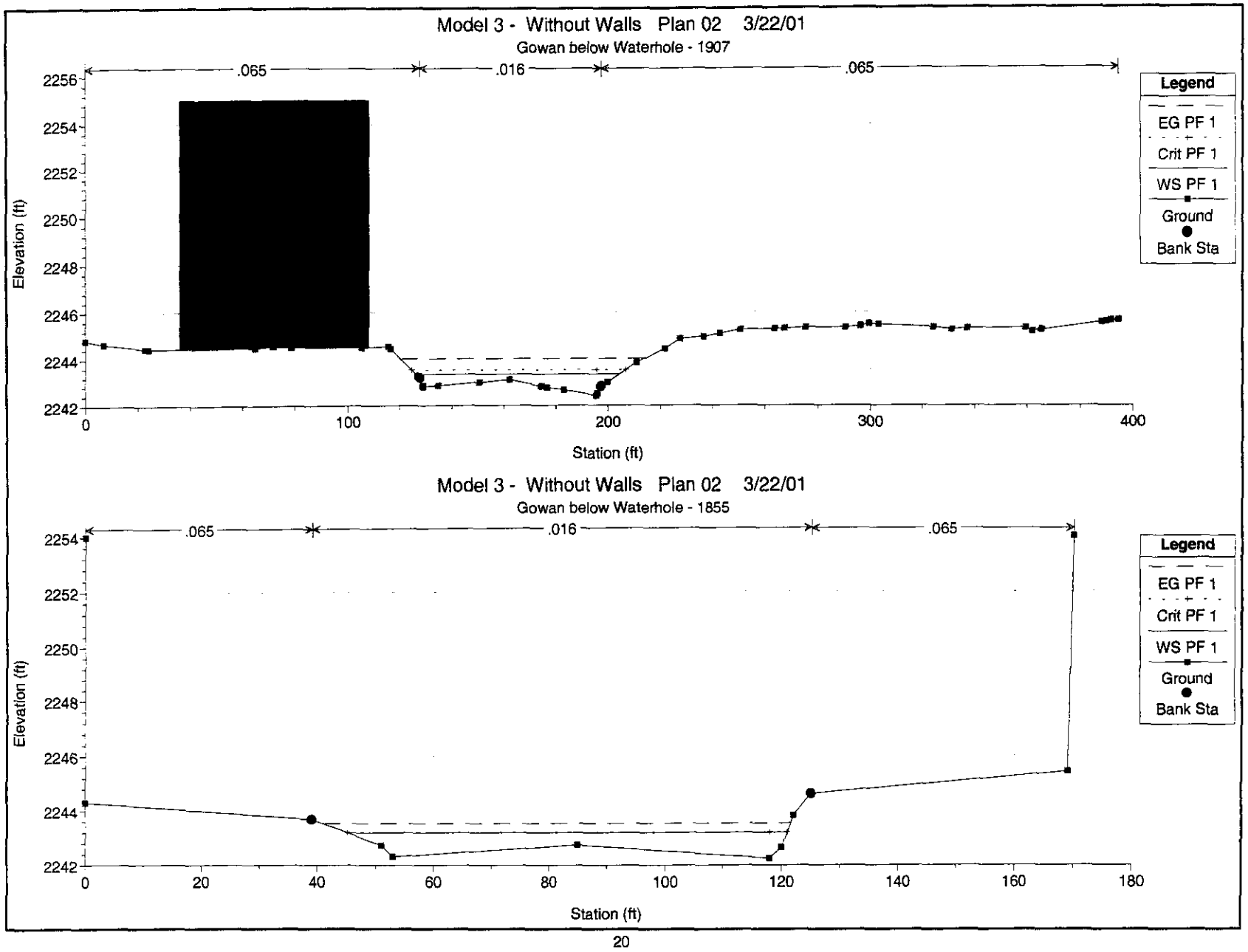

Model 3 - Without Walls Plan 02 3/22/01
RBP - 830
.065
.038
.038
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
RBP - 730
.065
.038
.038
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

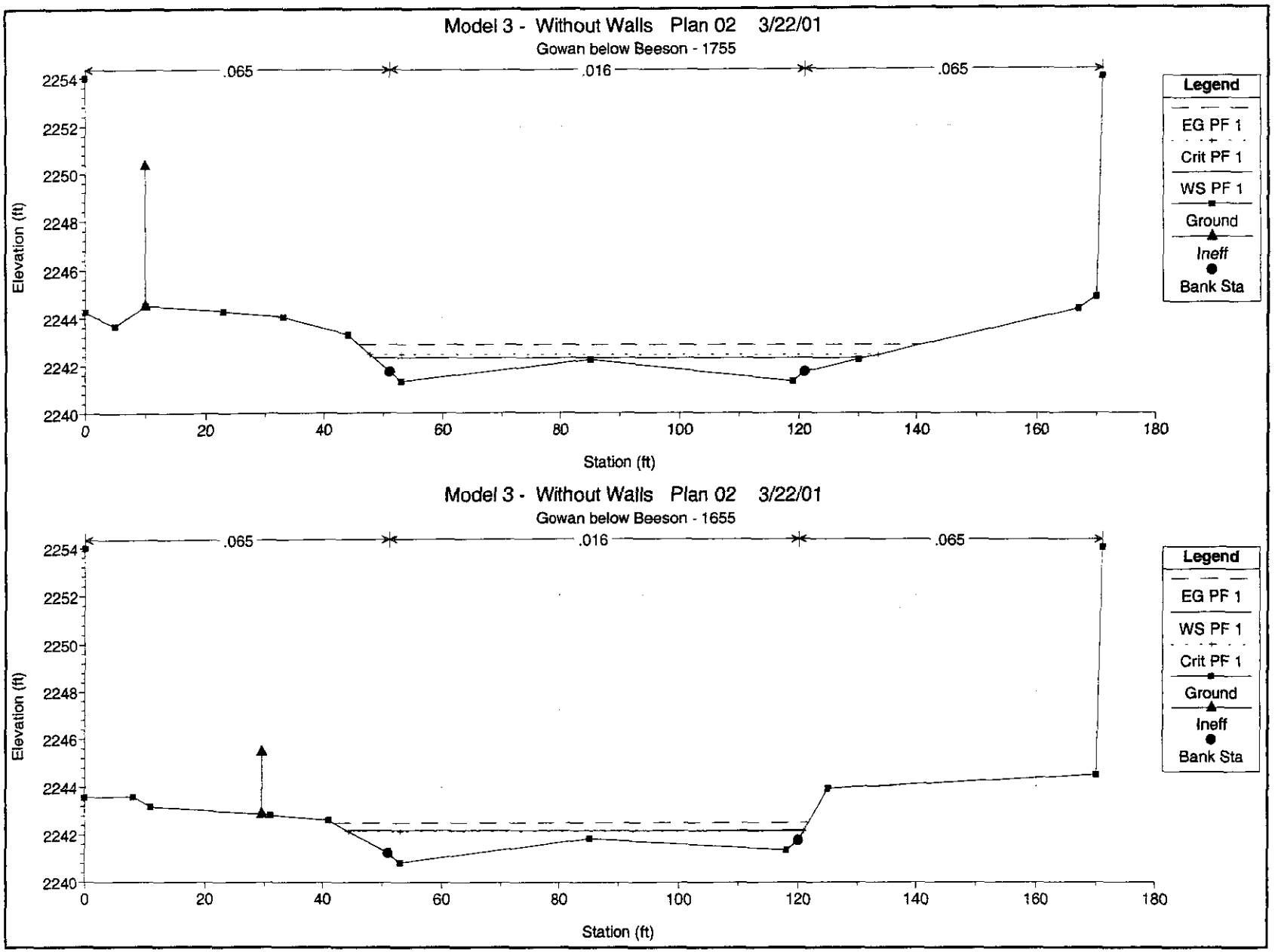

Model 3 - Without Walls Plan 02 3/22/01
RBP - 636
.065
.038
.038
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
RBP - 536
.065
.038
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

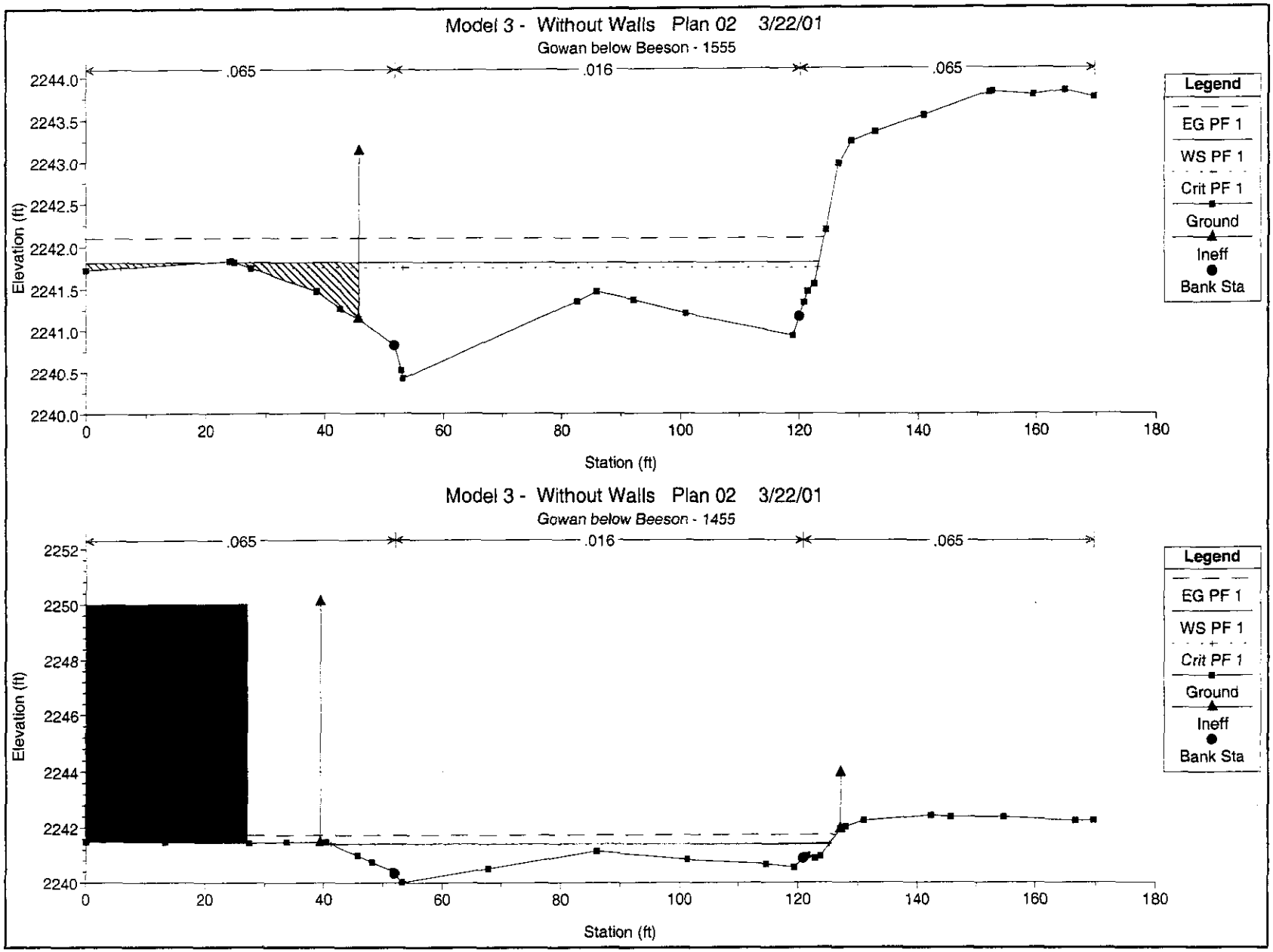

Model 3 - Without Walls Plan 02 3/22/01
RBP - 386
.065
.038
.038
.038
2248.0
2247.5
2247.0
2246.5
2246.0
2245.5
2245.0
Elevation (ft)
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
RBP - 278
.065
.038
2247.0
2246.5
2246.0
2245.5
2245.0
2244.5
2244.0
Elevation (ft)
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

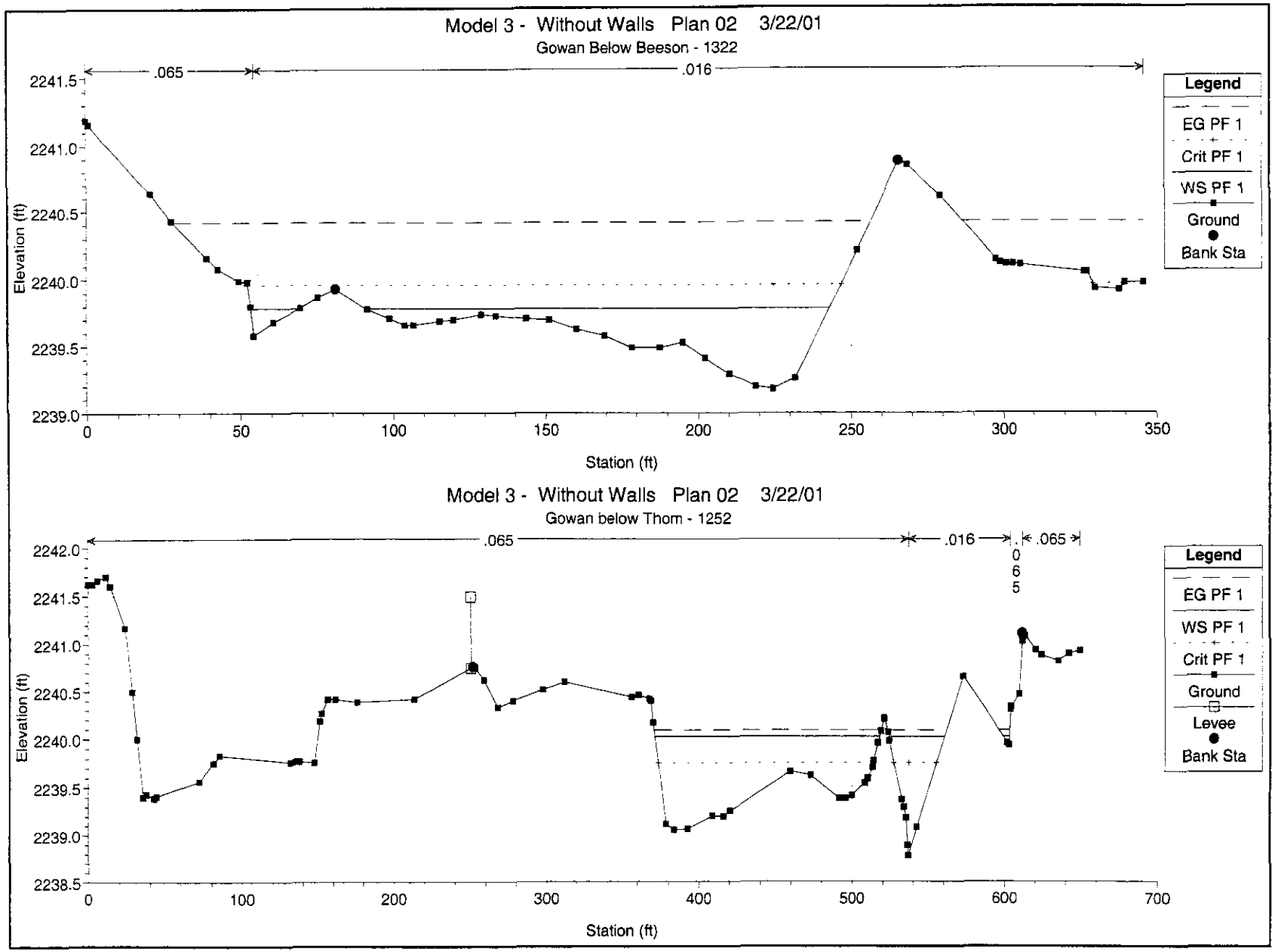

Model 3 - Without Walls Plan 02 3/22/01
RBP - 173
.065
.038
.038
.016
.065
Elevation (ft)
2245.5
2245.0
2244.5
2244.0
2243.5
2243.0
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Waterhole - 2183
.065
.016
.065
Elevation (ft)
2247.5
2247.0
2246.5
2246.0
2245.5
2245.0
2244.5
2244.0
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

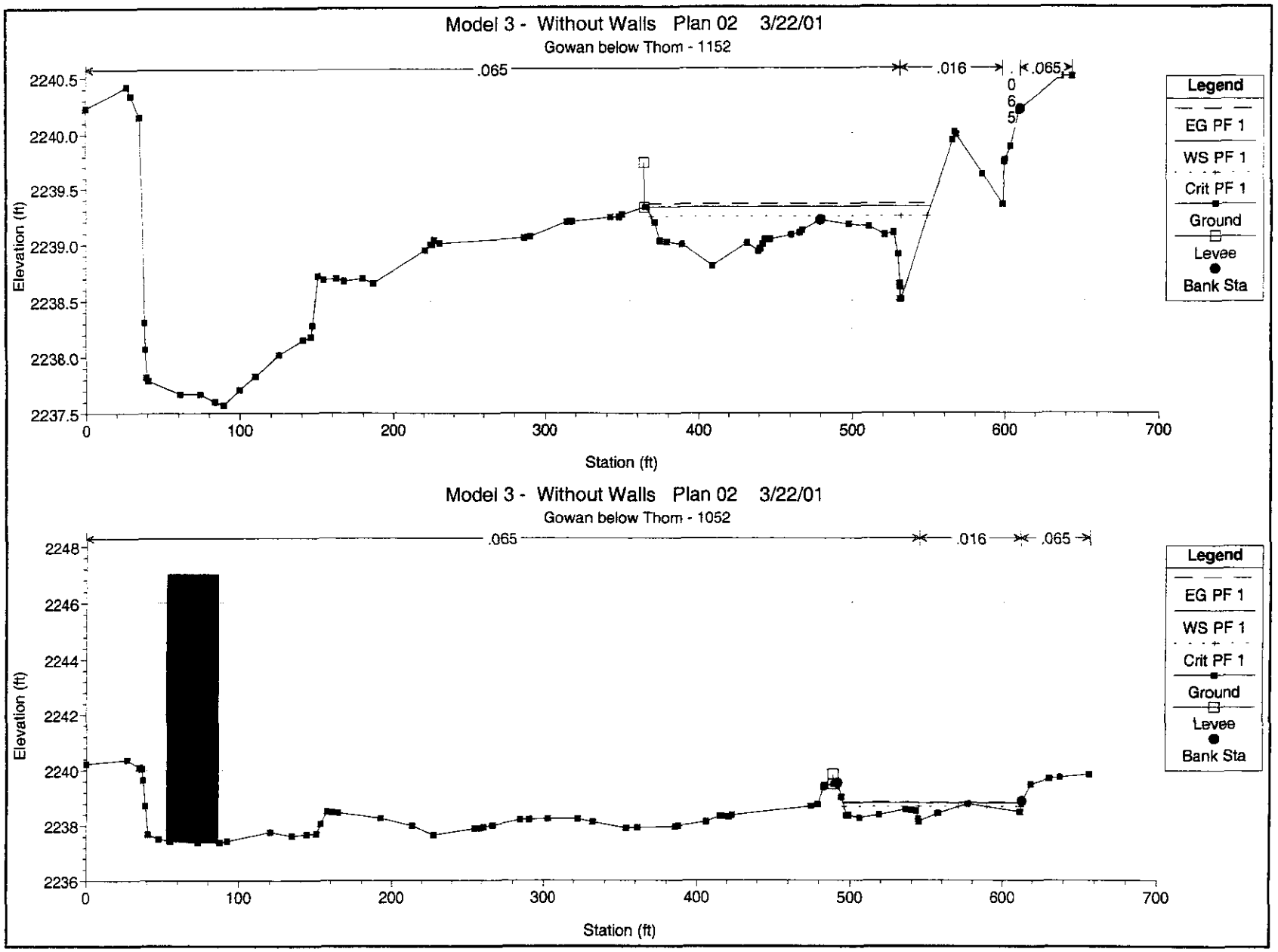

Model 3 - Without Walls Plan 02 3/22/01
Gowan below Waterhole - 2107
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Waterhole - 2007
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
2242
Elevation (ft)
0
100
200
300
400
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta

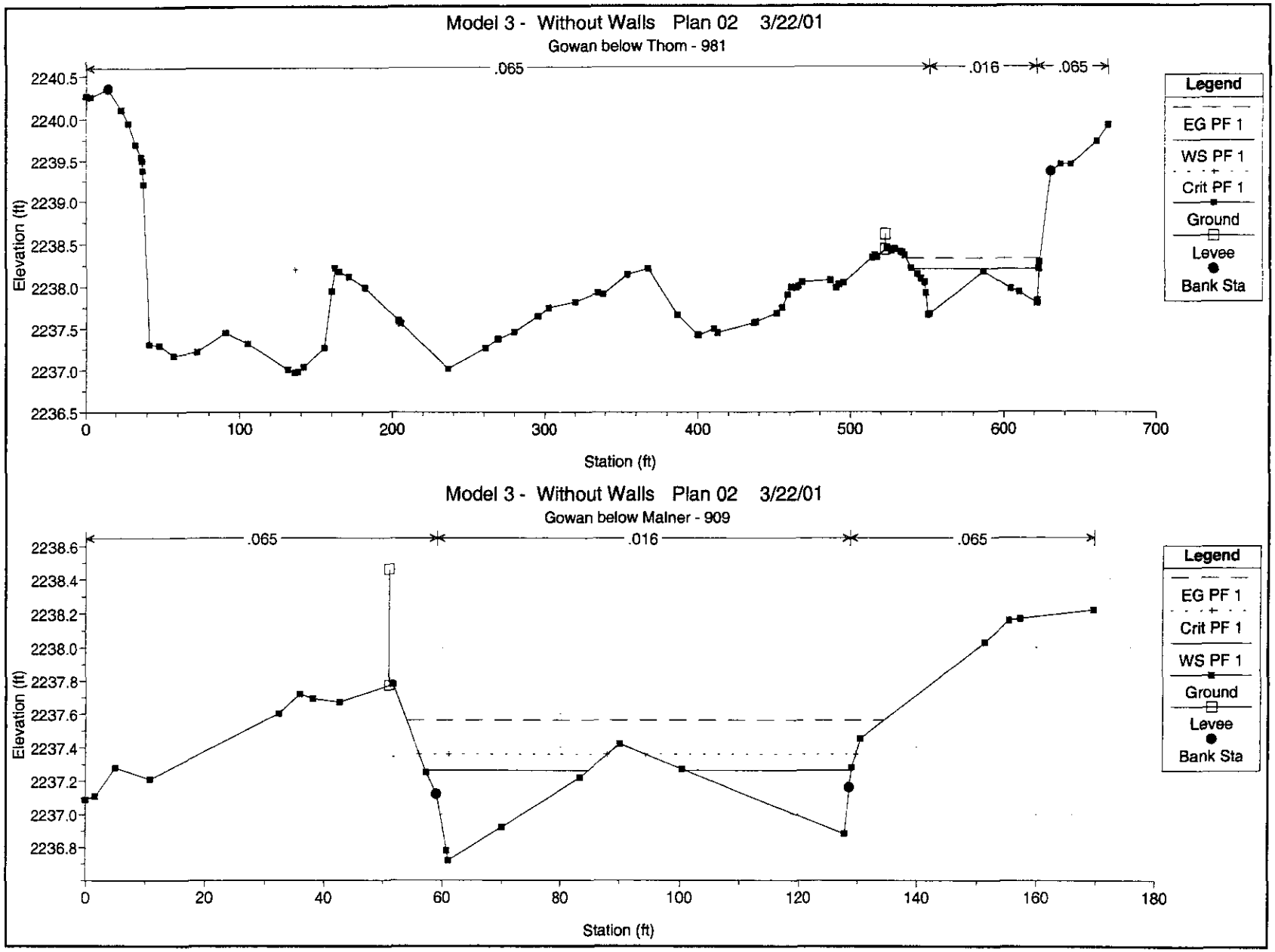

Model 3 - Without Walls Plan 02 3/22/01
Gowan below Waterhole - 1907
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2256
2254
2252
2250
2248
2246
2244
2242
0
100
200
300
400
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Waterhole - 1855
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2254
2252
2250
2248
2246
2244
2242
0
20
40
60
80
100
120
140
160
180
Station (ft)

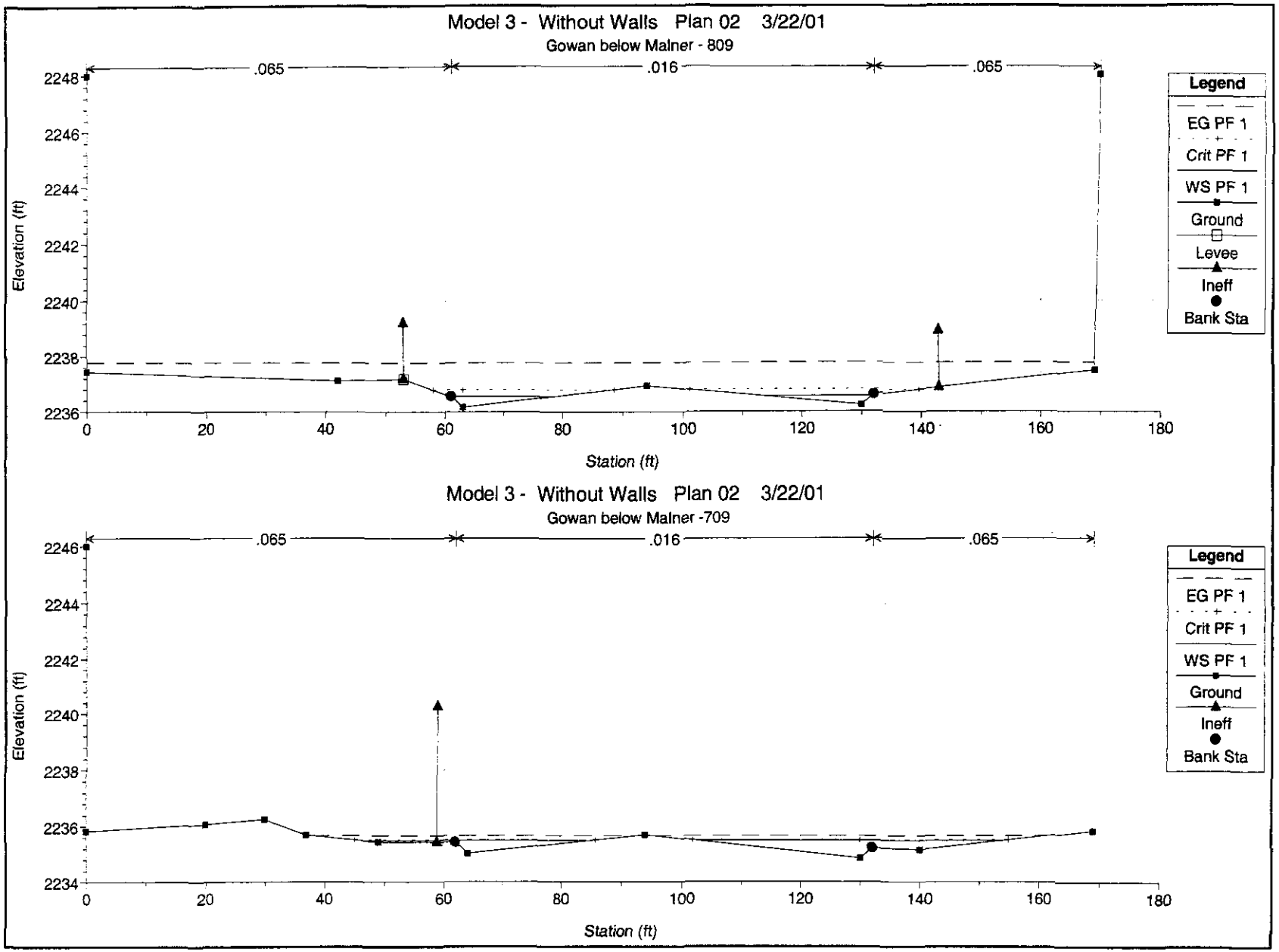

Model 3 - Without Walls Plan 02 3/22/01
Gowan below Beeson - 1755
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Beeson - 1655
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

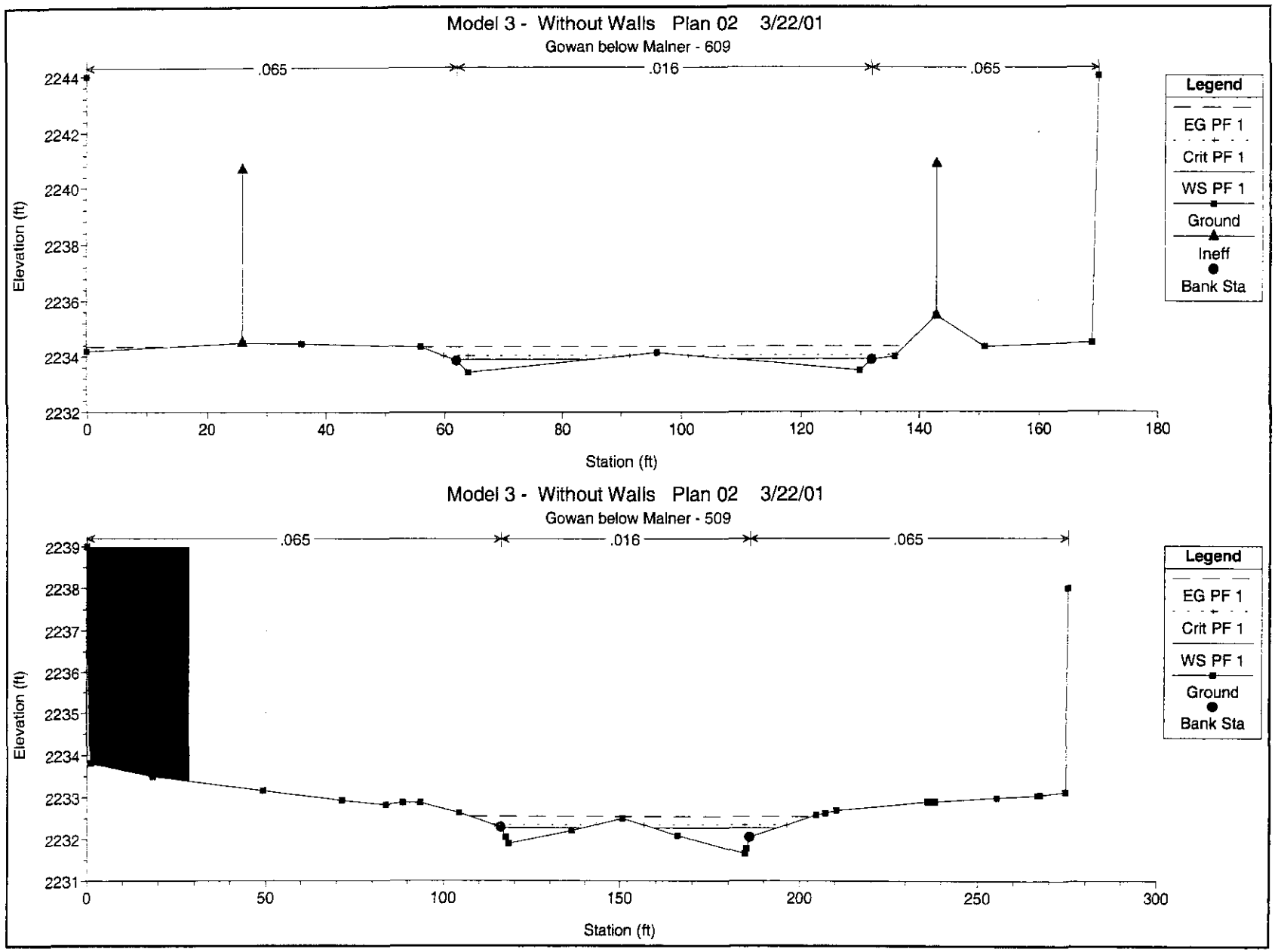

Model 3 - Without Walls Plan 02 3/22/01
Gowan below Beeson - 1555
.065
.016
.065
Elevation (ft)
2244.0
2243.5
2243.0
2242.5
2242.0
2241.5
2241.0
2240.5
2240.0
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Beeson - 1455
.065
.016
.065
Elevation (ft)
2252
2250
2248
2246
2244
2242
2240
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta

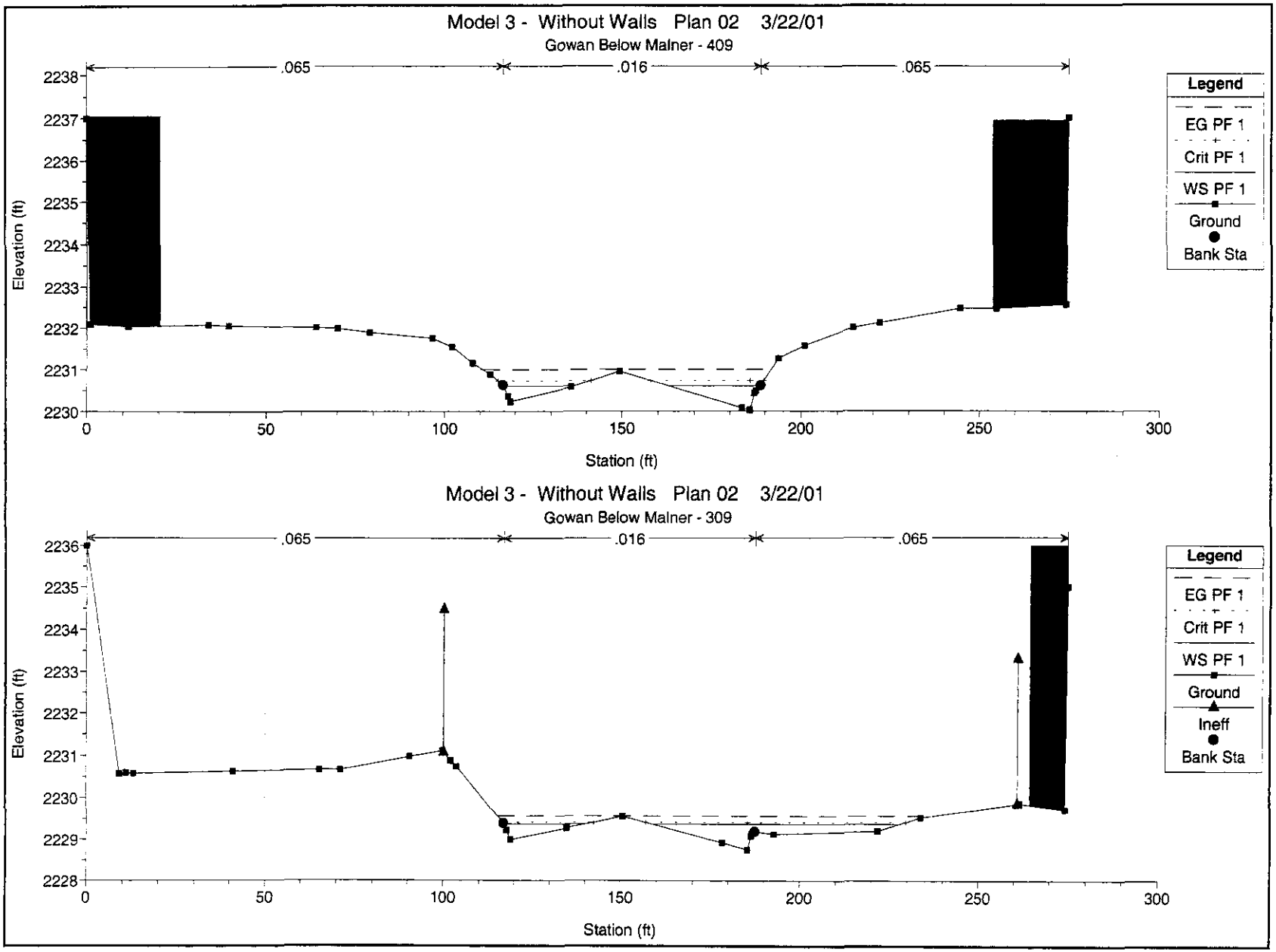

Model 3 - Without Walls Plan 02 3/22/01
Gowan Below Beeson - 1322
.065
.016
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Thom - 1252
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

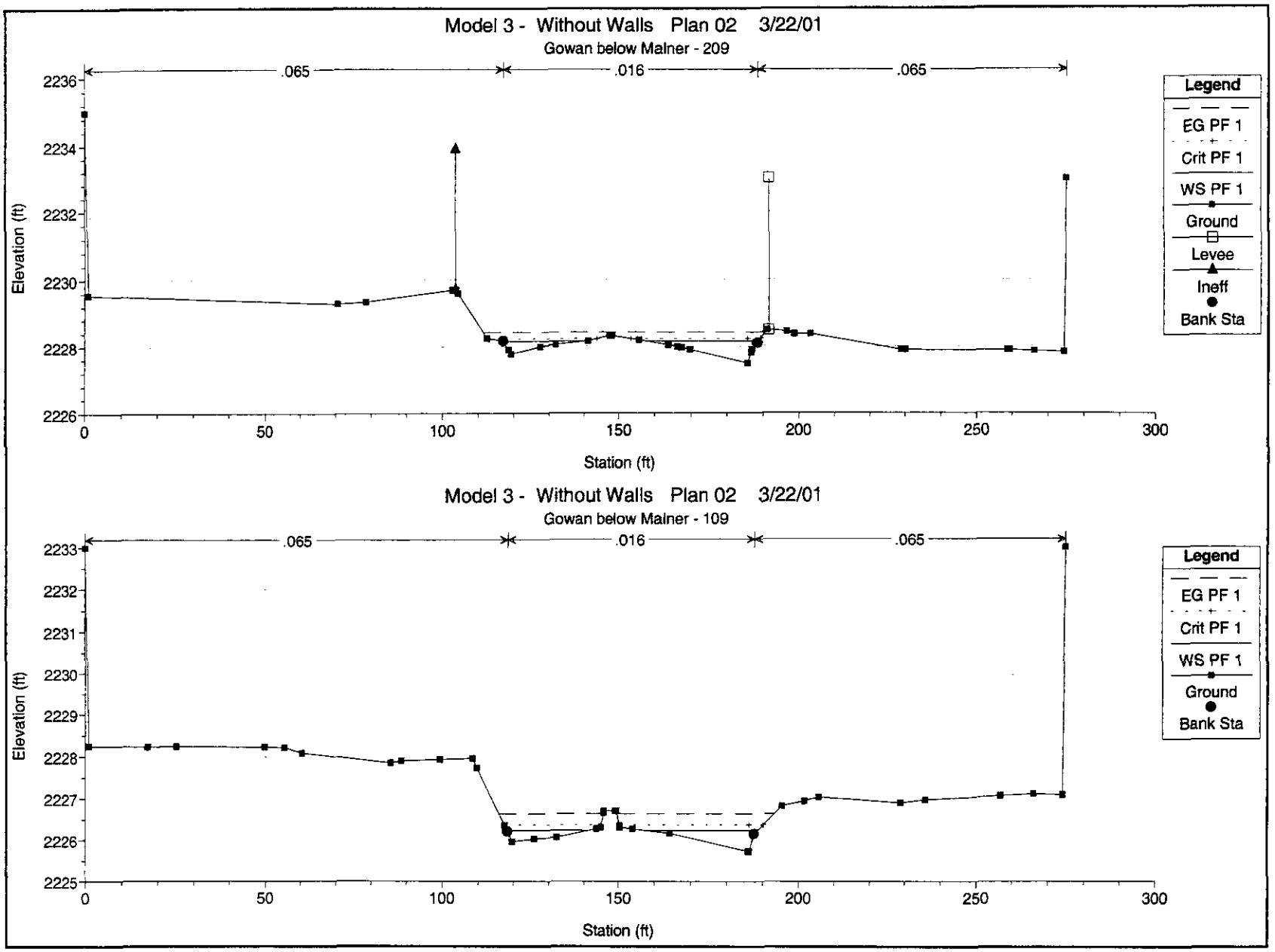

Model 3 - Without Walls Plan 02 3/22/01
Gowan below Thom - 1152
.065
.016
.065
0
6
5
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2240.5
2240.0
2239.5
2239.0
2238.5
2238.0
2237.5
0
100
200
300
400
500
600
700
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Thom - 1052
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2248
2246
2244
2242
2240
2238
2236
0
100
200
300
400
500
600
700
Station (ft)

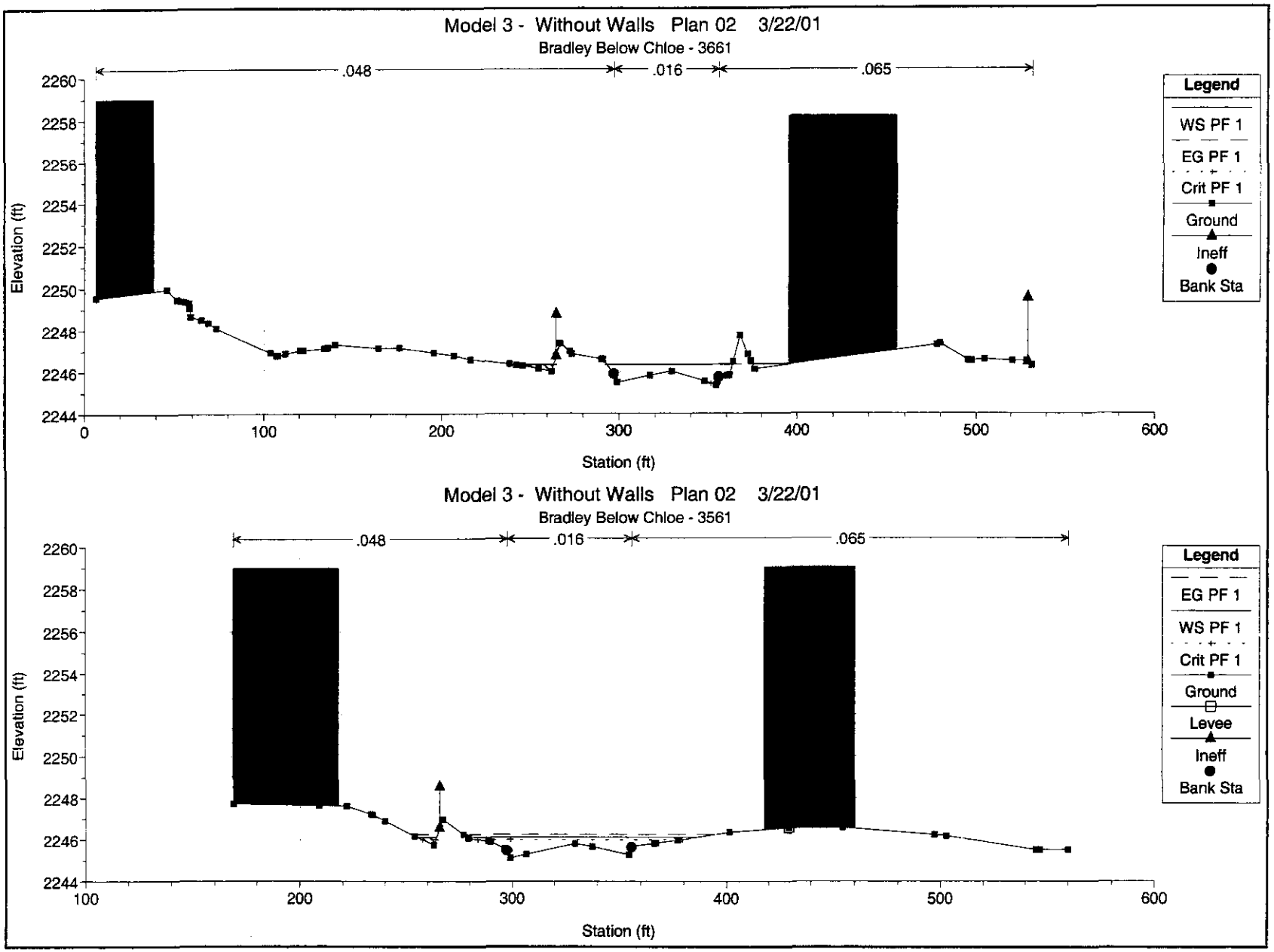

Model 3 - Without Walls Plan 02 3/22/01
Gowan below Thom - 981
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Malner - 909
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

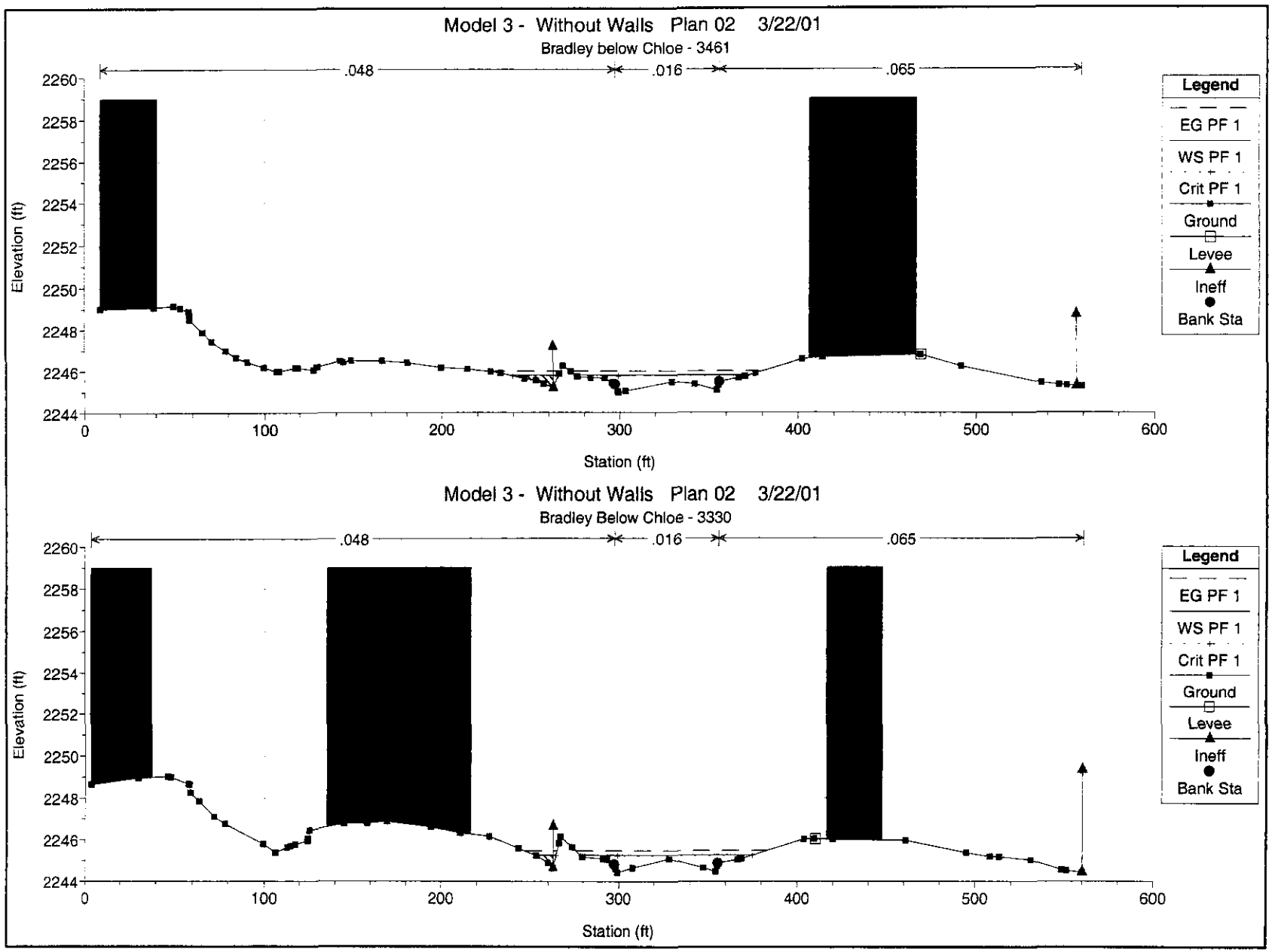

Model 3 - Without Walls Plan 02 3/22/01
Gowan below Malner - 809
.065
.016
.065
2248
2246
2244
2242
2240
2238
2236
Elevation (ft)
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Malner -709
.065
.016
.065
2246
2244
2242
2240
2238
2236
2234
Elevation (ft)
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

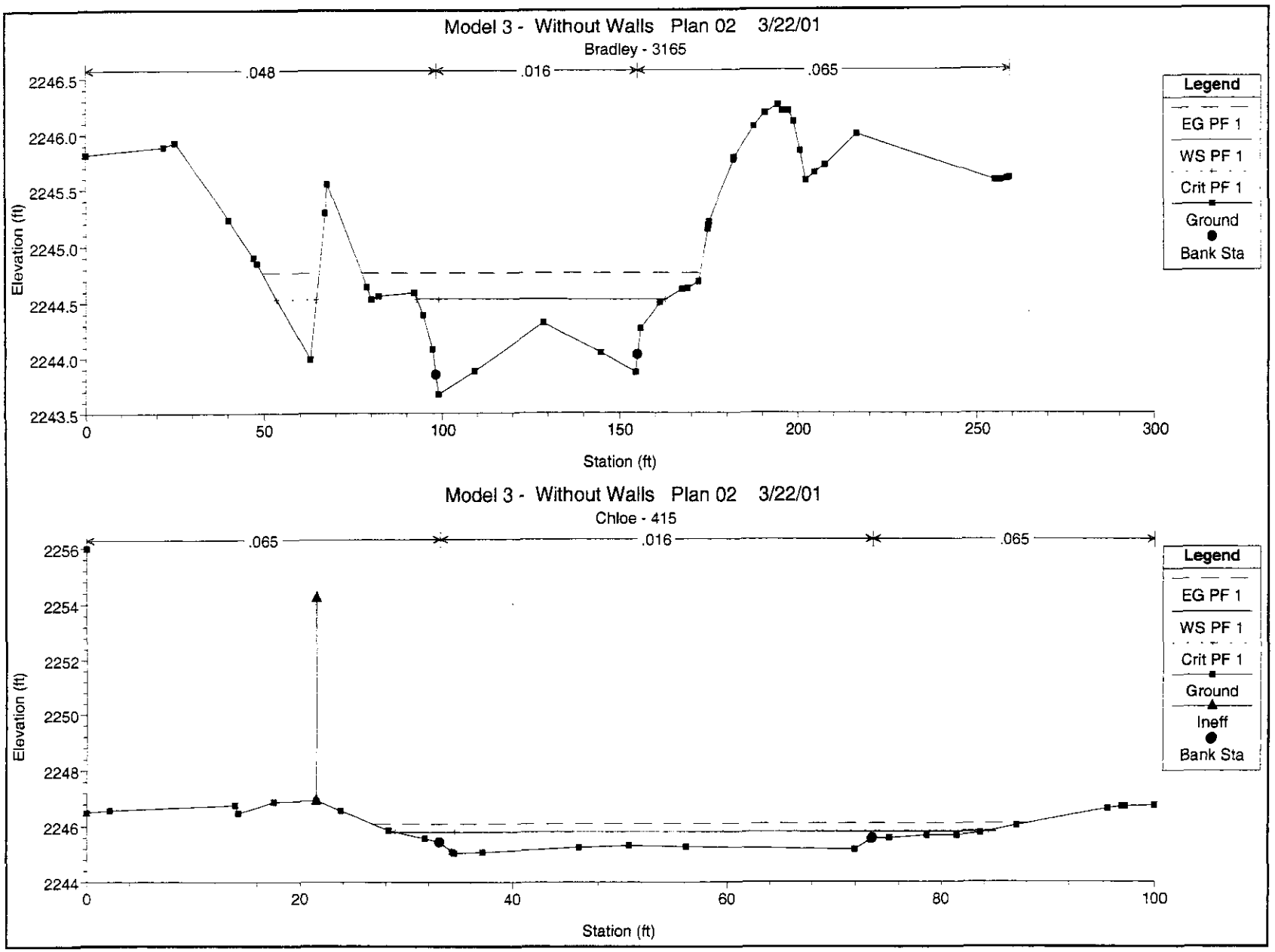

Model 3 - Without Walls Plan 02 3/22/01
Gowan below Malner - 609
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Malner - 509
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

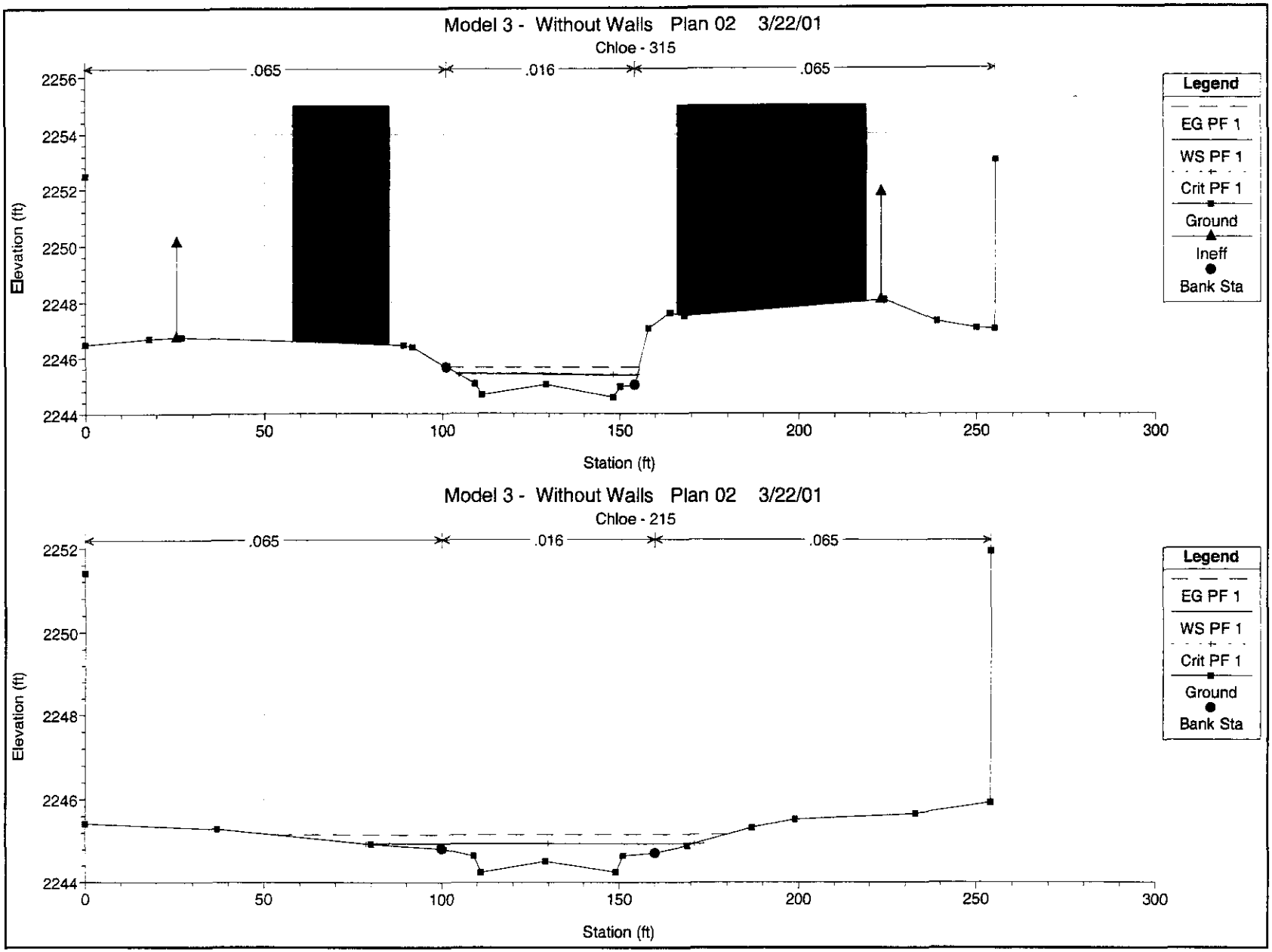

Model 3 - Without Walls Plan 02 3/22/01
Gowan Below Malner - 409
.065
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Gowan Below Malner - 309
.065
.016
.065
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

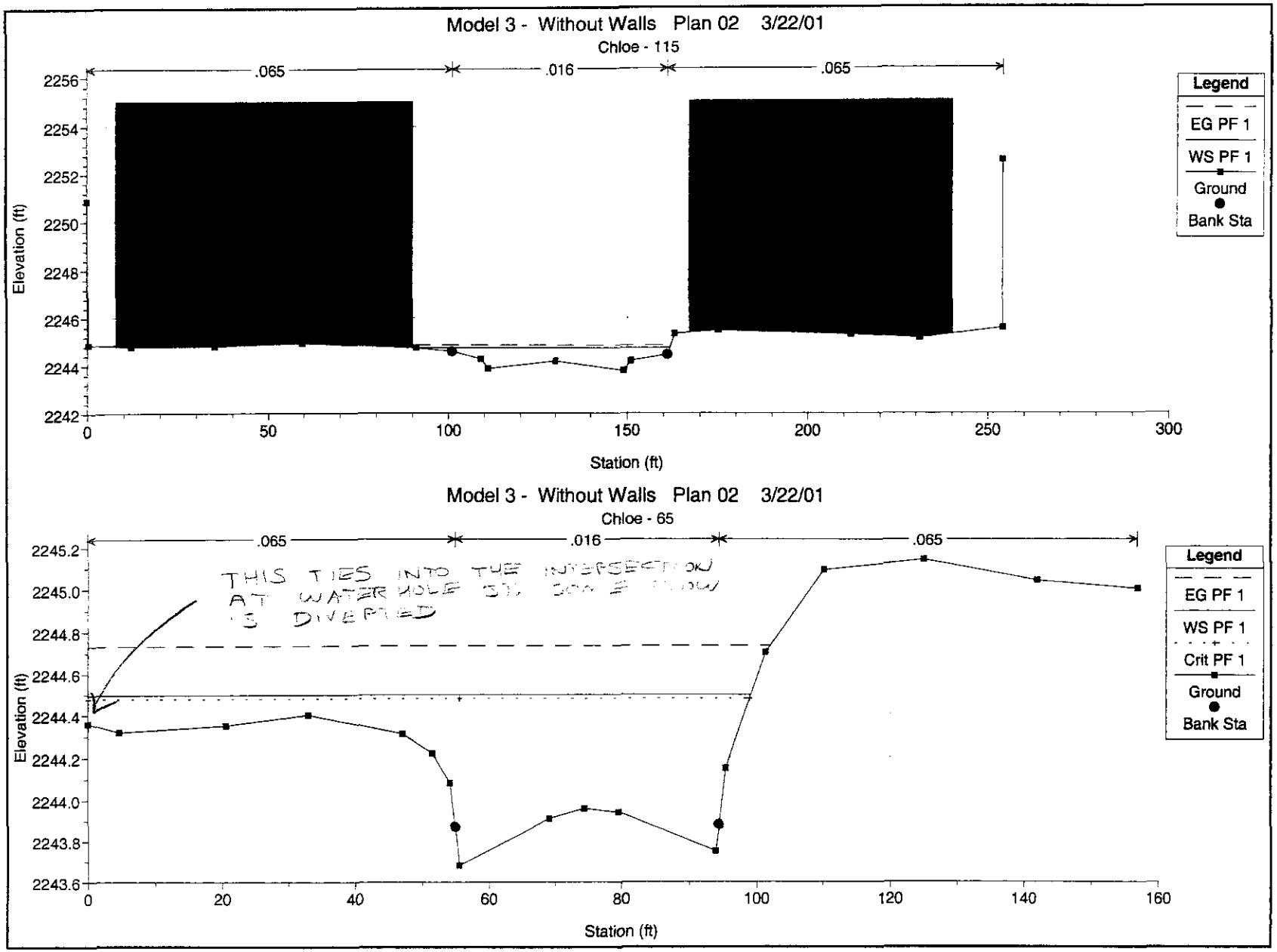

Model 3 - Without Walls Plan 02 3/22/01
Gowan below Malner - 209
.065
.016
.065
Elevation (ft)
2236
2234
2232
2230
2228
2226
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Gowan below Malner - 109
.065
.016
.065
Elevation (ft)
2233
2232
2231
2230
2229
2228
2227
2226
2225
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

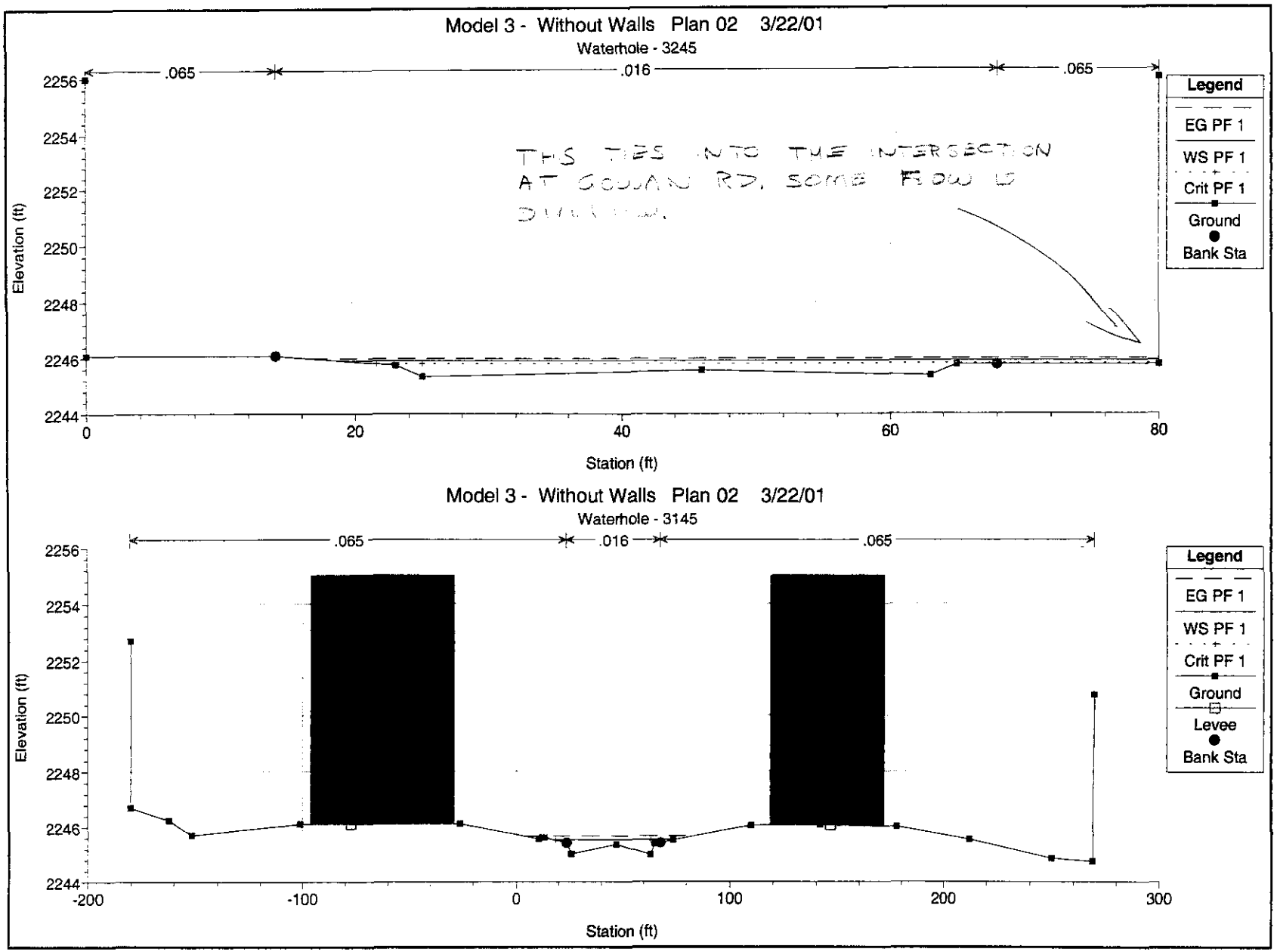

Model 3 - Without Walls Plan 02 3/22/01
Bradley Below Chloe - 3661
.048
.016
.065
Elevation (ft)
2260
2258
2256
2254
2252
2250
2248
2246
2244
0
100
200
300
400
500
600
Station (ft)
Legend
WS PF 1
EG PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Bradley Below Chloe - 3561
.048
.016
.065
Elevation (ft)
2260
2258
2256
2254
2252
2250
2248
2246
2244
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta

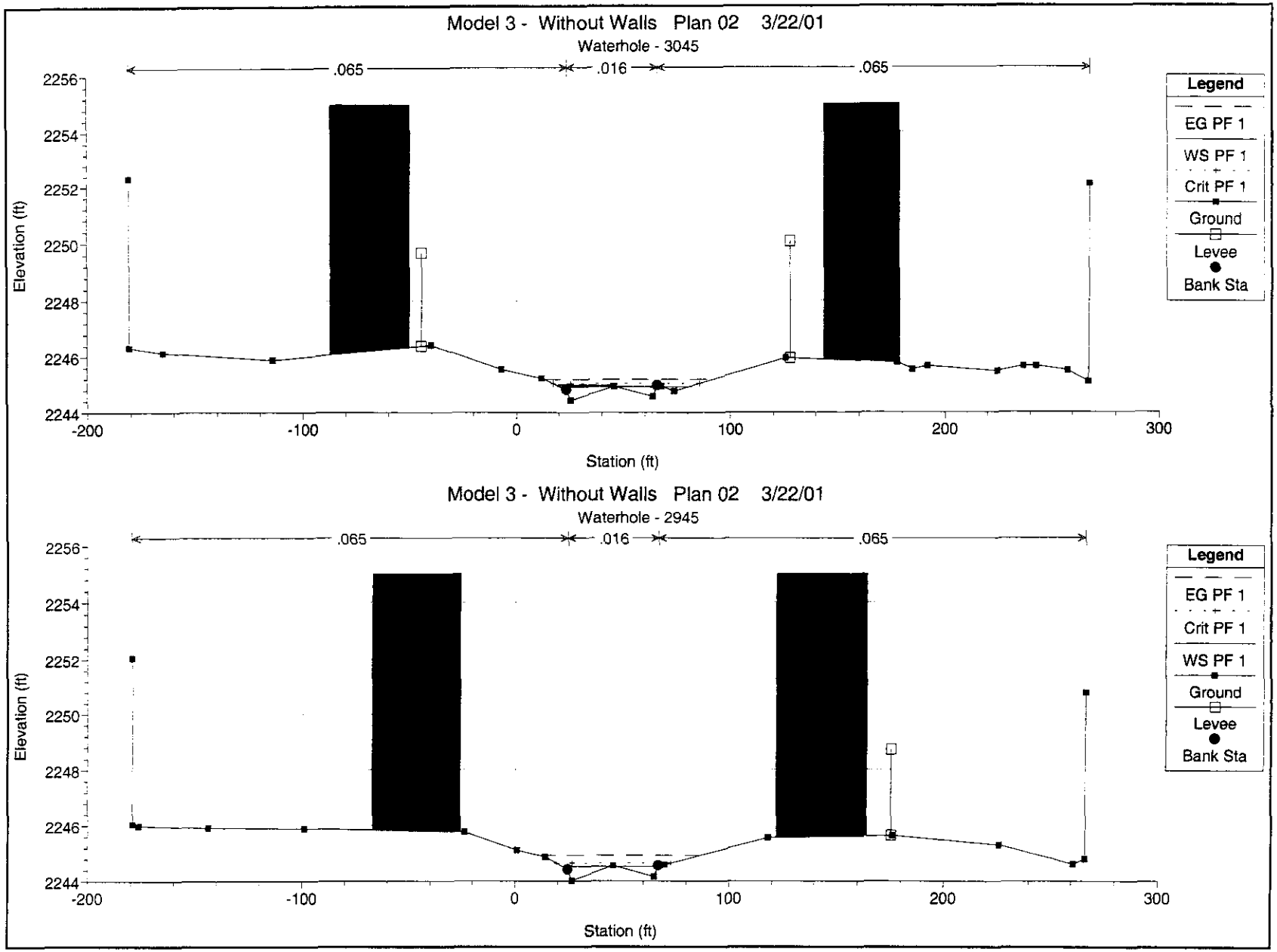

Model 3 - Without Walls Plan 02 3/22/01
Bradley below Chloe - 3461
.048
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Bradley Below Chloe - 3330
.048
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)

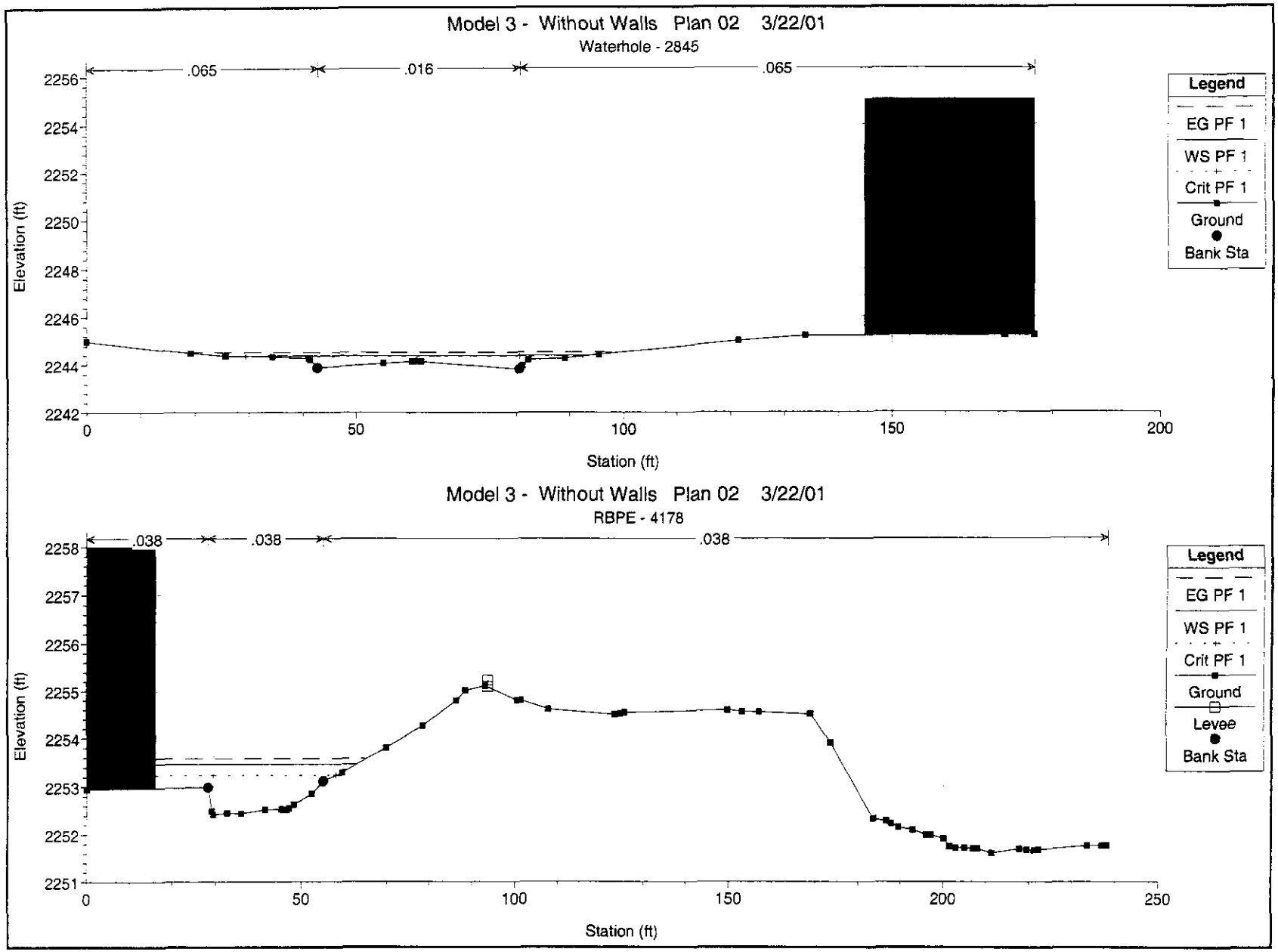

Model 3 - Without Walls Plan 02 3/22/01
Bradley - 3165
.048
.016
.065
2246.5
2246.0
2245.5
2245.0
2244.5
2244.0
2243.5
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Chloe - 415
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta

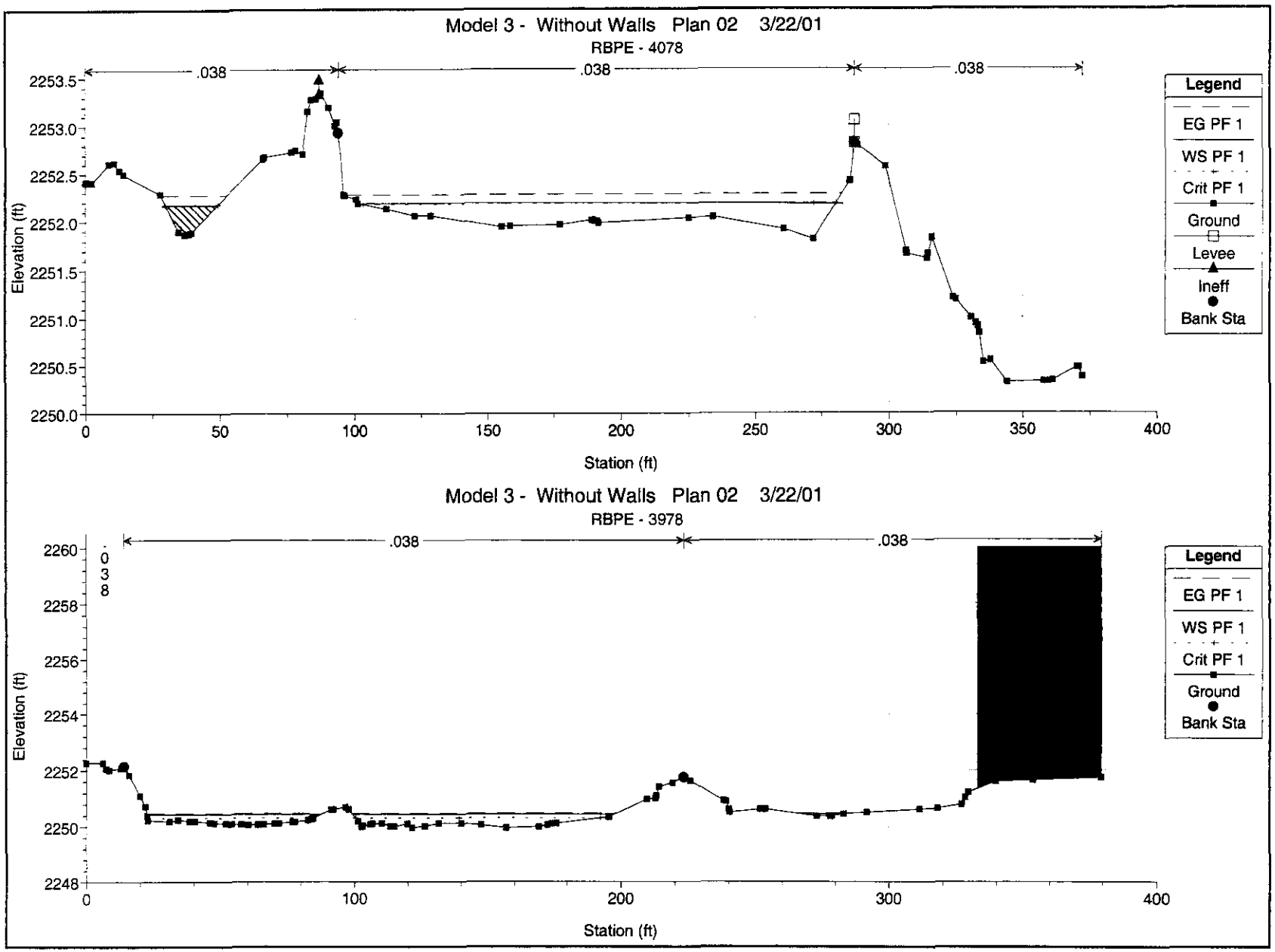

Model 3 - Without Walls Plan 02 3/22/01
Chloe - 315
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
Chloe - 215
.065
.016
.065
2252
2250
2248
2246
2244
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

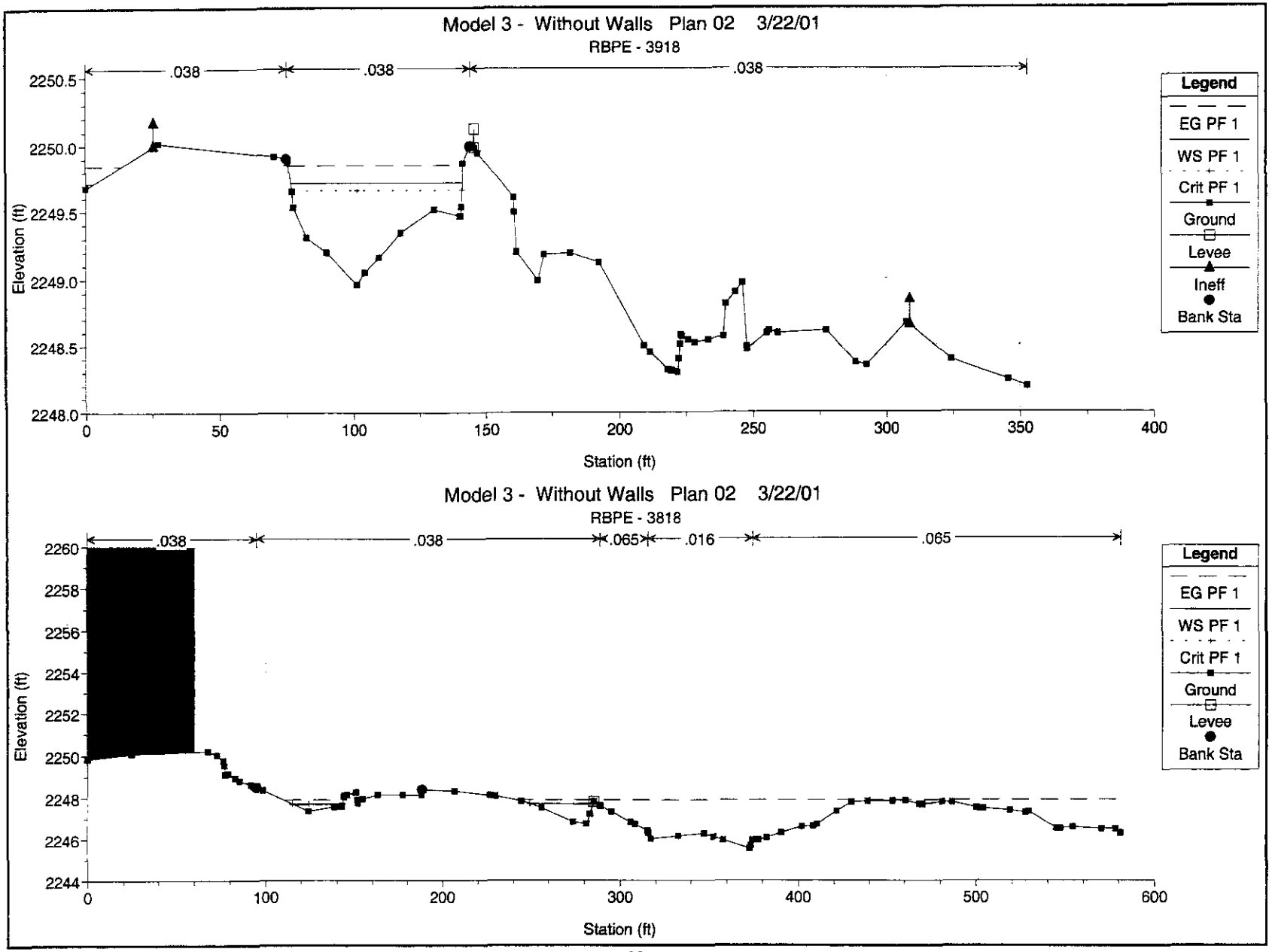

Model 3 - Without Walls Plan 02 3/22/01
Chloe - 115
.065
.016
.065
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Chloe - 65
.065
.016
.065
THIS TIES INTO THE INTERSECTION
AT WATER HOLE 31. SOME FLOW
IS DIVERTED
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

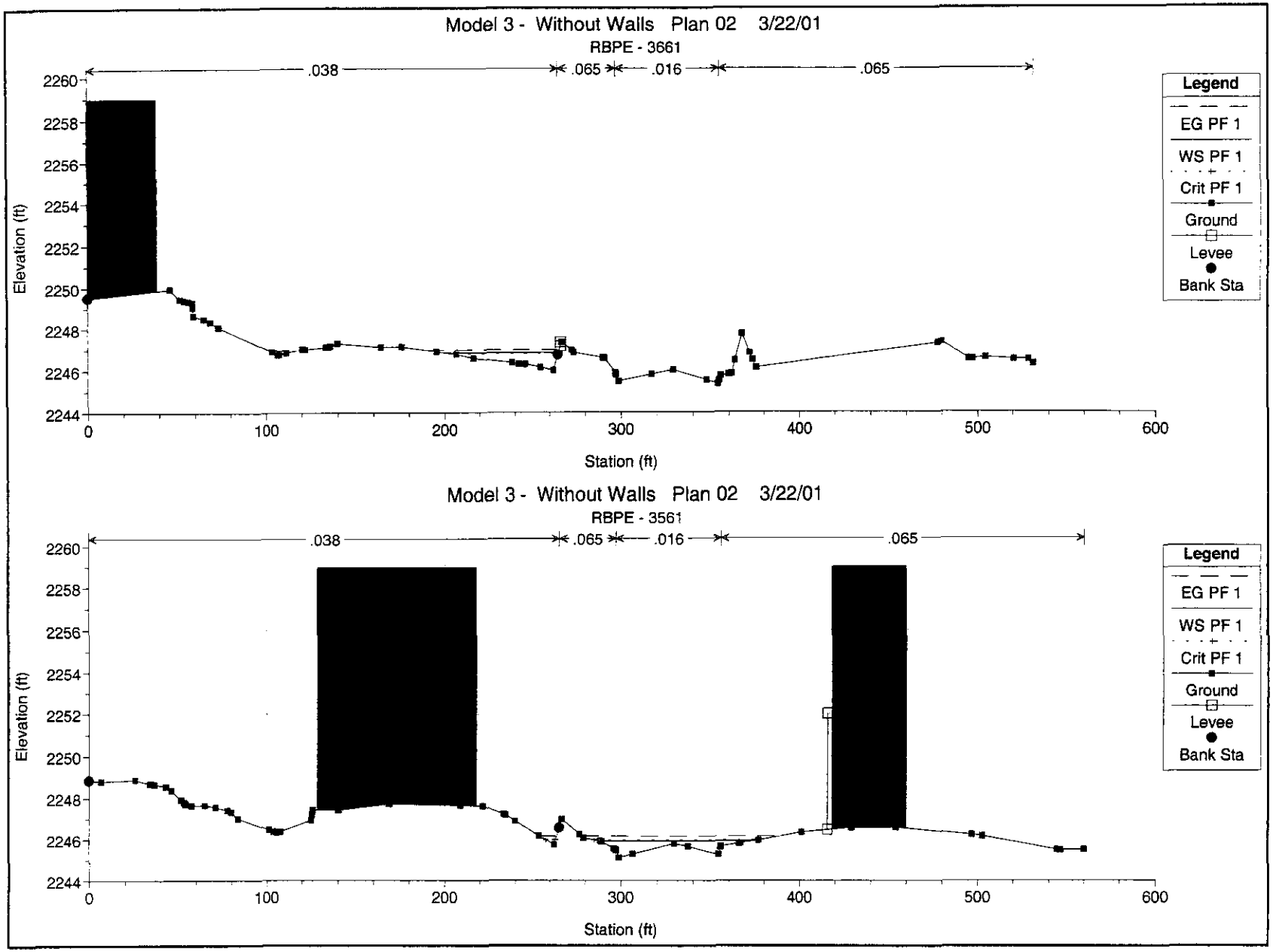

Model 3 - Without Walls Plan 02 3/22/01
Waterhole - 3245
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
0
20
40
60
80
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
THIS TIES INTO THE INTERSECTION
AT SOJAN RD. SOME FLOW TO
Model 3 - Without Walls Plan 02 3/22/01
Waterhole - 3145
.065
.016
.065
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
-200
-100
0
100
200
300
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

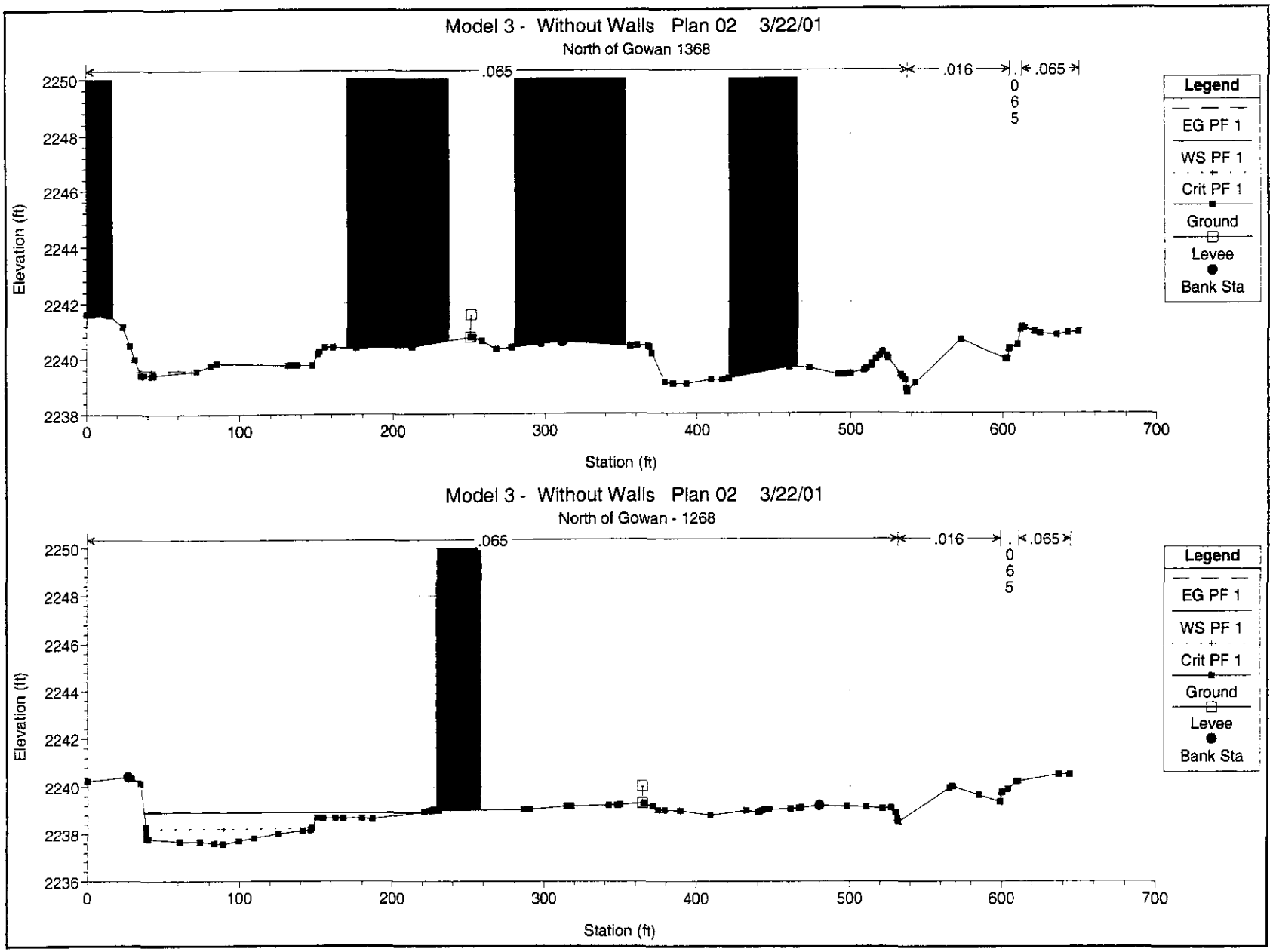

Model 3 - Without Walls Plan 02 3/22/01
Waterhole - 3045
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2256
2254
2252
2250
2248
2246
2244
-200
-100
0
100
200
300
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Waterhole - 2945
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2256
2254
2252
2250
2248
2246
2244
-200
-100
0
100
200
300
Station (ft)

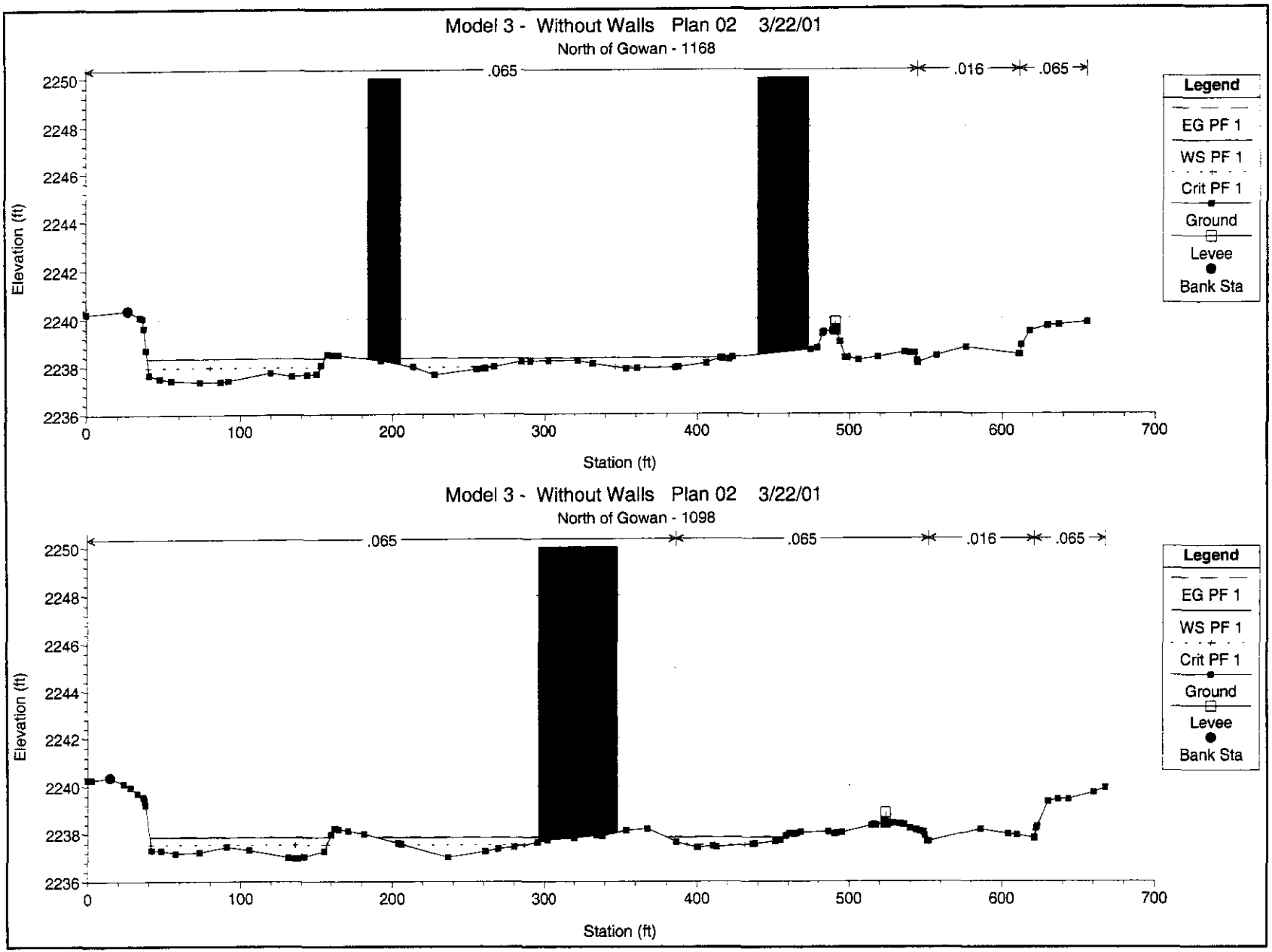

Model 3 - Without Walls Plan 02 3/22/01
Waterhole - 2845
.065
.016
.065
Elevation (ft)
2256
2254
2252
2250
2248
2246
2244
2242
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
RBPE - 4178
.038
.038
.038
Elevation (ft)
2258
2257
2256
2255
2254
2253
2252
2251
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

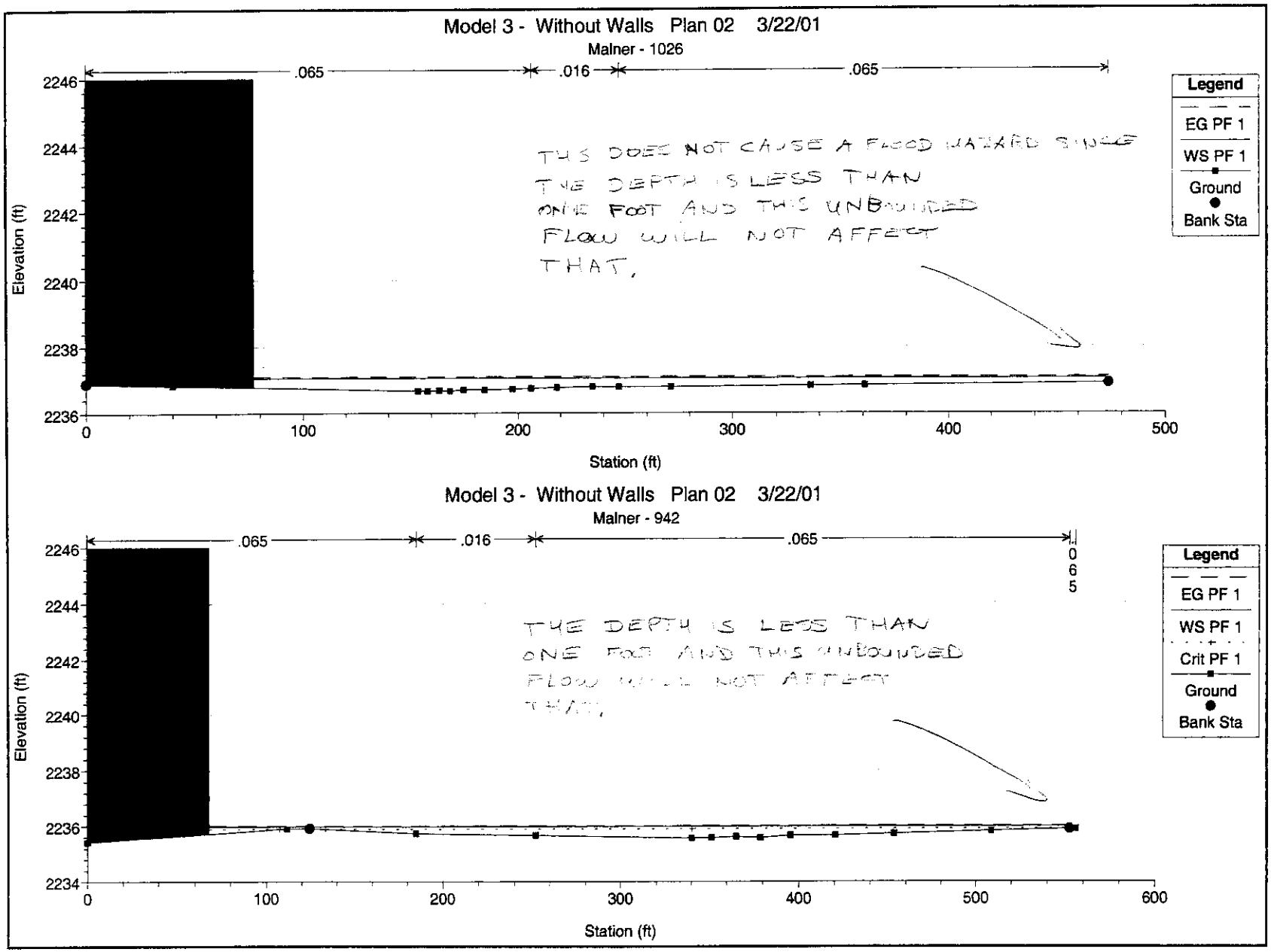

Model 3 - Without Walls Plan 02 3/22/01
RBPE - 4078
.038
.038
.038
2253.5
2253.0
2252.5
2252.0
2251.5
2251.0
2250.5
2250.0
Elevation (ft)
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
RBPE - 3978
.038
.038
.038
2260
2258
2256
2254
2252
2250
2248
Elevation (ft)
0
100
200
300
400
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

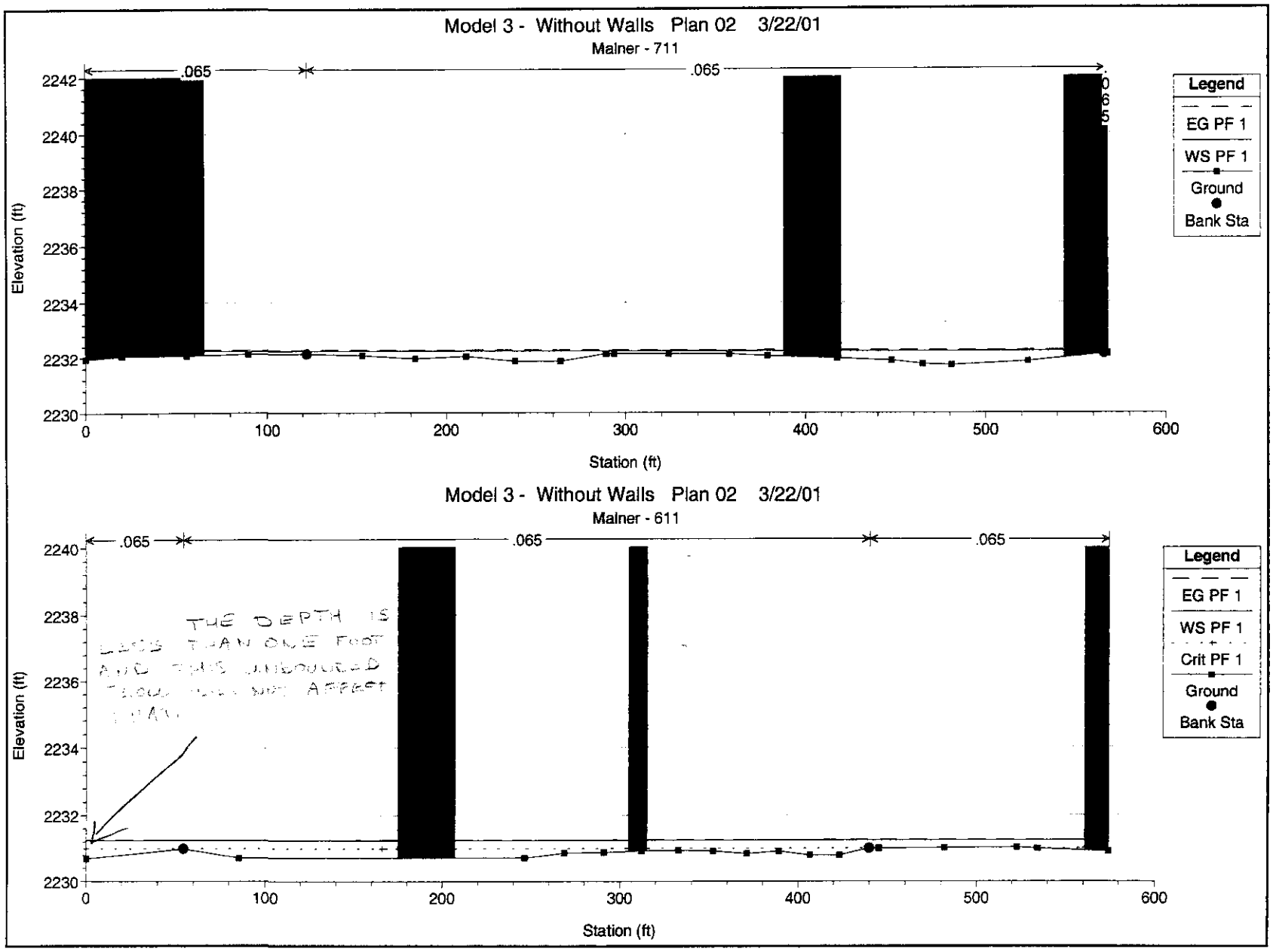

Model 3 - Without Walls Plan 02 3/22/01
RBPE - 3918
.038
.038
.038
2250.5
2250.0
2249.5
2249.0
2248.5
2248.0
Elevation (ft)
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 3 - Without Walls Plan 02 3/22/01
RBPE - 3818
.038
.038
.065
.016
.065
2260
2258
2256
2254
2252
2250
2248
2246
2244
Elevation (ft)
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

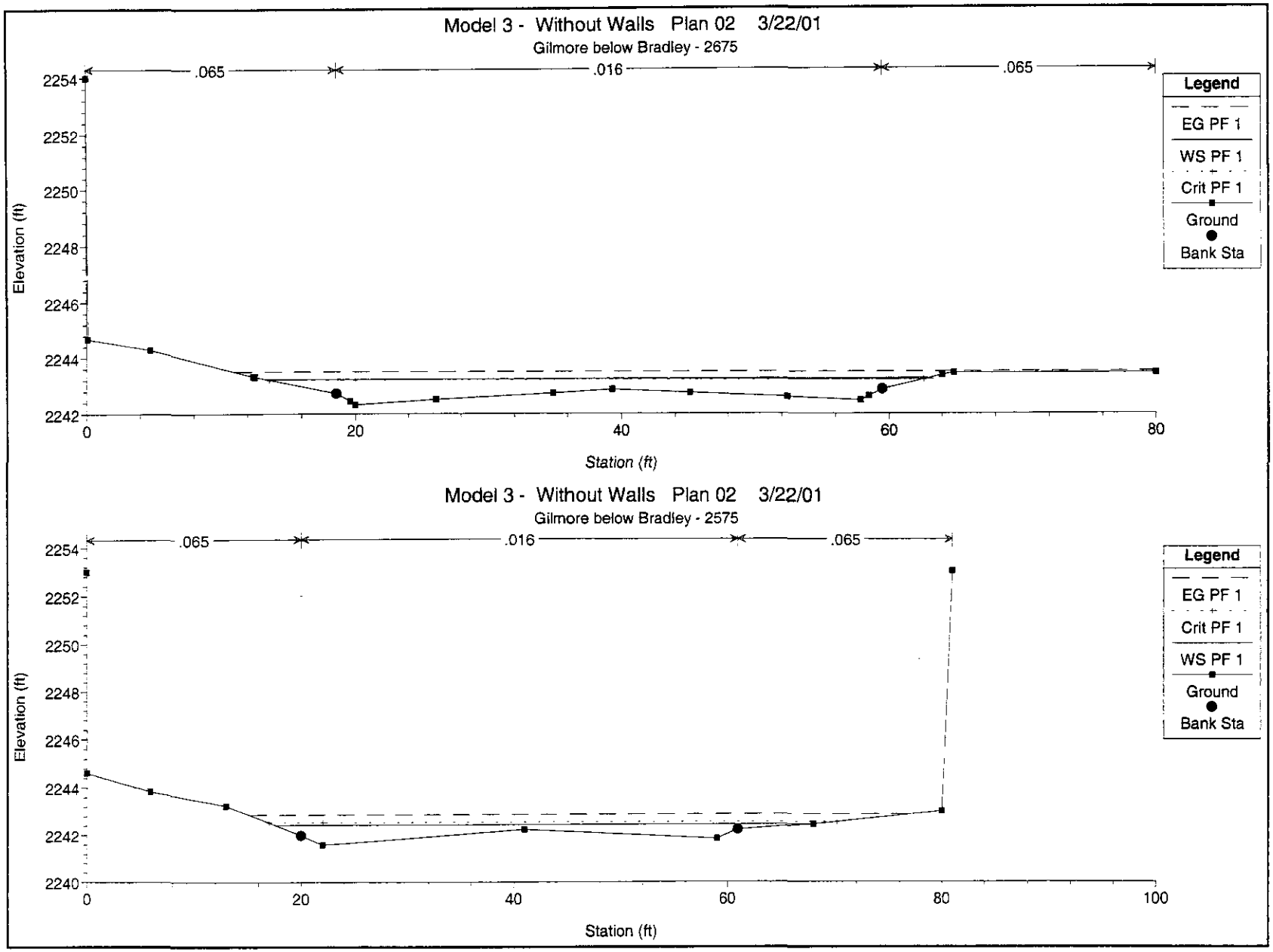

Model 3 - Without Walls Plan 02 3/22/01
RBPE - 3661
.038
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
RBPE - 3561
.038
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

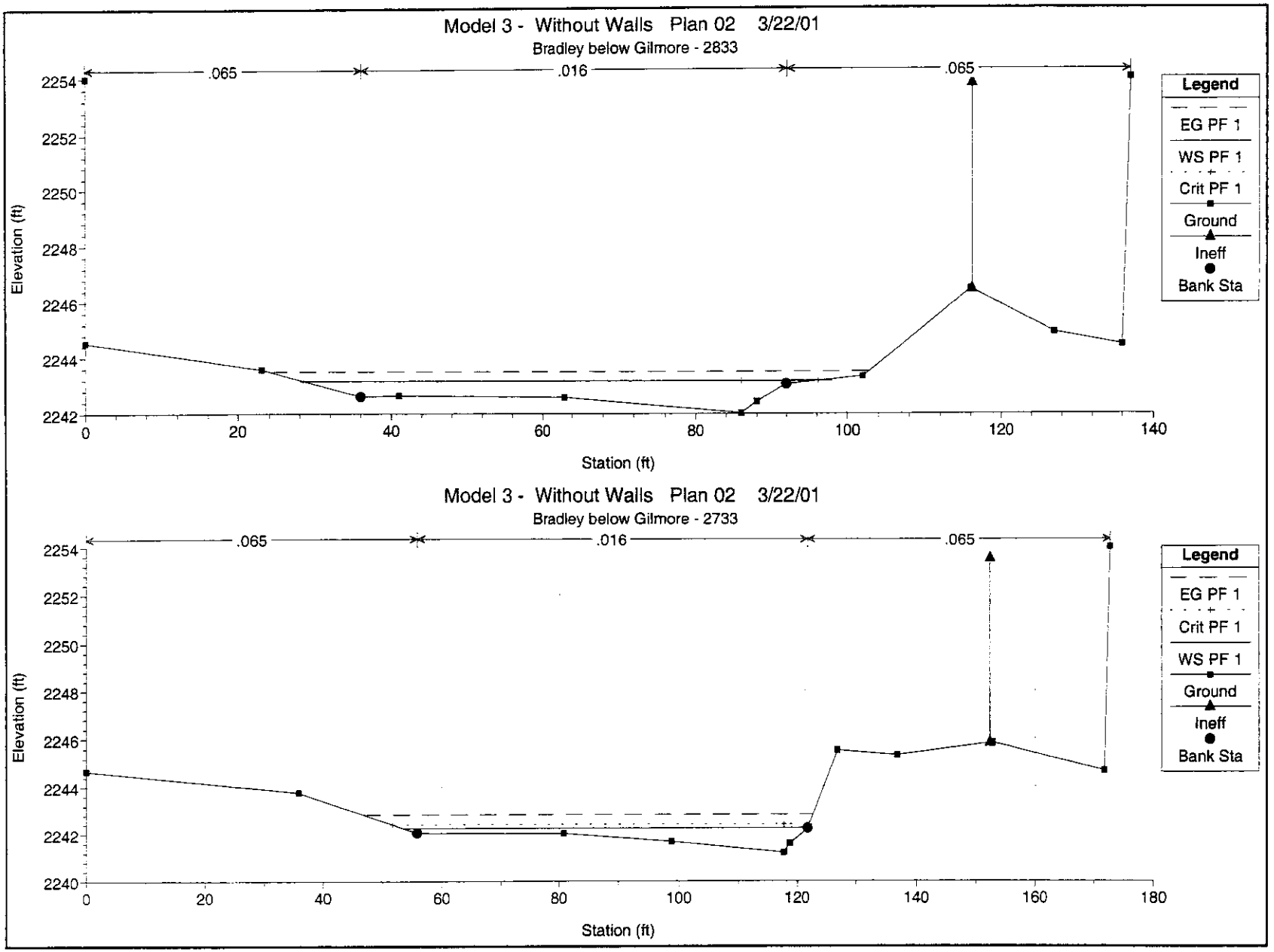

Model 3 - Without Walls Plan 02 3/22/01
North of Gowan 1368
.065
.016
.065
0
6
5
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2250
2248
2246
2244
2242
2240
2238
0
100
200
300
400
500
600
700
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
North of Gowan - 1268
.065
.016
.065
0
6
5
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2250
2248
2246
2244
2242
2240
2238
2236
0
100
200
300
400
500
600
700
Station (ft)

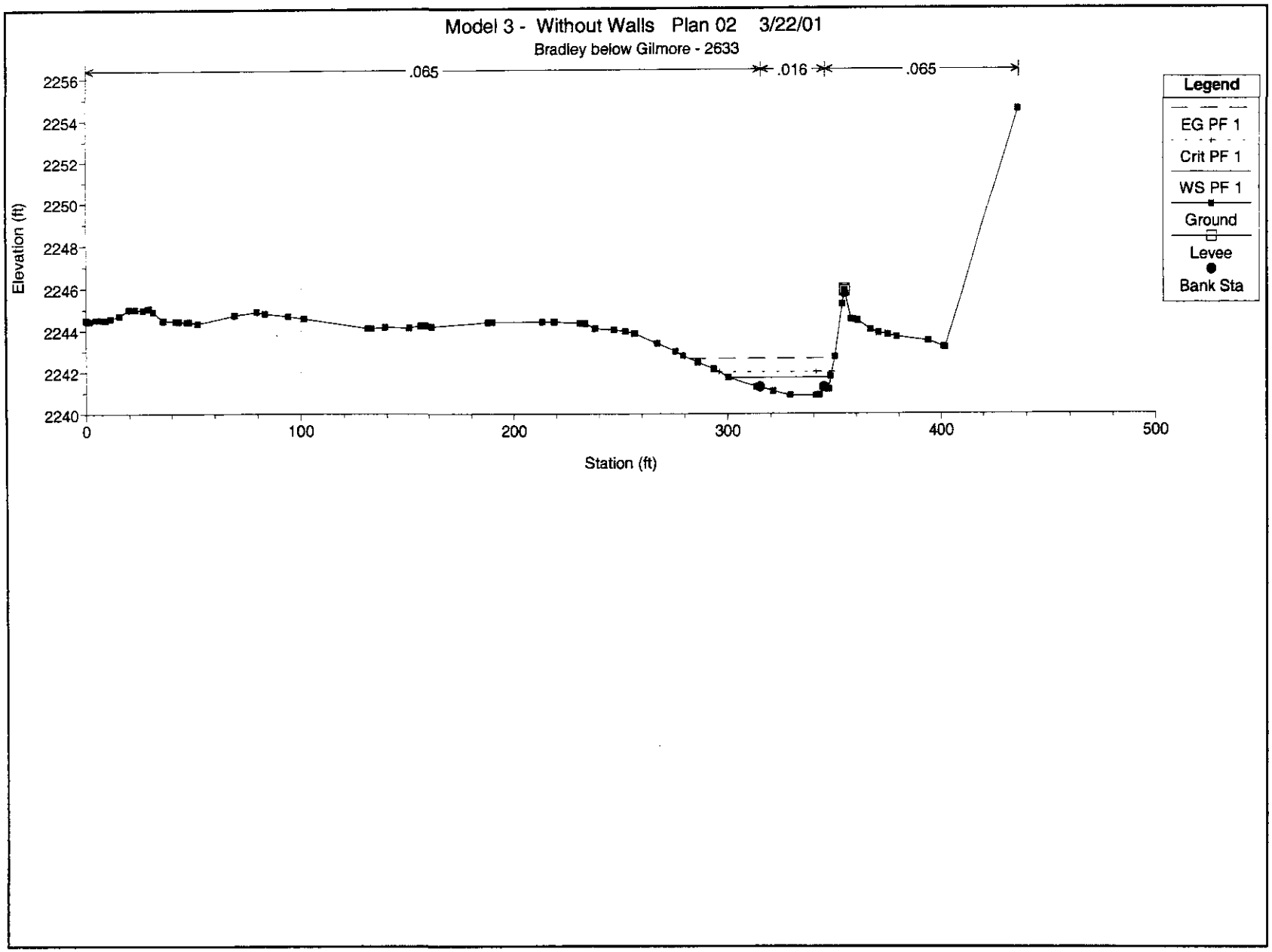

Model 3 - Without Walls Plan 02 3/22/01
North of Gowan - 1168
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
North of Gowan - 1098
.065
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)


Model 3 - Without Walls Plan 02 3/22/01
Malner - 1026
.065
.016
.065
2246
2244
2242
2240
2238
2236
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
THIS DOES NOT CAUSE A FLOOD HAZARD SINCE THE DEPTH IS LESS THAN ONE FOOT AND THIS UNBOUNDED FLOW WILL NOT AFFECT THAT.
Model 3 - Without Walls Plan 02 3/22/01
Malner - 942
.065
.016
.065
.065
2246
2244
2242
2240
2238
2236
2234
Elevation (ft)
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
THE DEPTH IS LESS THAN ONE FOOT AND THIS UNBOUNDED FLOW WILL NOT AFFECT THAT.


Model 3 - Without Walls Plan 02 3/22/01
Malner - 711
.065
.065
.065
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2242
2240
2238
2236
2234
2232
2230
0
100
200
300
400
500
600
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Malner - 611
.065
.065
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
THE DEPTH IS
Elevation (ft)
2240
2238
2236
2234
2232
2230
0
100
200
300
400
500
600
Station (ft)


Model 3 - Without Walls Plan 02 3/22/01
Gilmore below Bradley - 2675
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Gilmore below Bradley - 2575
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Model 3 - Without Walls Plan 02 3/22/01
Bradley below Gilmore - 2833
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Model 3 - Without Walls Plan 02 3/22/01
Bradley below Gilmore - 2733
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Model 3 - Without Walls Plan 02 3/22/01
Bradley below Gilmore - 2633
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2256
2254
2252
2250
2248
2246
2244
2242
2240
0
100
200
300
400
500
Station (ft)

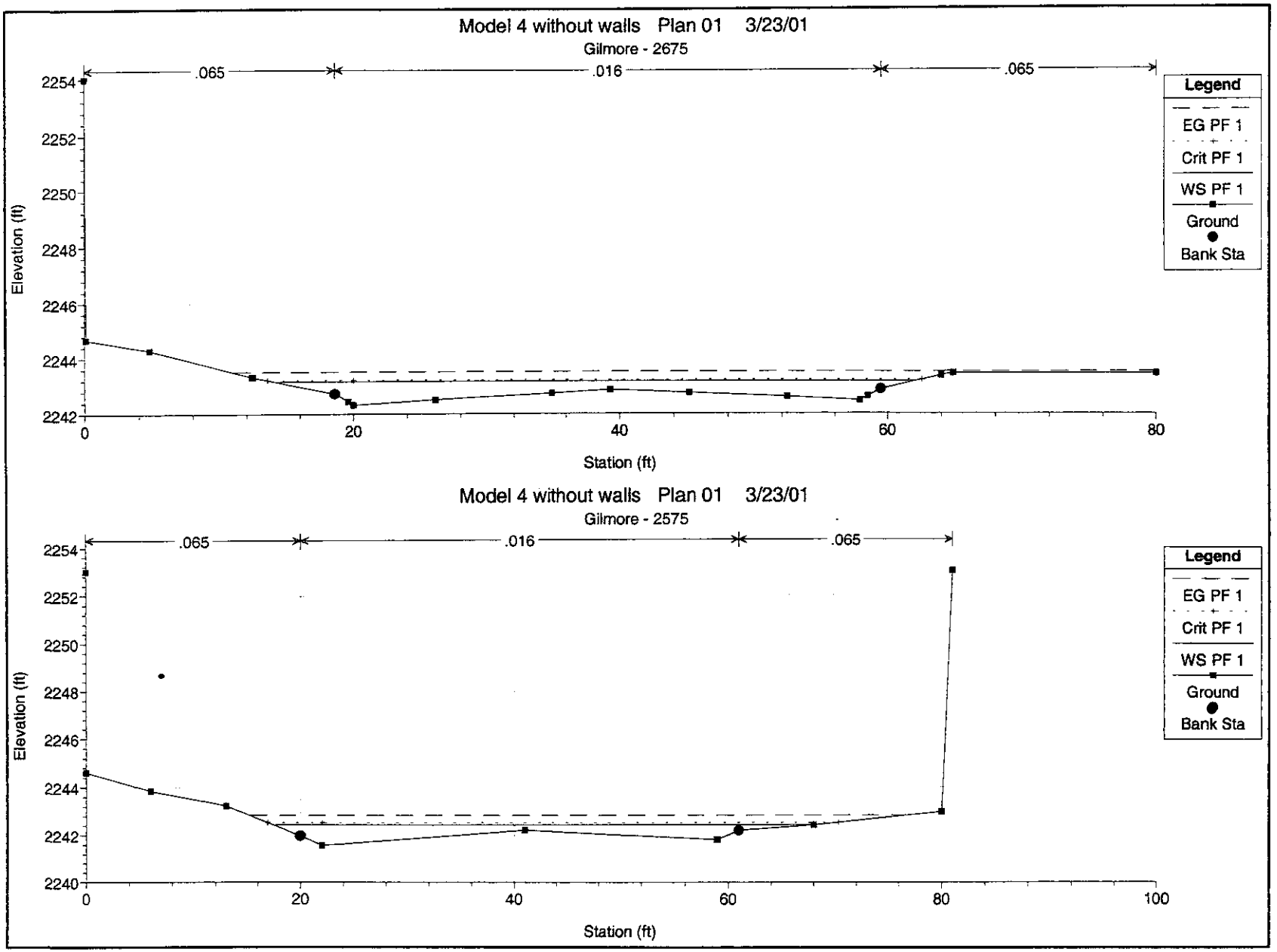
Model 4
Without Walls, Northeast Portion

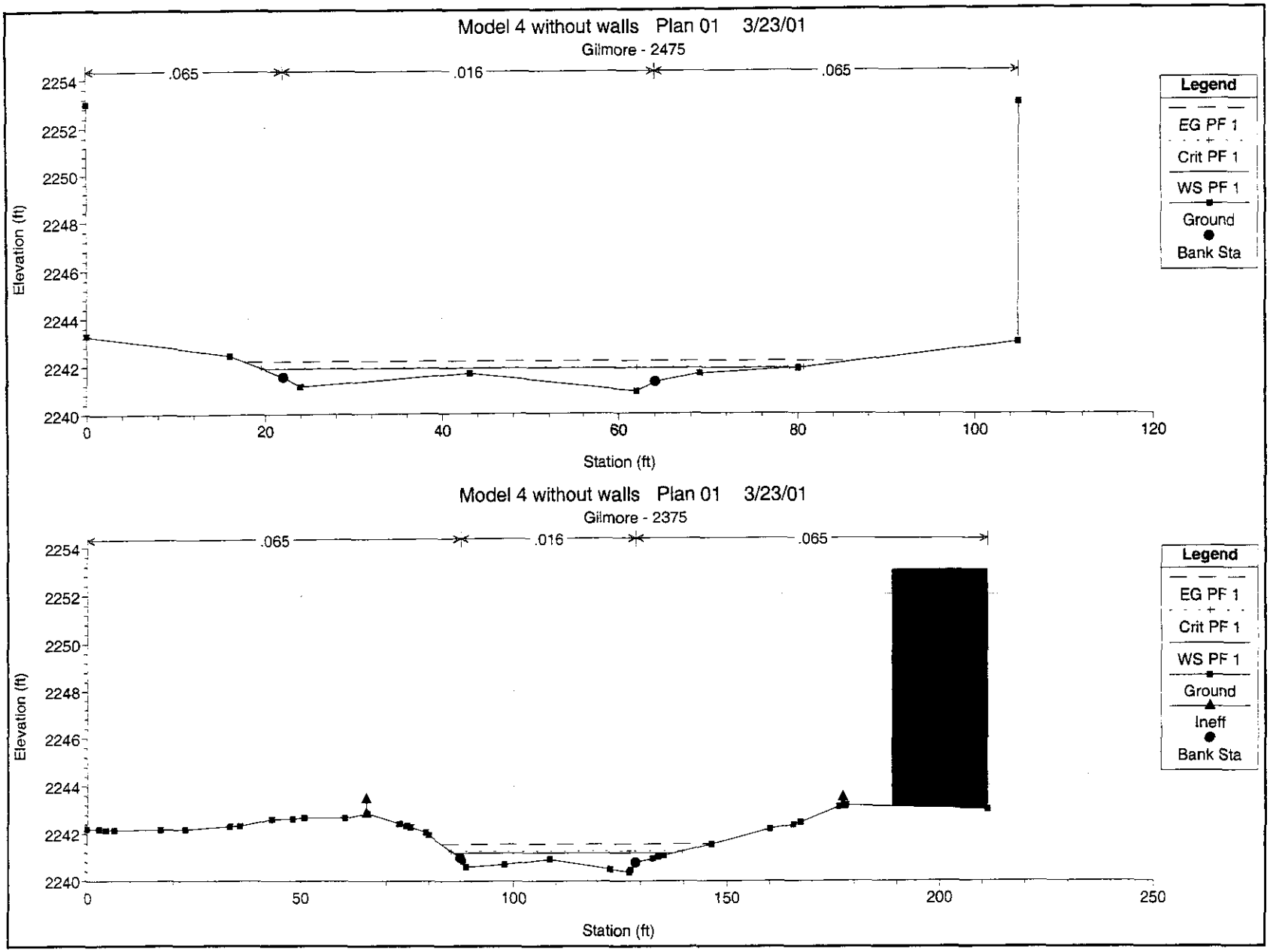
HEC-RAS Plan: Plan 01

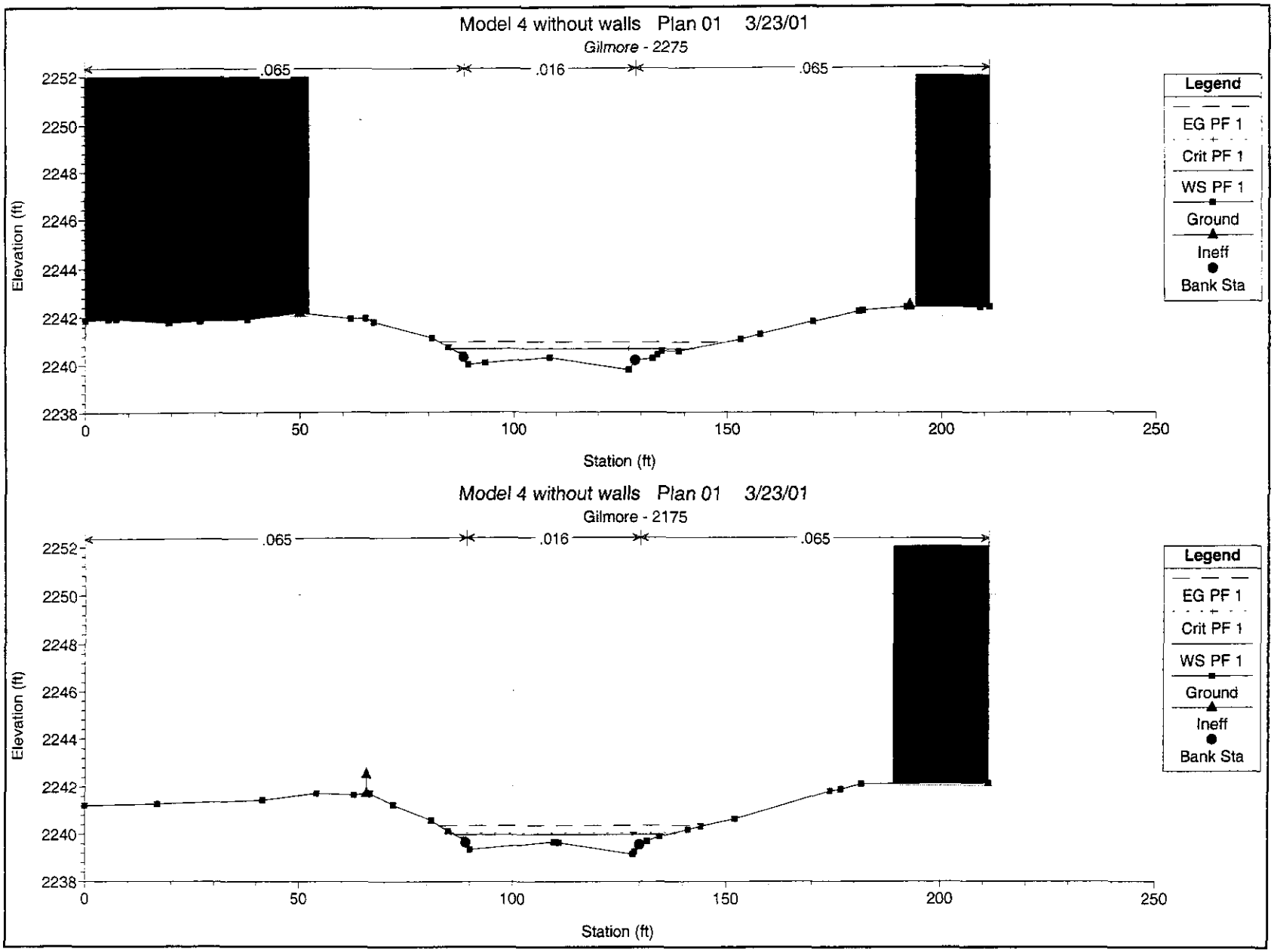
River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GB	Sweetwater North	940	55.00	2224.90	2225.91	2225.83	2226.04	0.002554	2.89	21.02	44.89	0.73
GB	Sweetwater North	840	55.00	2224.58	2225.49	2225.49	2225.68	0.005140	3.60	18.11	47.16	1.01
GB	Sweetwater North	719	55.00	2223.70	2224.67	2224.72	2224.94	0.007889	4.32	15.90	42.88	1.24
GB	Sweetwater North	655	55.00	2223.38	2224.01	2224.10	2224.33	0.011357	4.64	13.85	45.56	1.44
GB	Sweetwater North	555	55.00	2222.83	2223.34	2223.61	2224.59	0.062446	9.10	6.77	29.07	3.23
GB	Sweetwater North	455	55.00	2222.22	2222.76	2222.98	2223.64	0.041836	7.59	8.03	33.08	2.66
GB	Sweetwater North	355	55.00	2221.86	2222.09	2222.32	2223.09	0.050907	8.12	7.46	32.75	2.91
GB	Sweetwater North	266	55.00	2220.68	2221.70	2221.54	2221.78	0.001892	2.40	27.77	62.99	0.62
GB	Sweetwater North	166	55.00	2220.47	2221.60		2221.66	0.000738	2.02	33.99	52.99	0.42
GB	Sweetwater South	552	49.00	2224.95	2225.72	2225.76	2225.96	0.013457	4.13	12.92	54.56	1.49
GB	Sweetwater South	482	49.00	2224.44	2225.19	2225.20	2225.38	0.005786	3.55	15.37	44.76	1.05
GB	Sweetwater South	382	49.00	2223.80	2224.49	2224.53	2224.73	0.007942	3.95	13.85	43.70	1.21
GB	Sweetwater South	282	49.00	2223.10	2223.90	2224.03	2224.29	0.020991	5.24	11.04	43.56	1.87
GB	Sweetwater South	182	49.00	2222.47	2223.47	2223.47	2223.66	0.006269	3.61	18.61	46.15	1.08
GB	Sweetwater South	118	49.00	2221.99	2222.73	2222.82	2223.05	0.014799	4.85	11.90	45.30	1.59
GB	Sweetwater South	6	49.00	2221.31	2221.77	2222.01	2222.87	0.061953	8.52	6.26	29.00	3.17
GB	cutty	2888	149.00	2243.20	2244.04	2244.09	2244.44	0.005006	5.14	35.26	74.27	1.09
GB	cutty	2638	149.00	2242.93	2243.87	2243.90	2244.21	0.004125	4.78	43.10	108.84	0.99
GB	cutty	2488	149.00	2242.24	2243.19	2243.23	2243.56	0.004774	5.01	42.65	99.78	1.06
GB	cutty	2373	149.00	2241.47	2242.08	2242.24	2242.62	0.016286	5.89	27.39	85.36	1.75
GB	cutty	2273	149.00	2240.77	2242.01	2241.81	2242.22	0.001769	3.75	52.56	77.65	0.68
GB	cutty	2123	149.00	2240.53	2241.48	2241.48	2241.82	0.004069	4.78	36.05	89.45	0.99
GB	cutty	1973	149.00	2239.71	2240.63	2240.73	2241.08	0.006389	5.47	34.81	74.43	1.21
GB	cutty	1851	149.00	2239.08	2240.07	2240.15	2240.52	0.006402	5.42	27.48	73.70	1.21
GB	cutty	1751	149.00	2238.61	2239.63	2239.68	2240.03	0.005484	5.08	29.30	72.21	1.12
GB	cutty	1651	149.00	2238.24	2238.99	2239.08	2239.43	0.006704	5.31	28.04	78.15	1.22
GB	cutty	1551	149.00	2236.56	2237.42	2237.71	2238.37	0.020380	7.86	20.23	49.82	2.05
GB	cutty	1451	149.00	2236.63	2237.42	2237.26	2237.60	0.025233	2.31	66.66	159.35	0.57
GB	cutty	1351	149.00	2235.64	2236.64		2236.65	0.002761	1.08	144.49	196.82	0.21
GB	cutty	1251	149.00	2235.45	2236.24	2236.07	2236.29	0.016420	2.08	85.06	341.49	0.47
GB	cutty	1151	149.00	2234.70	2235.44	2235.18	2235.45	0.004920	1.04	157.40	351.50	0.25
GB	cutty	1051	149.00	2233.73	2234.30	2234.23	2234.37	0.042323	2.31	71.07	280.72	0.89
GB	cutty	951	149.00	2230.87	2231.89	2231.89	2232.14	0.013705	3.99	37.35	73.33	0.99
GB	cutty	618	149.00	2228.37	2229.28	2228.96	2229.32	0.010121	1.61	92.33	155.90	0.67
GB	cutty	518	149.00	2227.50	2228.75	2228.25	2228.77	0.003435	1.12	133.37	175.02	0.26
GB	cutty	418	149.00	2226.70	2228.35	2227.73	2228.38	0.004764	1.25	119.54	170.25	0.28
GB	cutty	318	149.00	2226.27	2227.04	2227.01	2227.20	0.065323	3.12	47.78	122.31	0.88
GB	cutty	218	149.00	2224.55	2226.07	2225.41	2226.11	0.004089	1.51	98.89	94.27	0.26
GB	cutty	118	149.00	2224.39	2225.73	2225.10	2225.76	0.003001	1.19	125.42	136.98	0.22

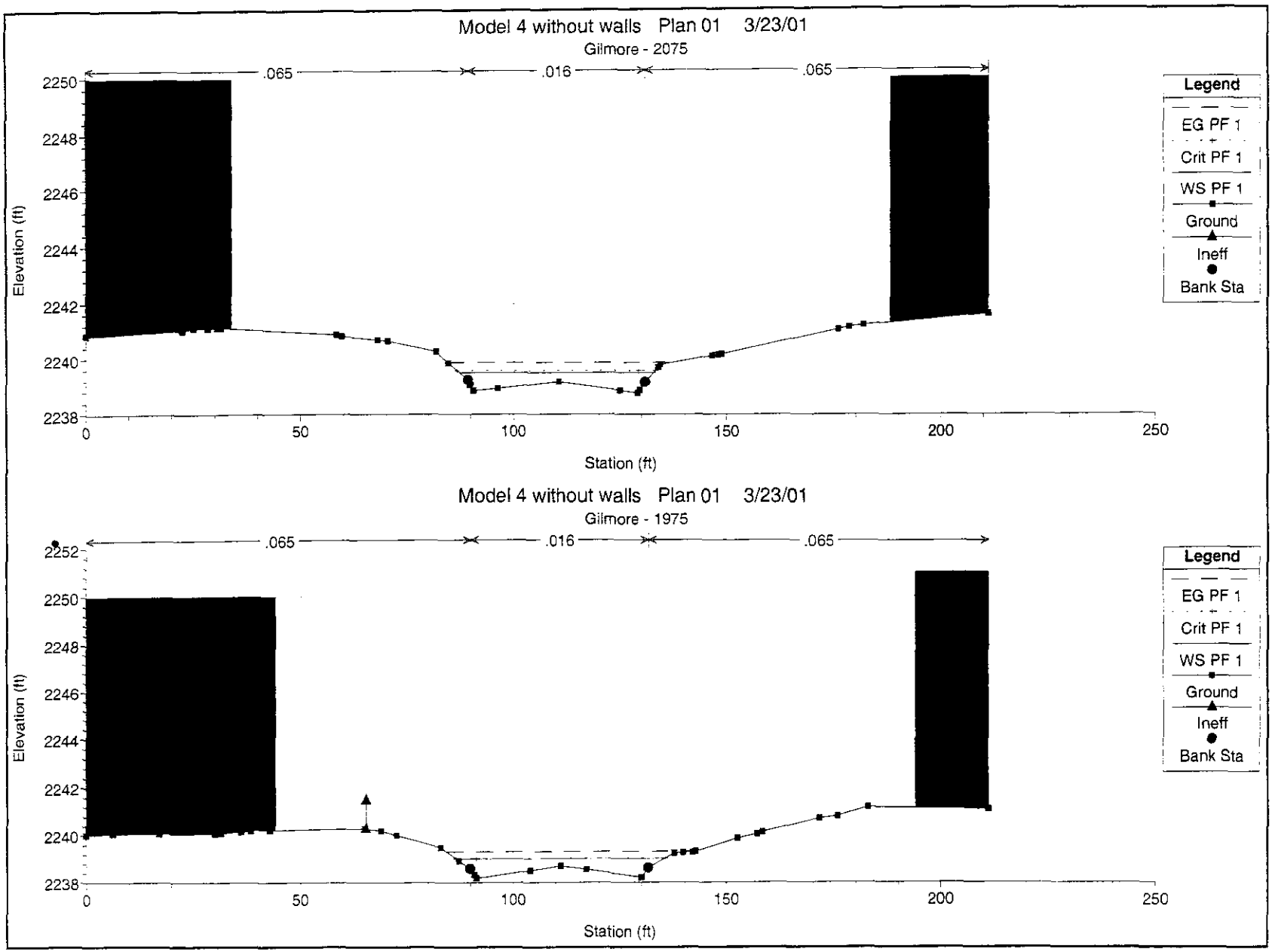
HEC-RAS Plan: Plan 01 (Continued)

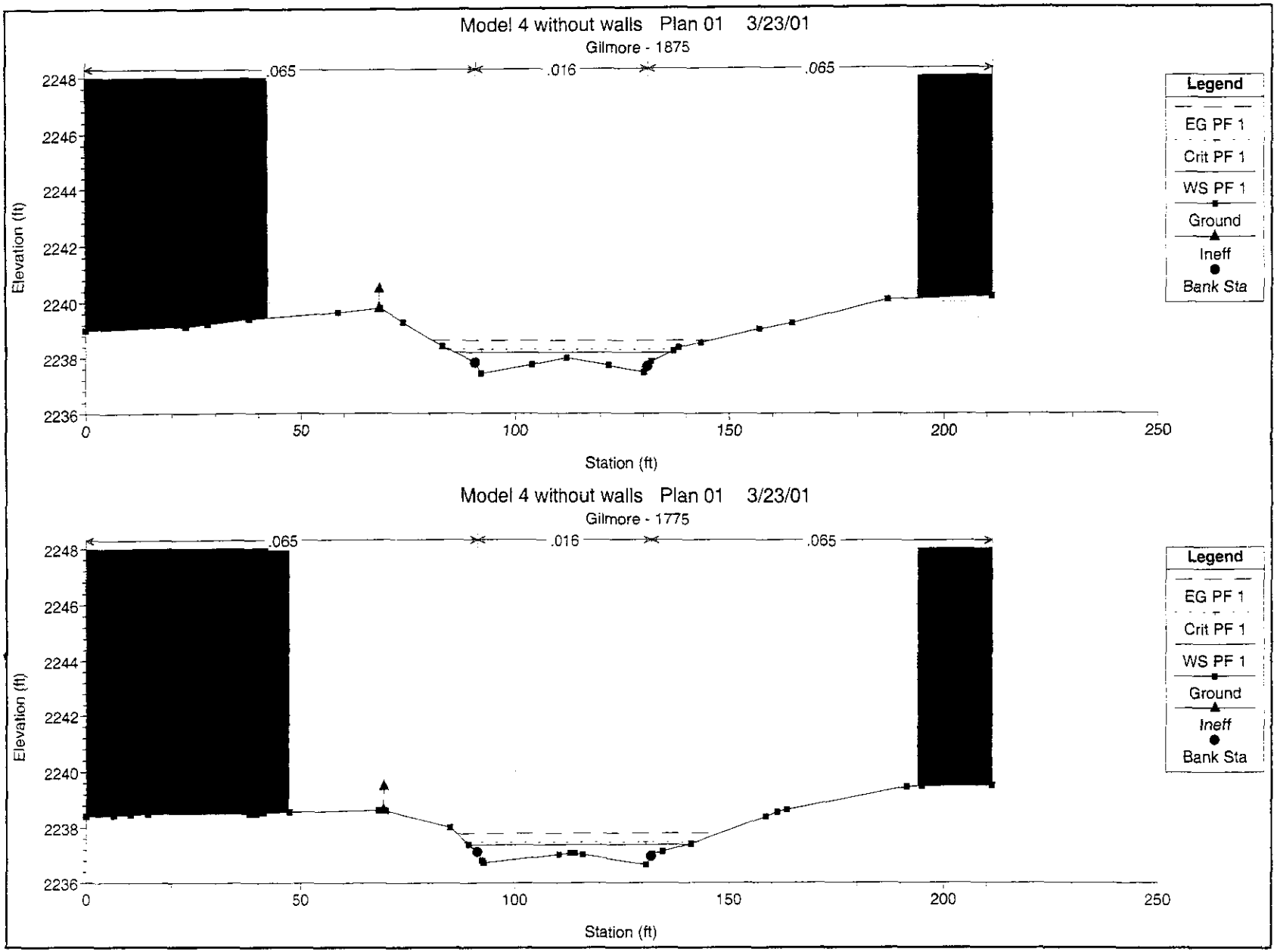
River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GB	Dole	35	104.00	2219.84	2221.08	2221.08	2221.35	0.005825	4.35	27.67	56.03	1.10
GB	Dole	0	104.00	2219.62	2220.53	2220.88	2221.05	0.011582	5.88	19.72	44.83	1.54
north zone	Gilmore	2675	104.00	2242.32	2243.17	2243.21	2243.51	0.008006	4.73	28.23	46.09	1.14
north zone	Gilmore	2575	104.00	2241.59	2242.46	2242.55	2242.85	0.007850	5.08	21.51	50.98	1.27
north zone	Gilmore	2475	104.00	2240.93	2241.90	2241.93	2242.20	0.005314	4.49	25.25	50.13	1.08
north zone	Gilmore	2375	104.00	2240.37	2241.18	2241.27	2241.57	0.007569	5.03	22.37	51.76	1.26
north zone	Gilmore	2275	104.00	2239.78	2240.66	2240.68	2240.96	0.004840	4.43	25.24	55.88	1.03
north zone	Gilmore	2175	104.00	2239.15	2239.97	2240.05	2240.35	0.007068	4.96	22.30	49.94	1.23
north zone	Gilmore	2075	104.00	2238.76	2239.51	2239.56	2239.86	0.006799	4.89	21.77	45.21	1.20
north zone	Gilmore	1975	104.00	2238.18	2239.00	2239.02	2239.30	0.004857	4.41	24.86	48.63	1.03
north zone	Gilmore	1875	104.00	2237.43	2238.20	2238.31	2238.64	0.008845	5.32	21.17	50.21	1.36
north zone	Gilmore	1775	104.00	2236.85	2237.38	2237.47	2237.79	0.007897	5.14	21.76	51.03	1.29
north zone	Gilmore	1675	104.00	2235.84	2236.46	2236.60	2236.94	0.009399	5.44	21.02	49.93	1.40
north zone	Gilmore	1575	104.00	2235.10	2235.99	2236.04	2236.32	0.005189	4.73	25.42	58.30	1.15
north zone	Gilmore	1383	104.00	2233.16	2233.69	2233.83	2234.13	0.025515	6.60	18.56	74.61	1.98
north zone	Gilmore	1171	104.00	2231.11	2232.50	2232.00	2232.50	0.002253	0.76	136.96	257.61	0.18
north zone	Gilmore	994	104.00	2230.89	2231.46	2231.46	2231.83	0.017476	3.33	31.27	58.29	0.98
north zone	Gilmore	797	104.00	2228.48	2229.85	2229.07	2229.89	0.001426	0.85	159.65	243.53	0.14
north zone	Gilmore	689	104.00	2239.00	2228.68	2228.68	2229.12	0.077805		19.67	23.00	0.00

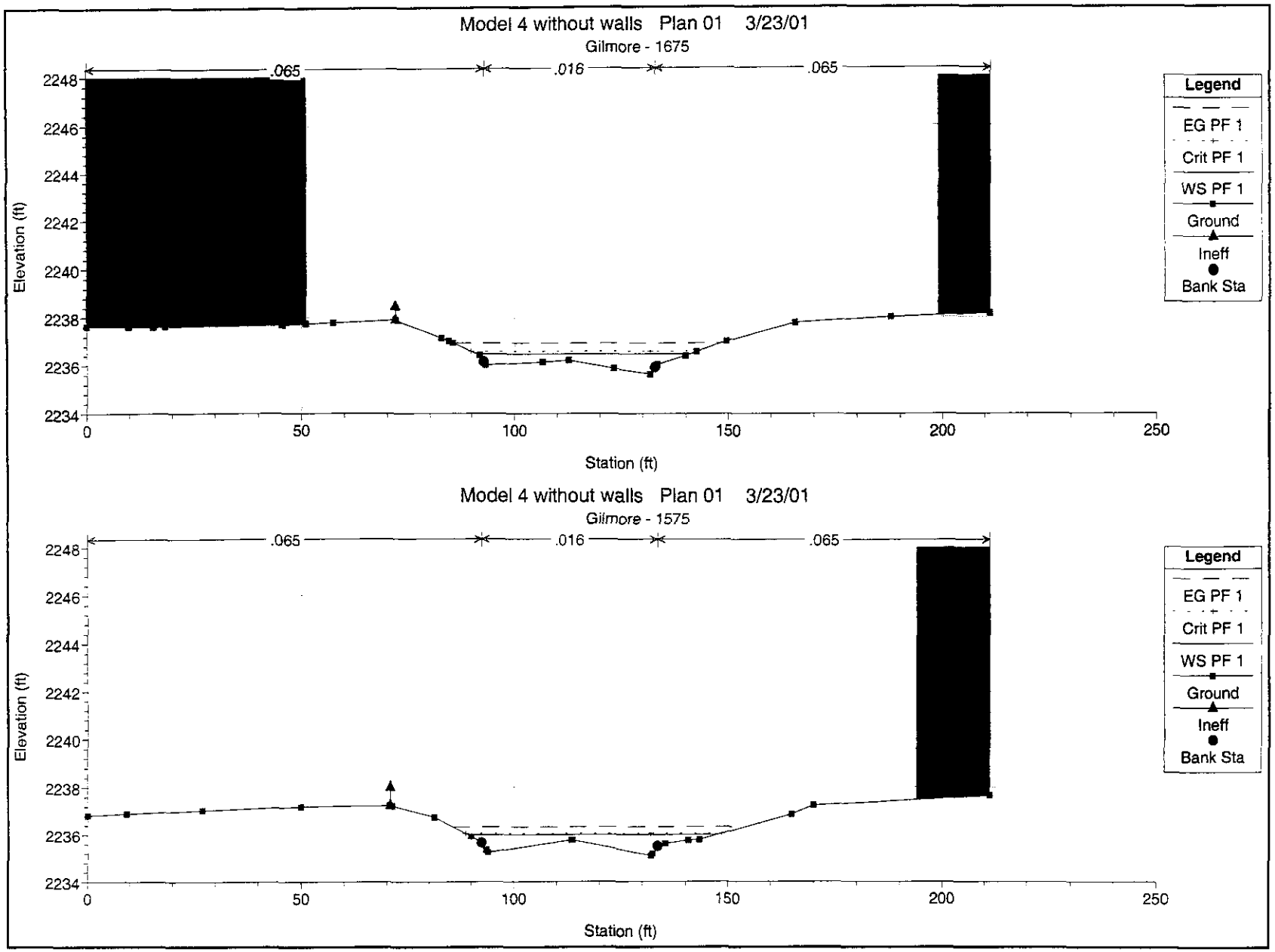

Model 4 without walls Plan 01 3/23/01
Gilmore - 2675
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 4 without walls Plan 01 3/23/01
Gilmore - 2575
.065
.016
.065
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

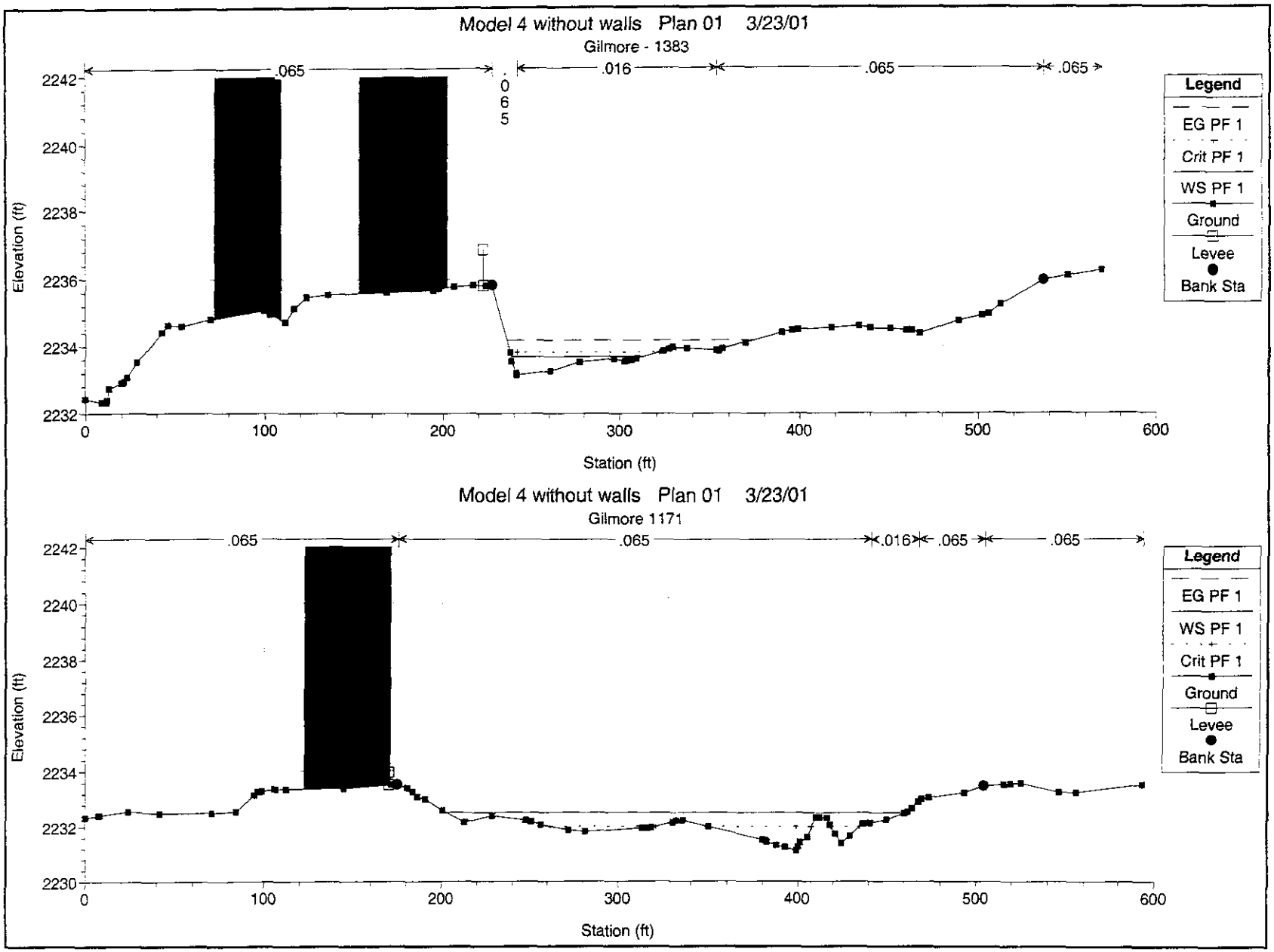

Model 4 without walls Plan 01 3/23/01
Gilmore - 2475
.065
.016
.065
Elevation (ft)
2254
2252
2250
2248
2246
2244
2242
2240
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 4 without walls Plan 01 3/23/01
Gilmore - 2375
.065
.016
.065
Elevation (ft)
2254
2252
2250
2248
2246
2244
2242
2240
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

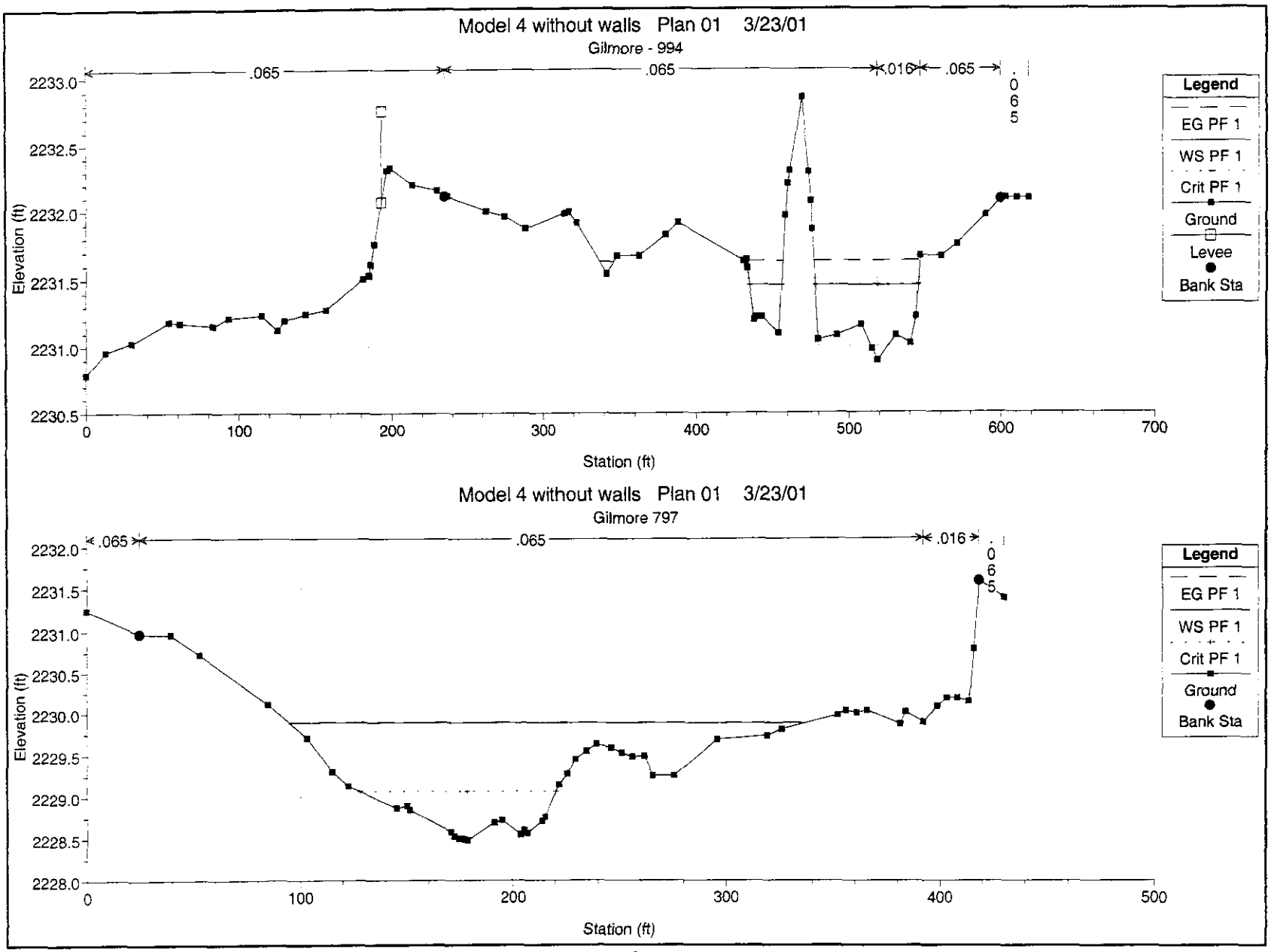

Model 4 without walls Plan 01 3/23/01
Gilmore - 2275
.065
.016
.065
2252
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 4 without walls Plan 01 3/23/01
Gilmore - 2175
.065
.016
.065
2252
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

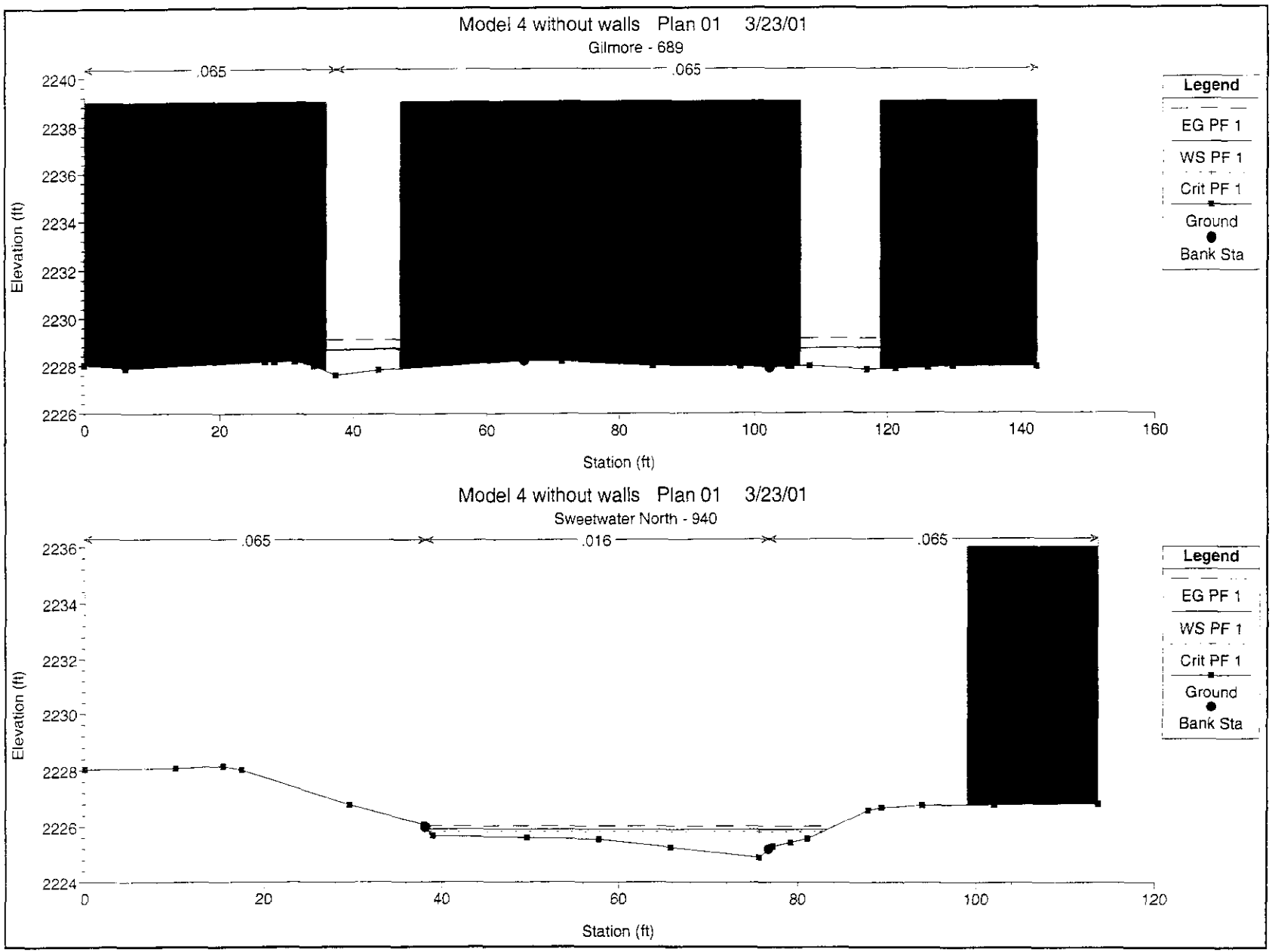

Model 4 without walls Plan 01 3/23/01
Gilmore - 2075
.065
.016
.065
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 4 without walls Plan 01 3/23/01
Gilmore - 1975
.065
.016
.065
2252
2250
2248
2246
2244
2242
2240
2238
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

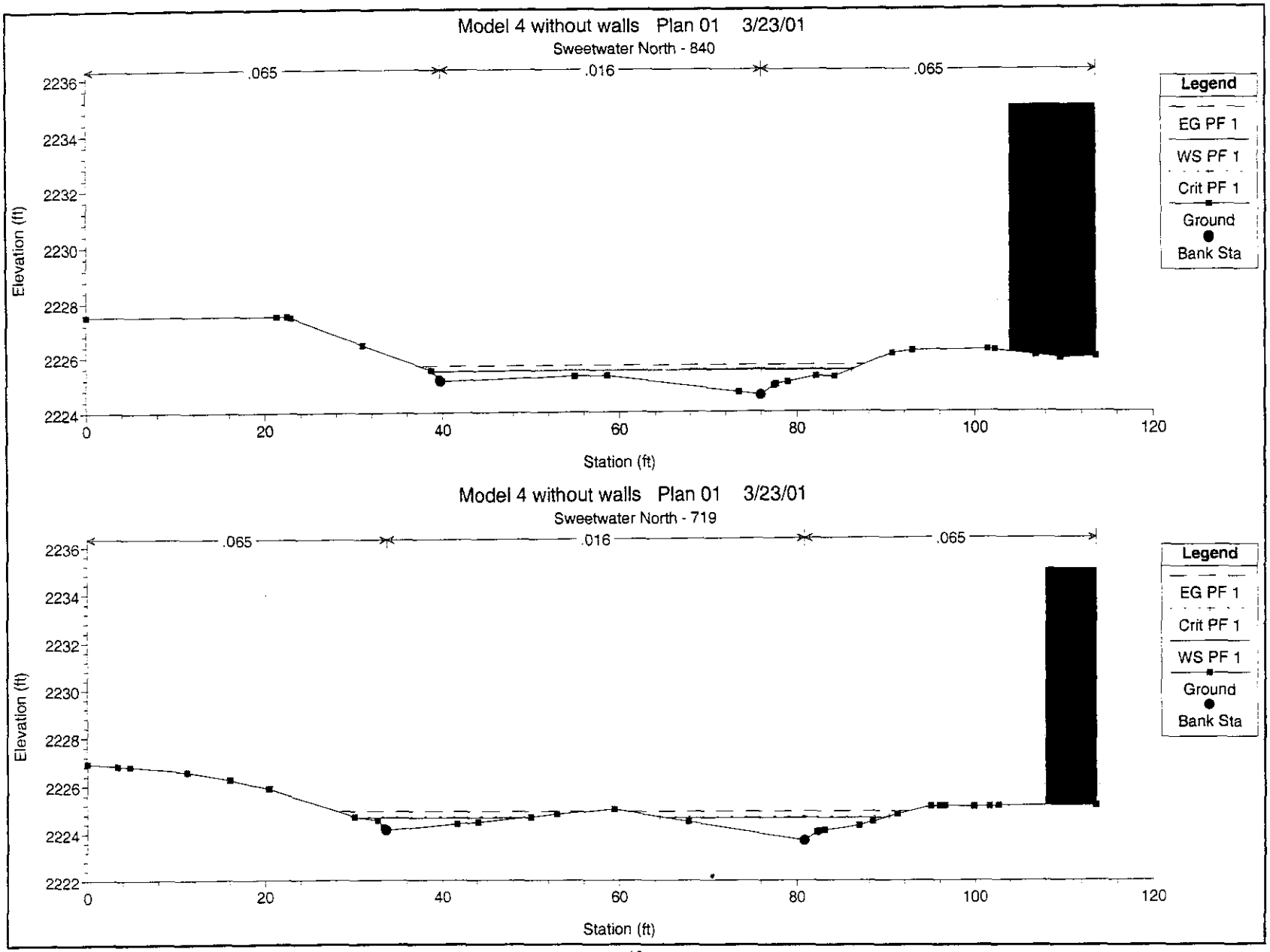

Model 4 without walls Plan 01 3/23/01
Gilmore - 1875
.065
.016
.065
2248
2246
2244
2242
2240
2238
2236
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 4 without walls Plan 01 3/23/01
Gilmore - 1775
.065
.016
.065
2248
2246
2244
2242
2240
2238
2236
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

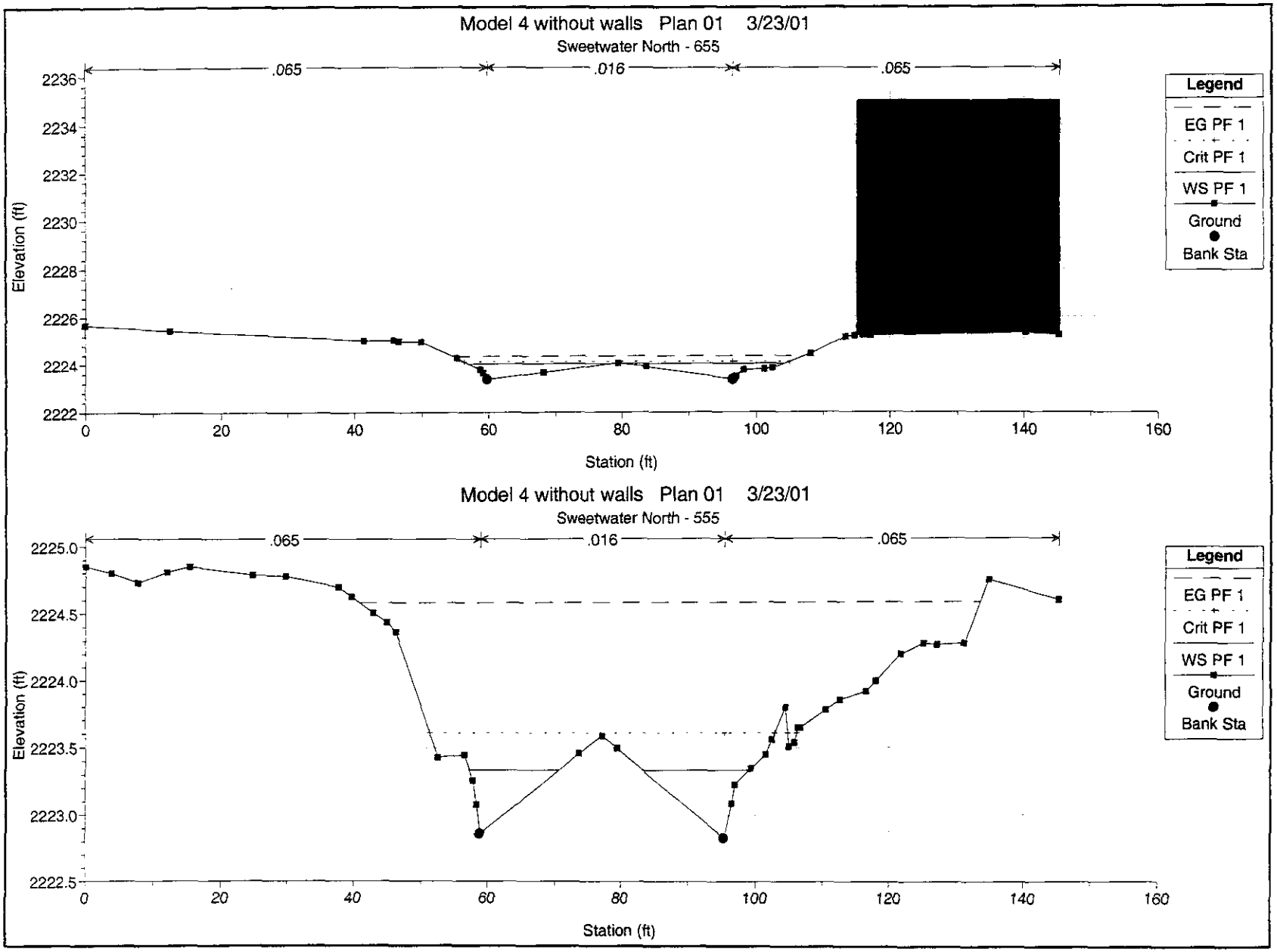

Model 4 without walls Plan 01 3/23/01
Gilmore - 1675
.065
.016
.065
2248
2246
2244
2242
2240
2238
2236
2234
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Model 4 without walls Plan 01 3/23/01
Gilmore - 1575
.065
.016
.065
2248
2246
2244
2242
2240
2238
2236
2234
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta

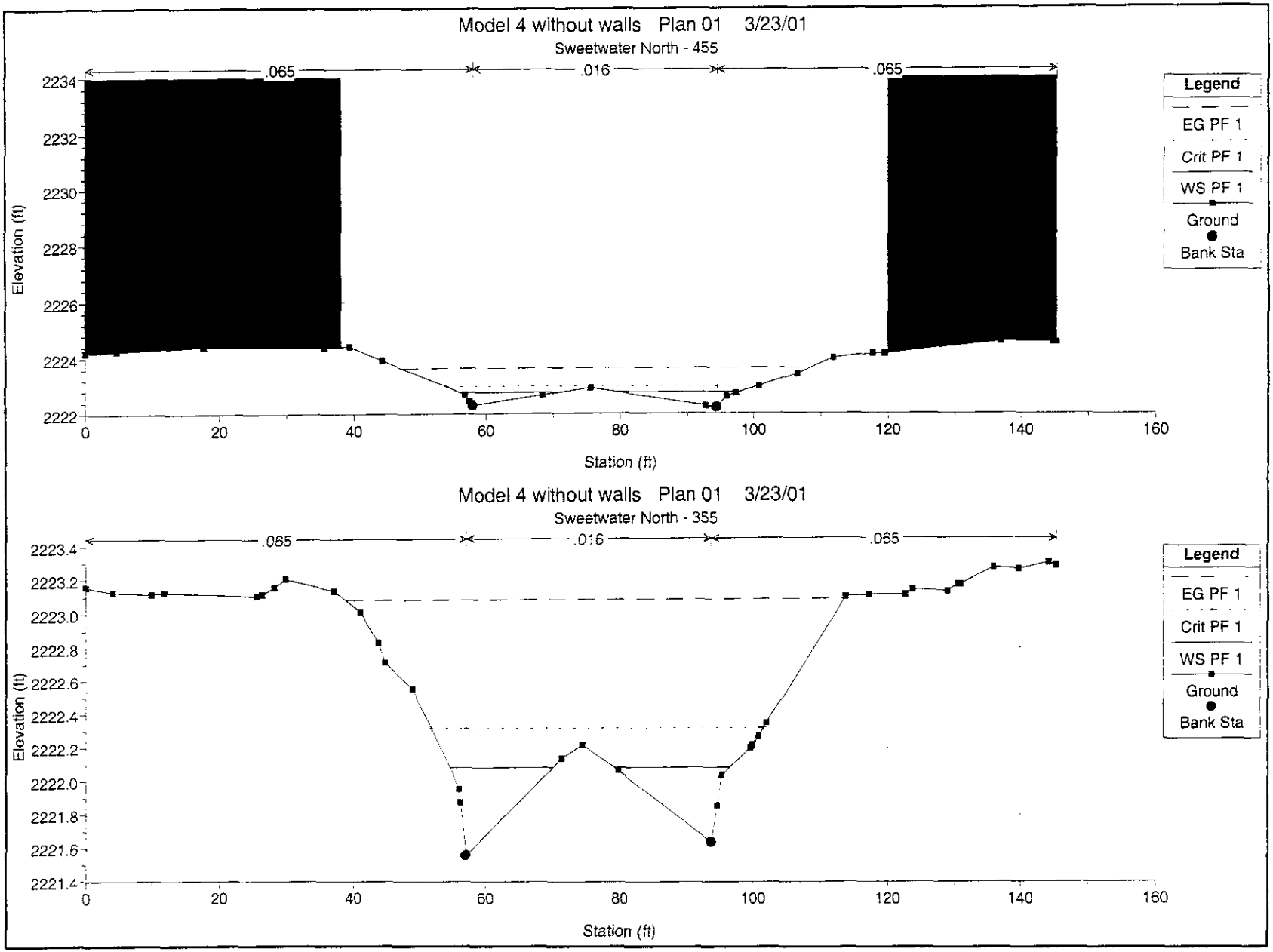

Model 4 without walls Plan 01 3/23/01
Gilmore - 1383
.065
.016
.065
.065
.065
Elevation (ft)
2242
2240
2238
2236
2234
2232
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Model 4 without walls Plan 01 3/23/01
Gilmore 1171
.065
.065
.016
.065
.065
Elevation (ft)
2242
2240
2238
2236
2234
2232
2230
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300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

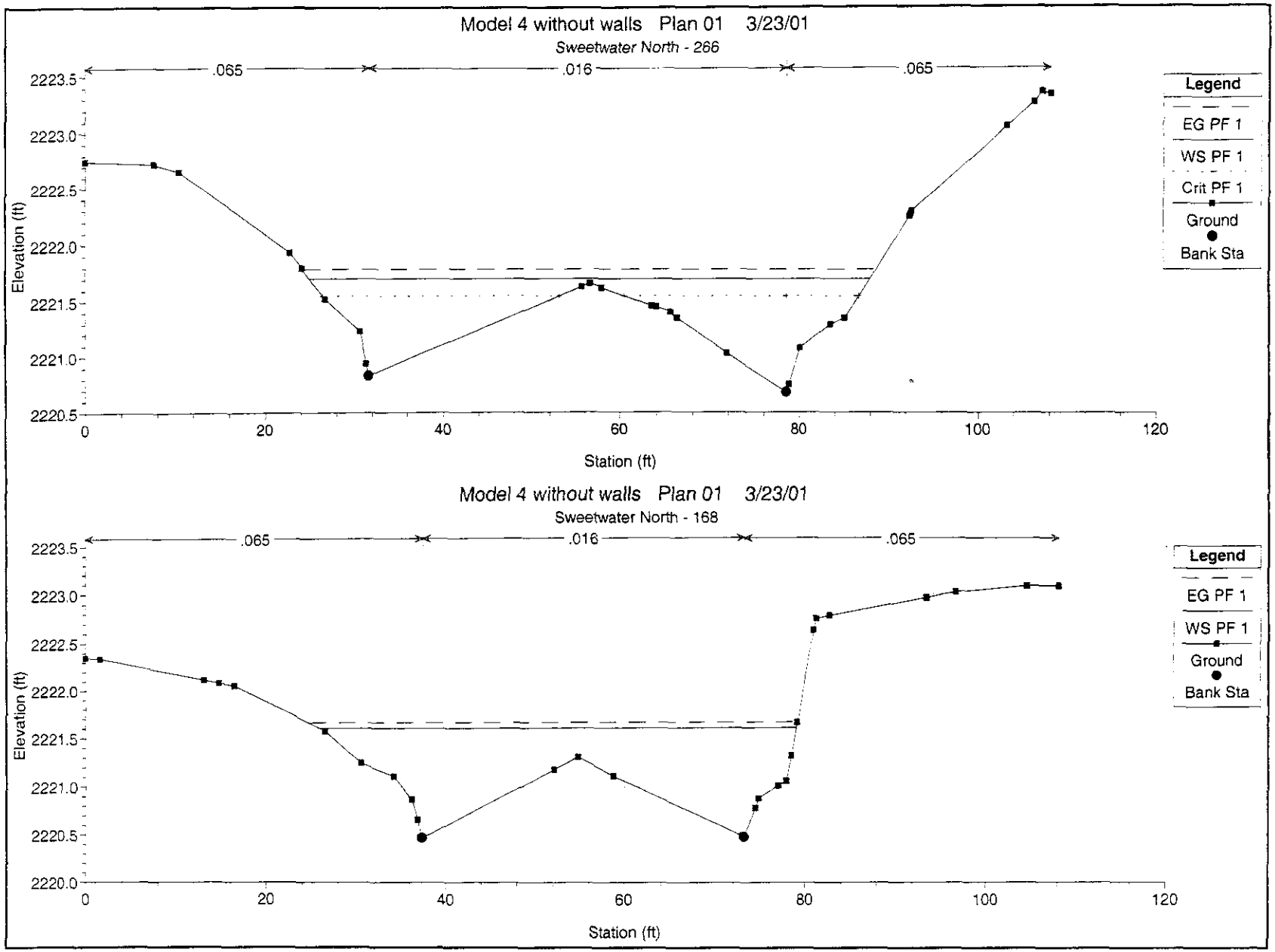

Model 4 without walls Plan 01 3/23/01
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2231.0
2230.5
Elevation (ft)
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200
300
400
500
600
700
Station (ft)
Legend
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WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 4 without walls Plan 01 3/23/01
Gilmore 797
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2232.0
2231.5
2231.0
2230.5
2230.0
2229.5
2229.0
2228.5
2228.0
Elevation (ft)
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Station (ft)
Legend
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Crit PF 1
Ground
Bank Sta

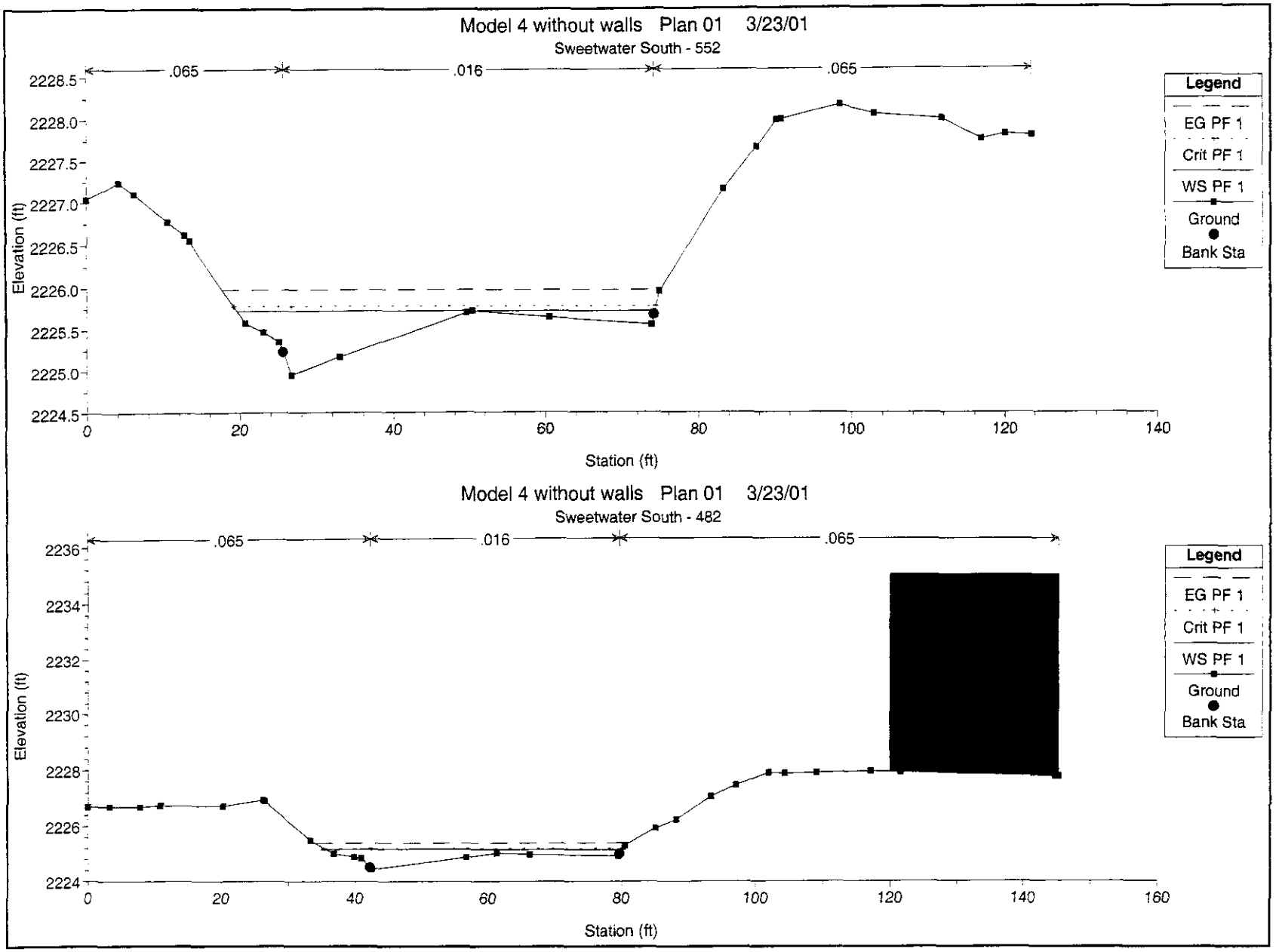

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80
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120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Model 4 without walls Plan 01 3/23/01
Sweetwater North - 940
.065
.016
.065
Elevation (ft)
2236
2234
2232
2230
2228
2226
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120
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

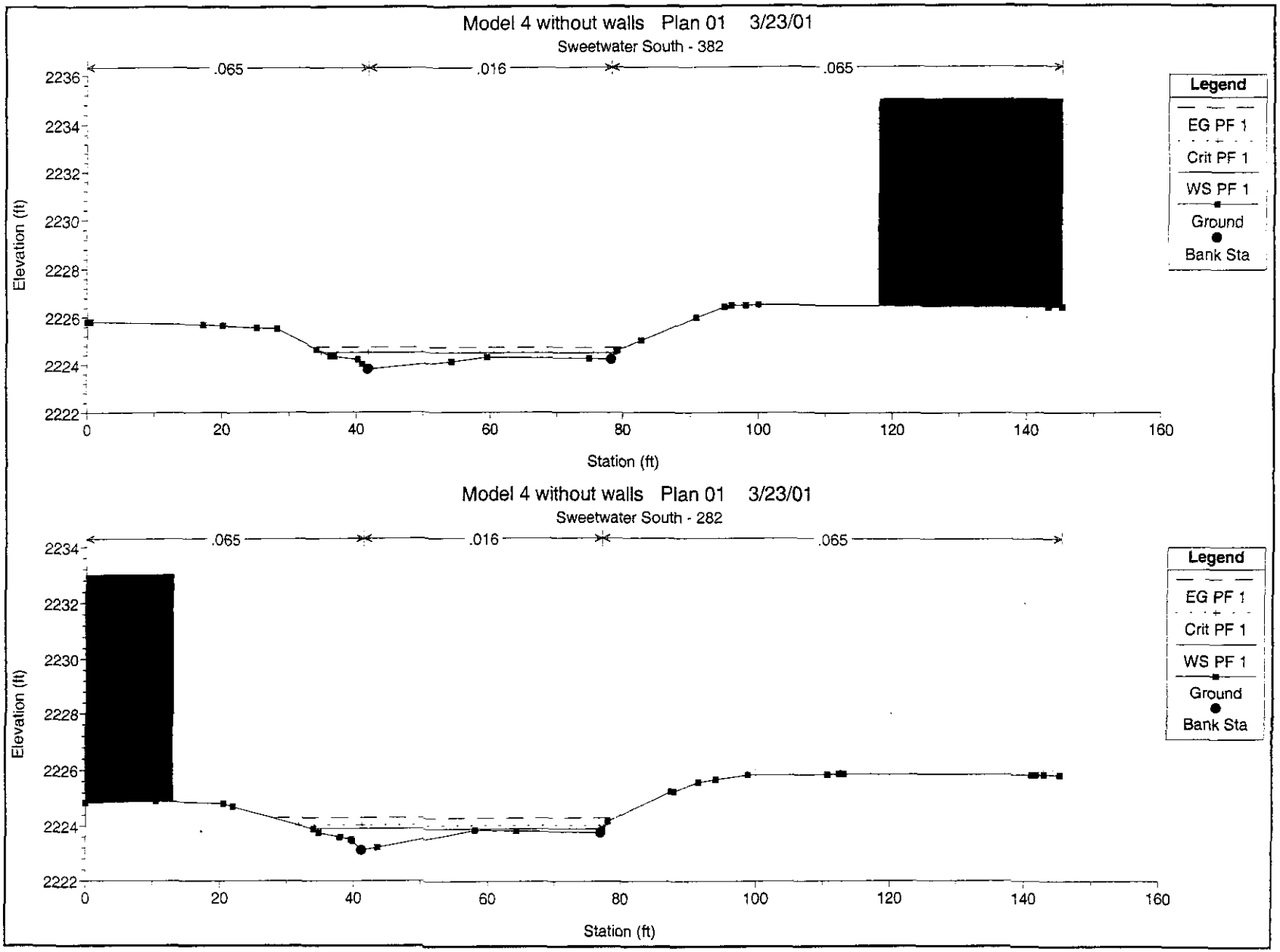

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Sweetwater North - 840
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Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 4 without walls Plan 01 3/23/01
Sweetwater North - 719
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.016
.065
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Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

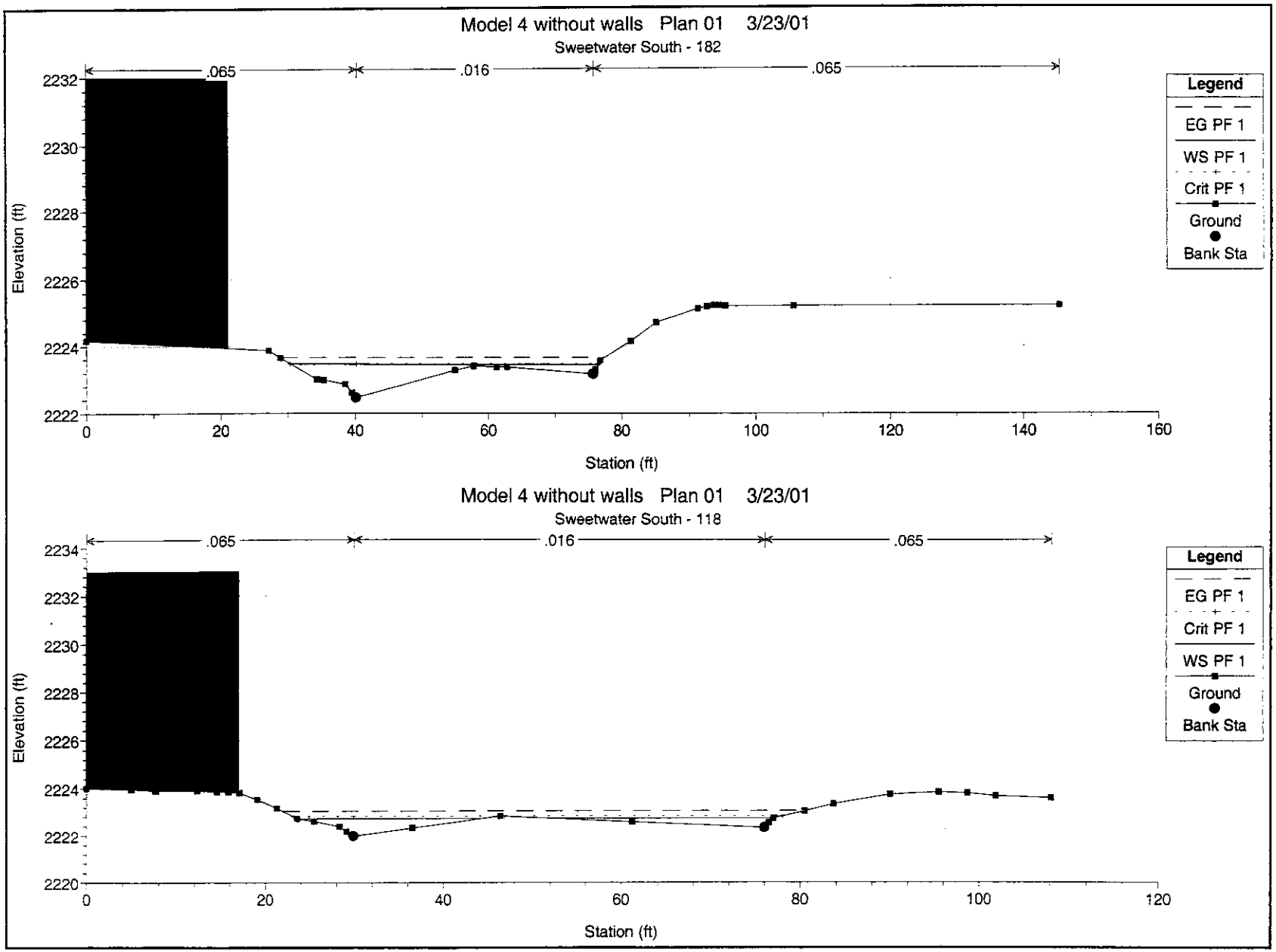

Model 4 without walls Plan 01 3/23/01
Sweetwater North - 655
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.065
Legend
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Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 4 without walls Plan 01 3/23/01
Sweetwater North - 555
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.016
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Legend
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Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

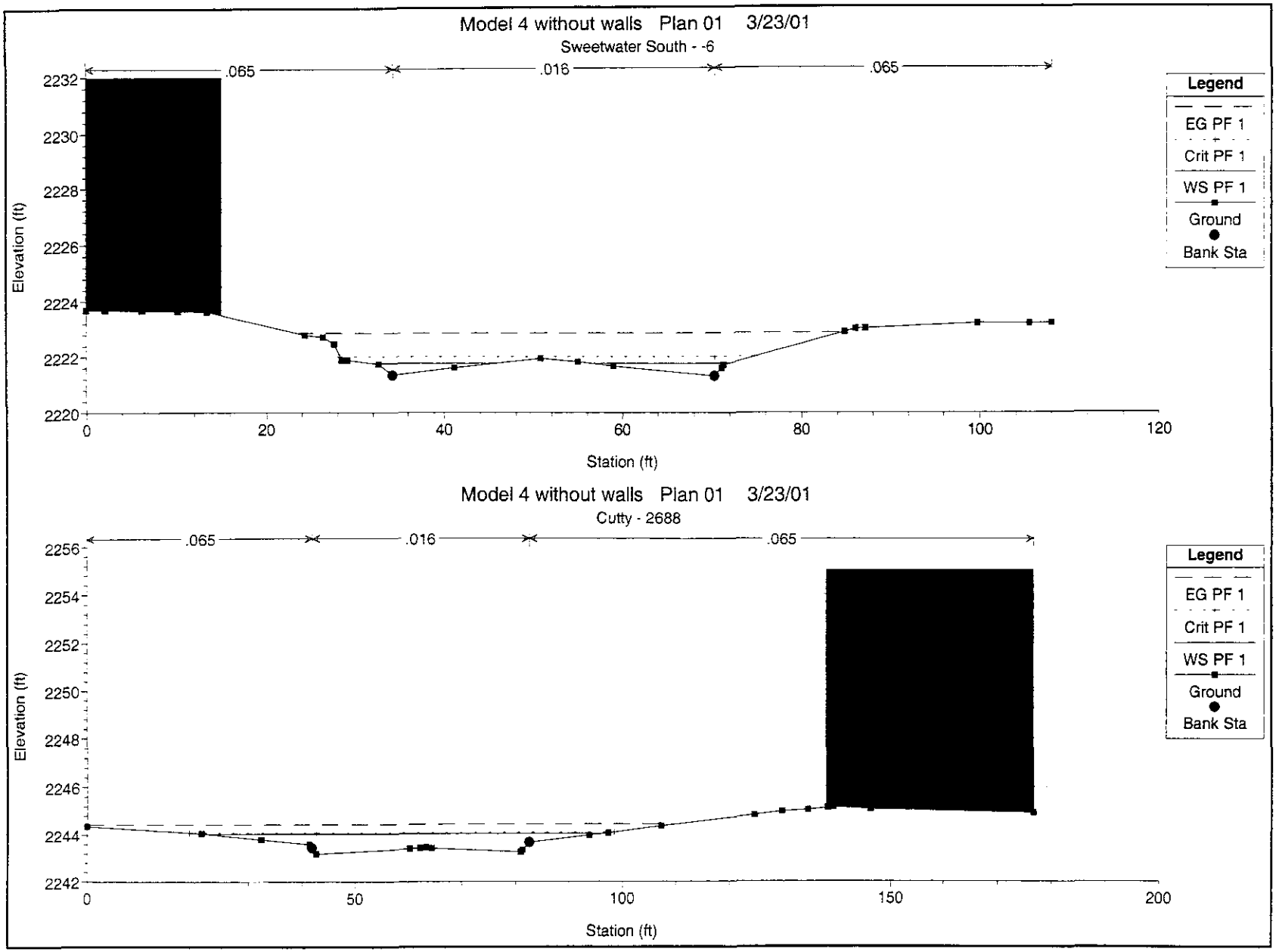

Model 4 without walls Plan 01 3/23/01
Sweetwater North - 455
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Elevation (ft)
Station (ft)
Legend
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WS PF 1
Ground
Bank Sta
Model 4 without walls Plan 01 3/23/01
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.016
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Station (ft)
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EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

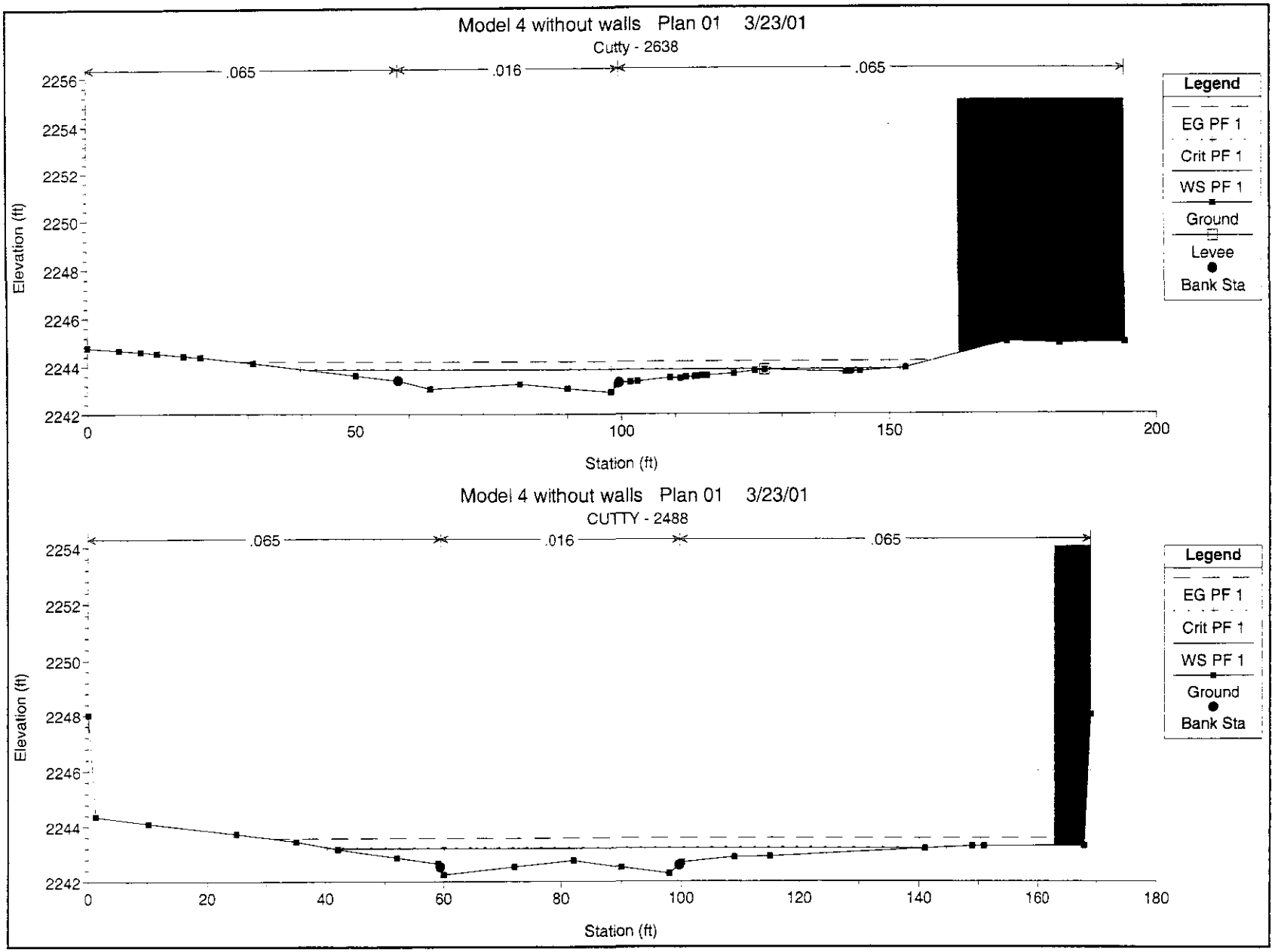

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Sweetwater North - 266
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Legend
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Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 4 without walls Plan 01 3/23/01
Sweetwater North - 168
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Legend
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WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

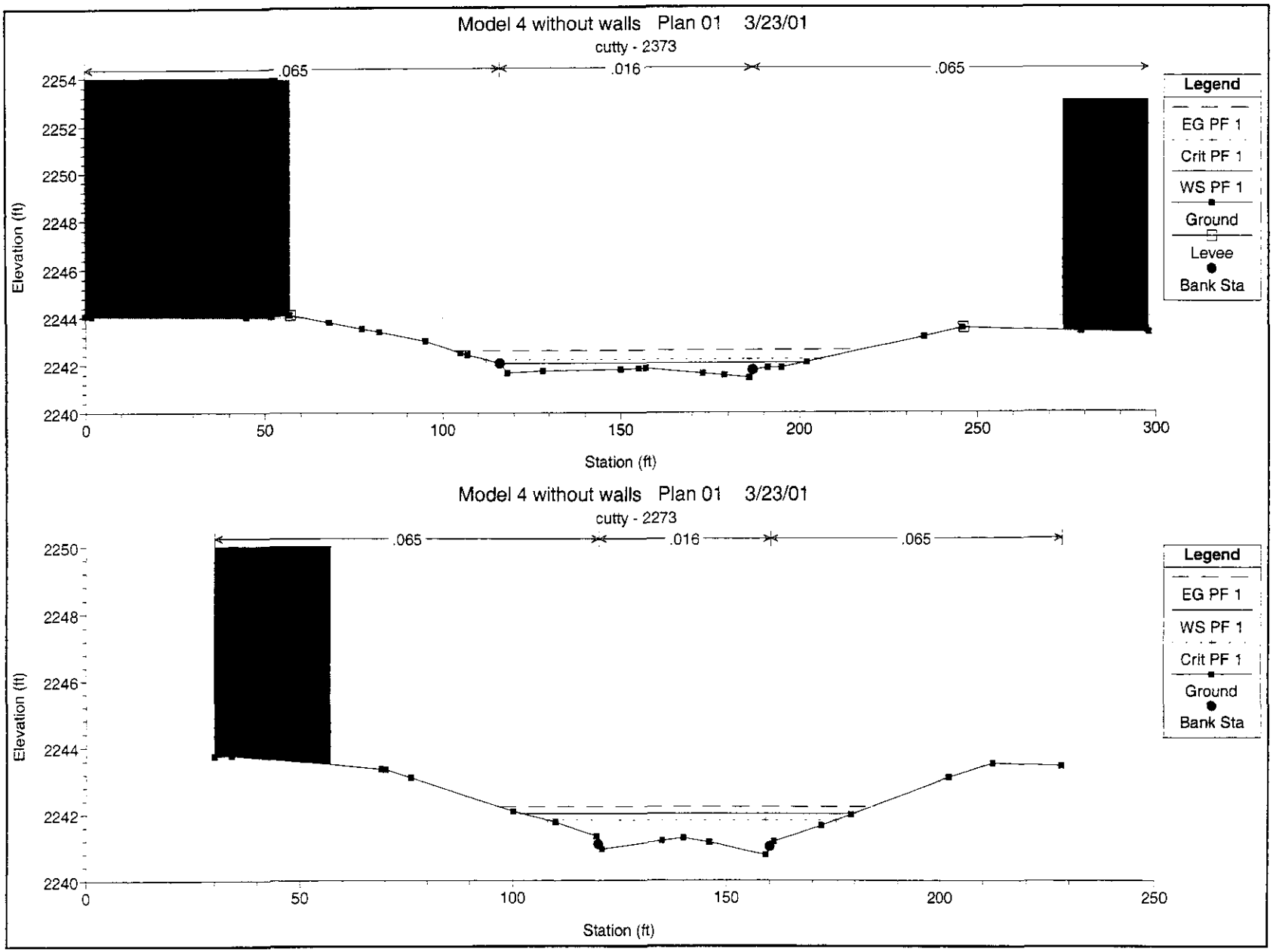

Model 4 without walls Plan 01 3/23/01
Sweetwater South - 552
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WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 4 without walls Plan 01 3/23/01
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WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

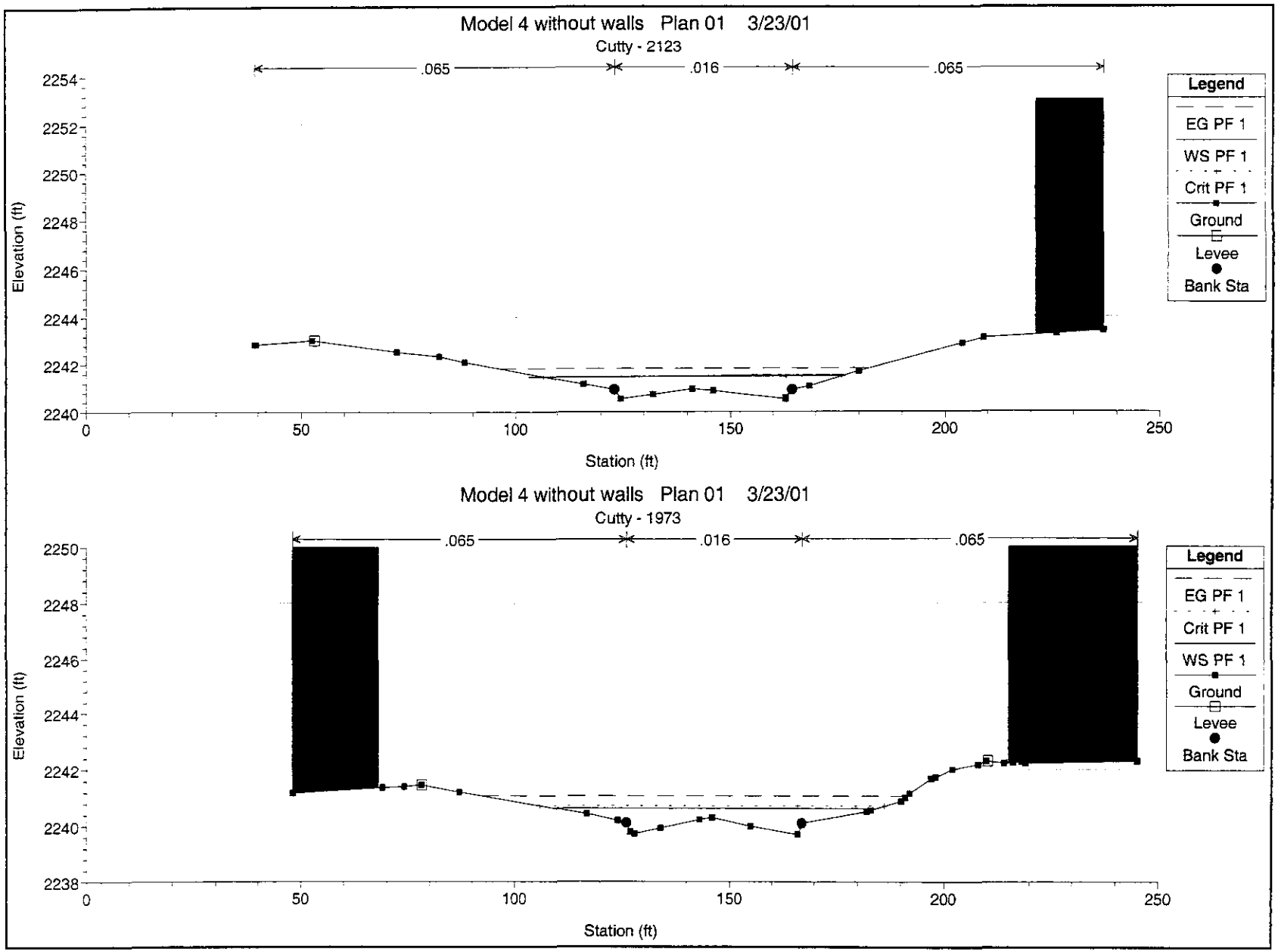

Model 4 without walls Plan 01 3/23/01
Sweetwater South - 382
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Elevation (ft)
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2232
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2226
2224
2222
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 4 without walls Plan 01 3/23/01
Sweetwater South - 282
.065
.016
.065
Elevation (ft)
2234
2232
2230
2228
2226
2224
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Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

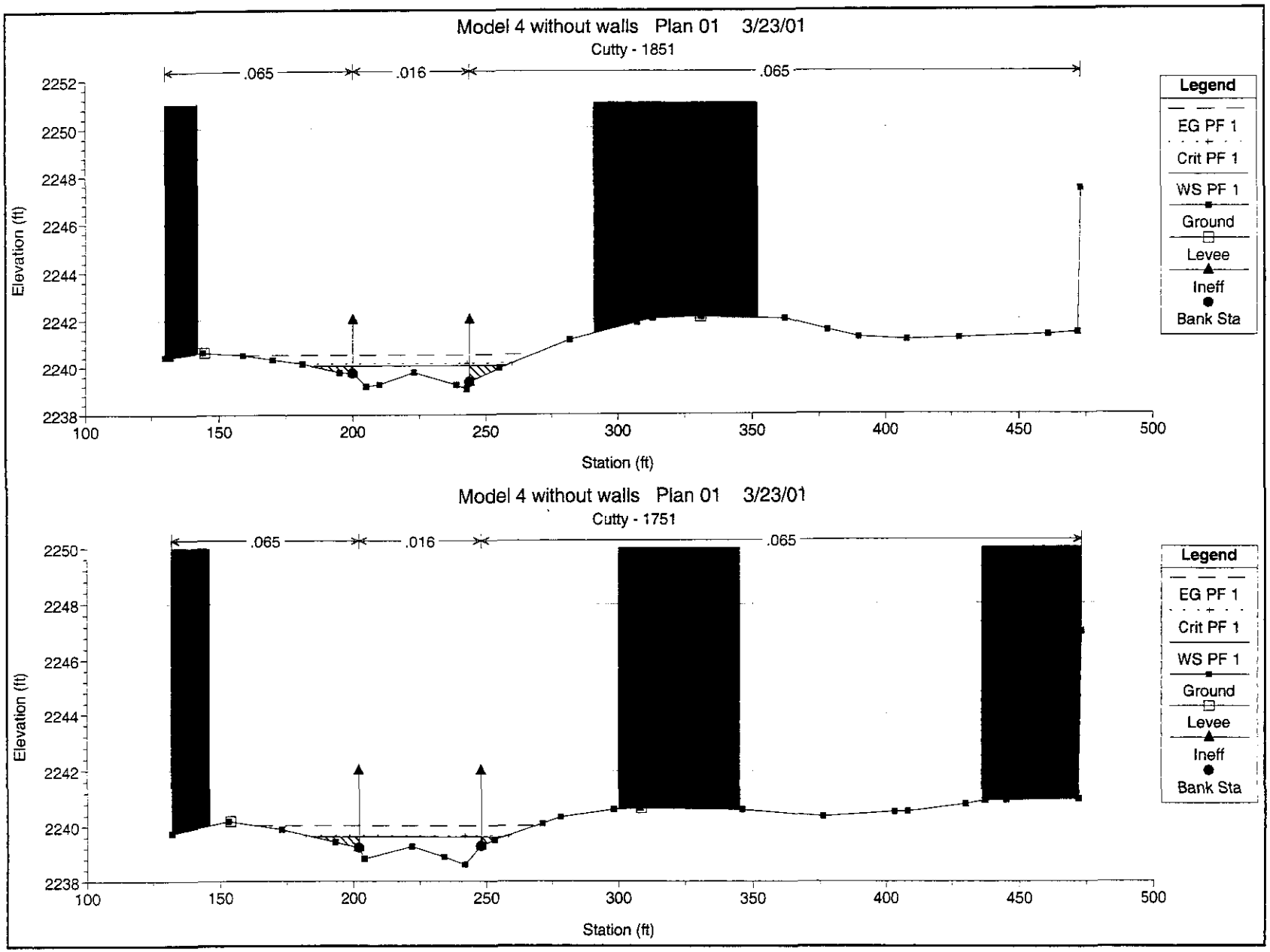

Model 4 without walls Plan 01 3/23/01
Sweetwater South - 182
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Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 4 without walls Plan 01 3/23/01
Sweetwater South - 118
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Legend
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WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

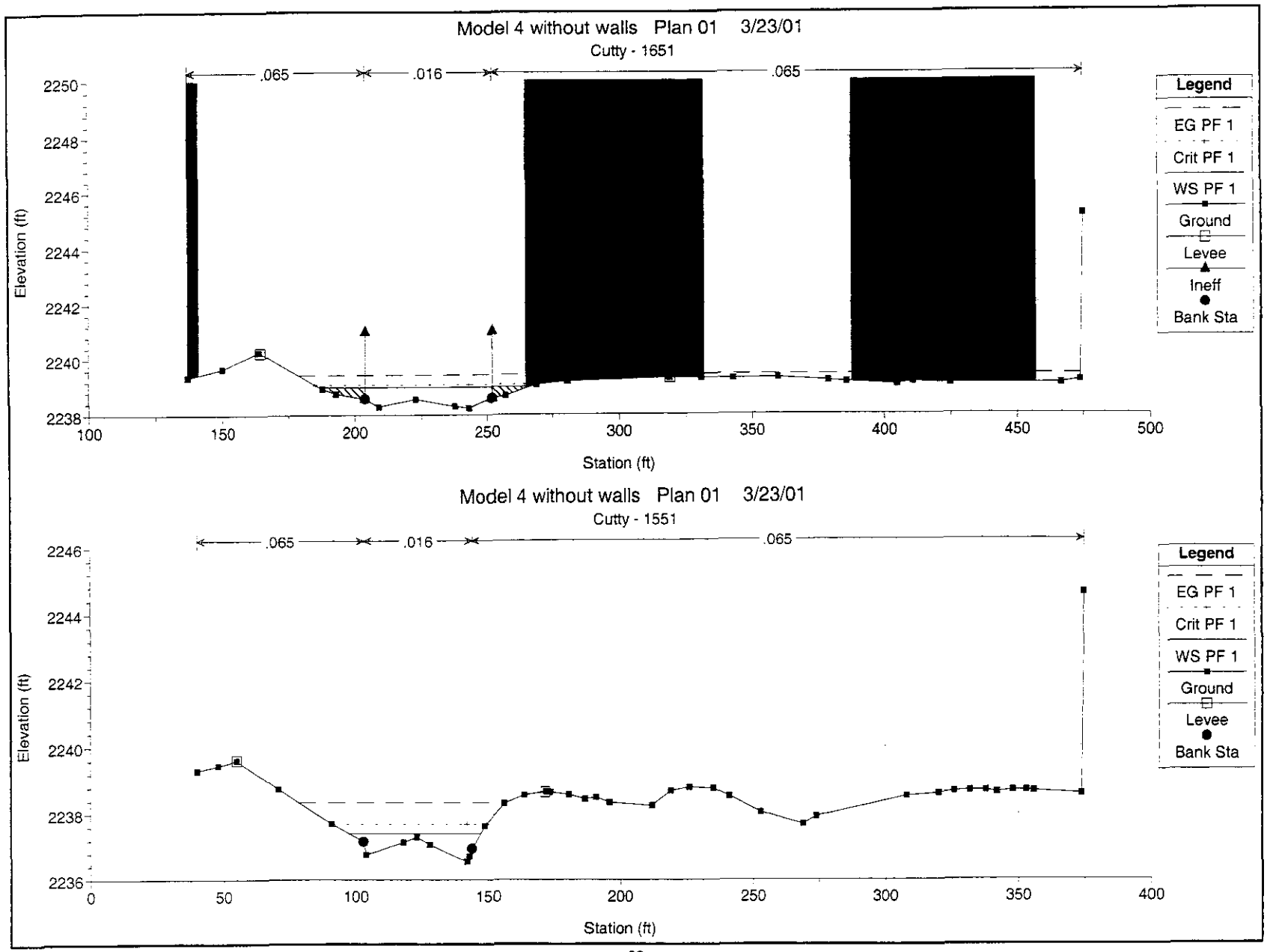

Model 4 without walls Plan 01 3/23/01
Sweetwater South - -6
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.016
.065
Elevation (ft)
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2230
2228
2226
2224
2222
2220
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 4 without walls Plan 01 3/23/01
Cutty - 2688
.065
.016
.065
Elevation (ft)
2256
2254
2252
2250
2248
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2244
2242
0
50
100
150
200
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

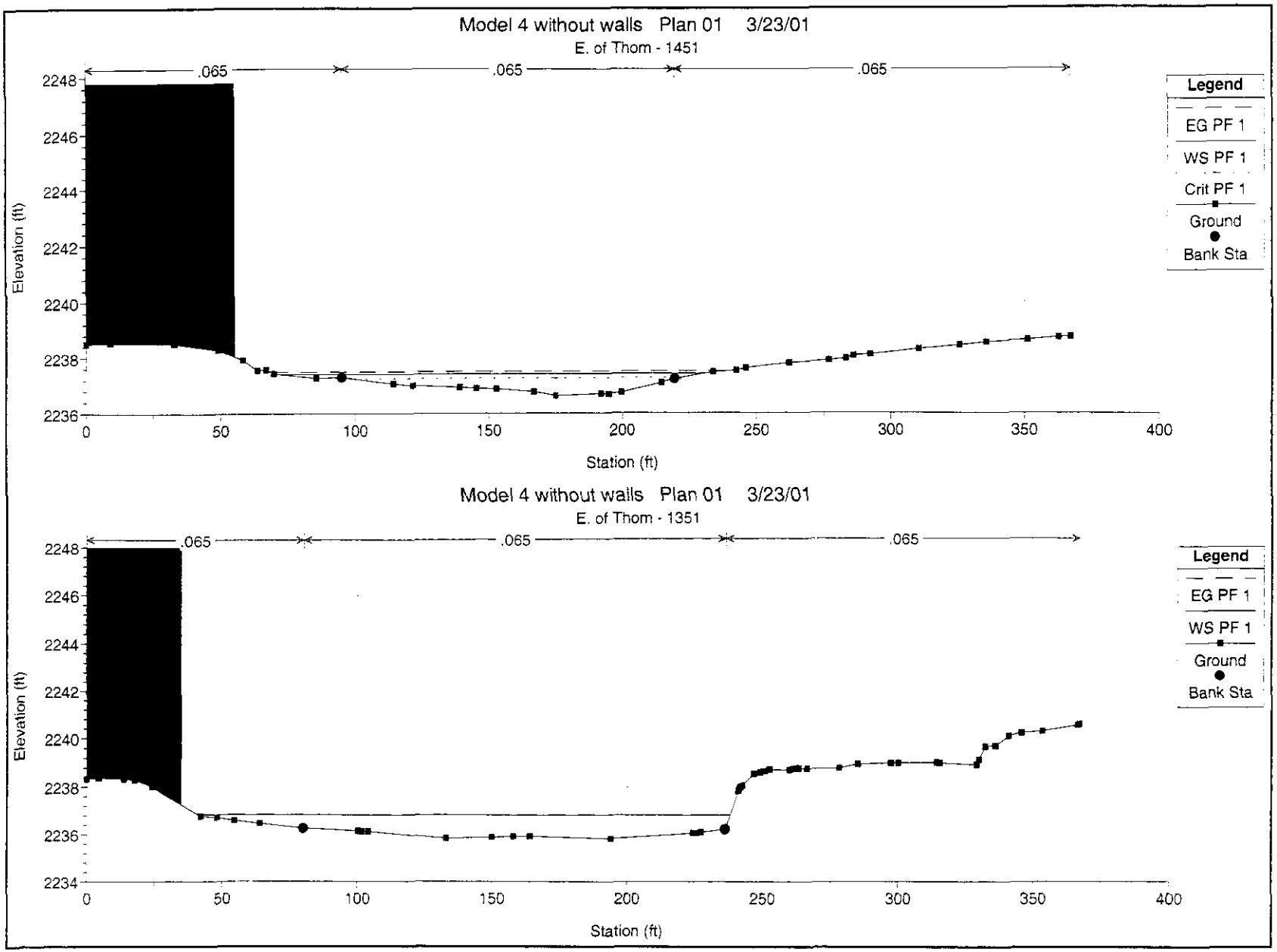

Model 4 without walls Plan 01 3/23/01
Cutty - 2638
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.016
.065
2256
2254
2252
2250
2248
2246
2244
2242
Elevation (ft)
0
50
100
150
200
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Model 4 without walls Plan 01 3/23/01
CUTTY - 2488
.065
.016
.065
2254
2252
2250
2248
2246
2244
2242
Elevation (ft)
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100
120
140
160
180
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

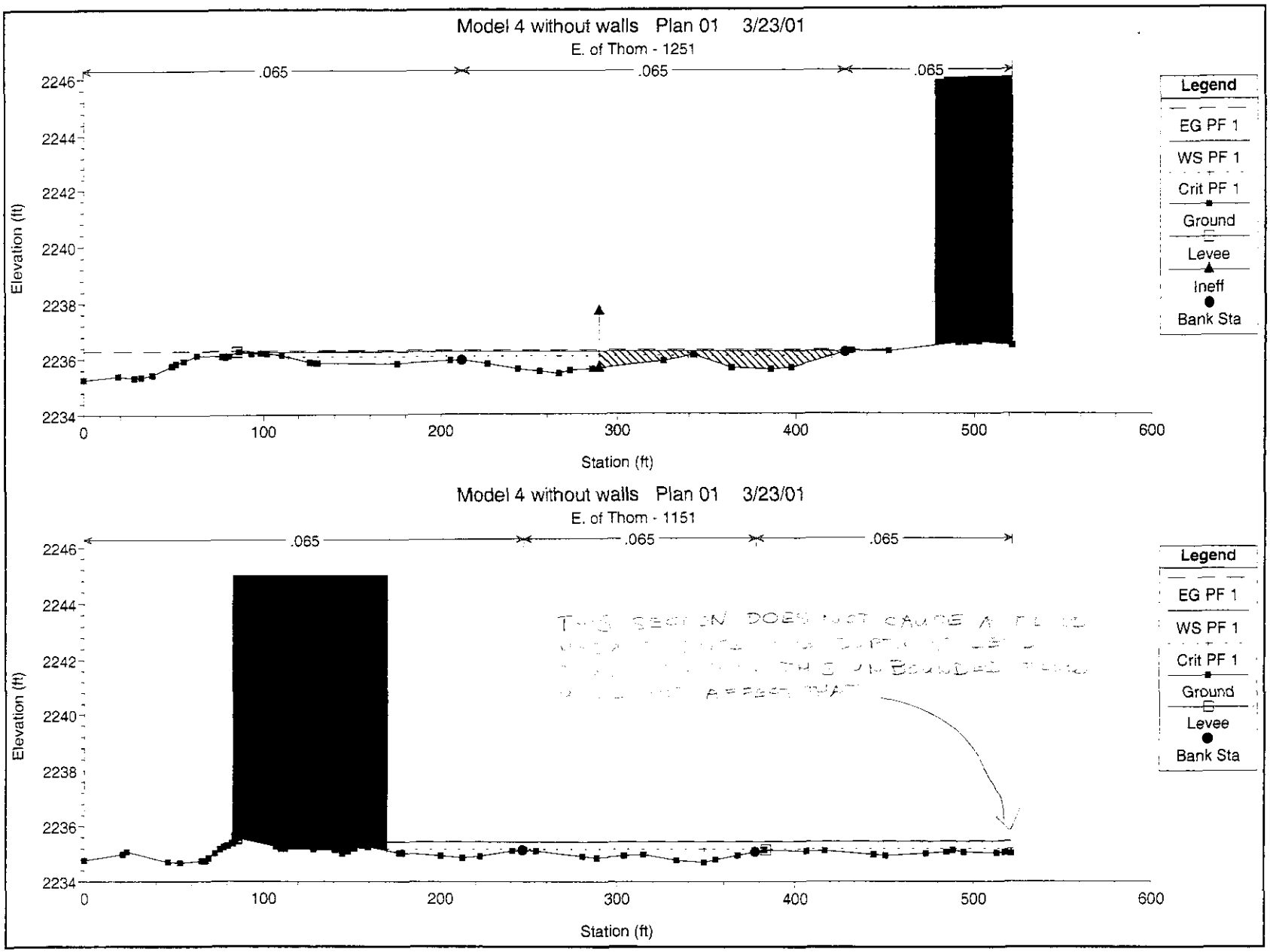

Model 4 without walls Plan 01 3/23/01
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.065
Legend
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Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 4 without walls Plan 01 3/23/01
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Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

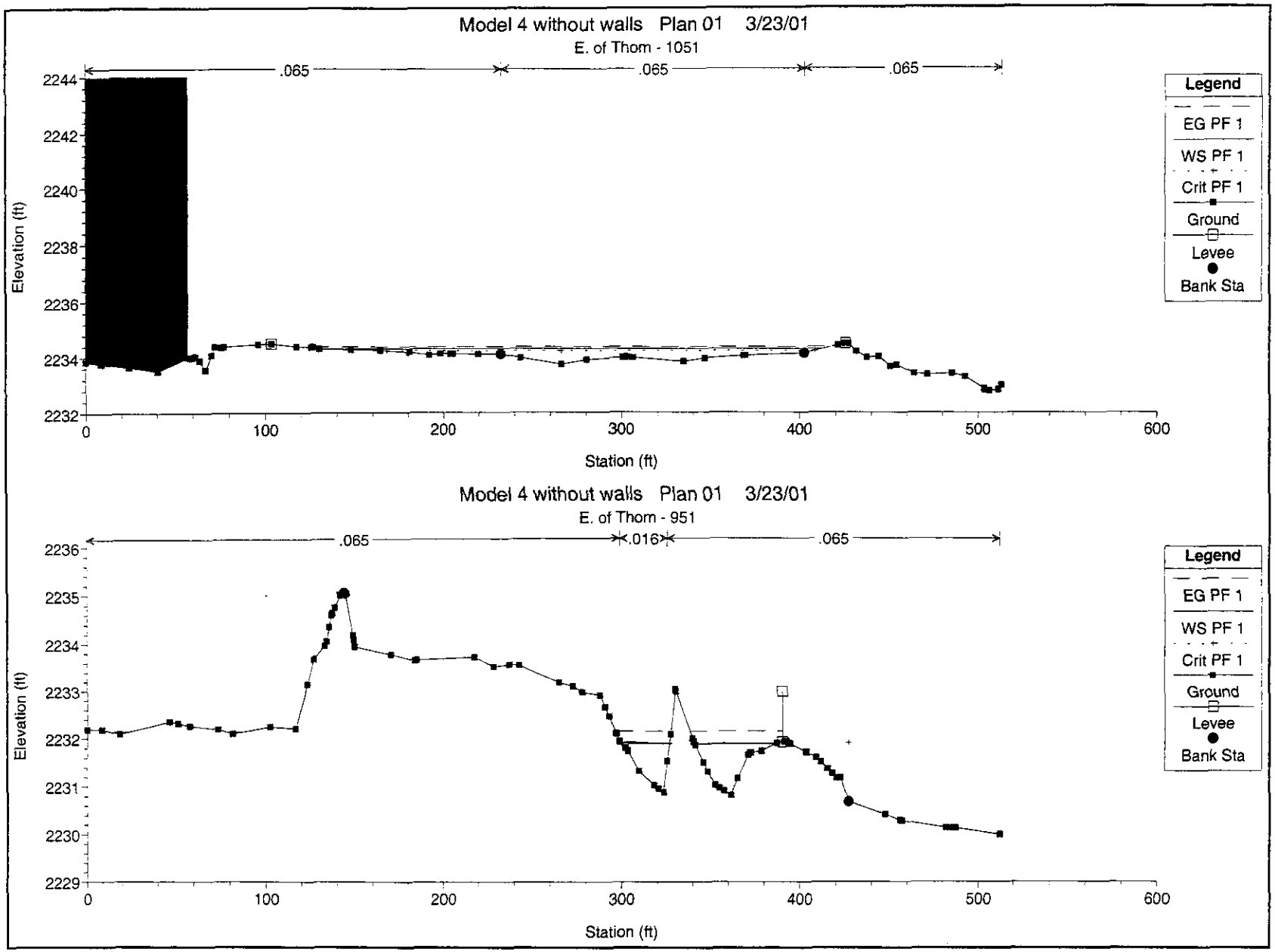

Model 4 without walls Plan 01 3/23/01
Cutty - 2123
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Legend
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Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
Model 4 without walls Plan 01 3/23/01
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Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

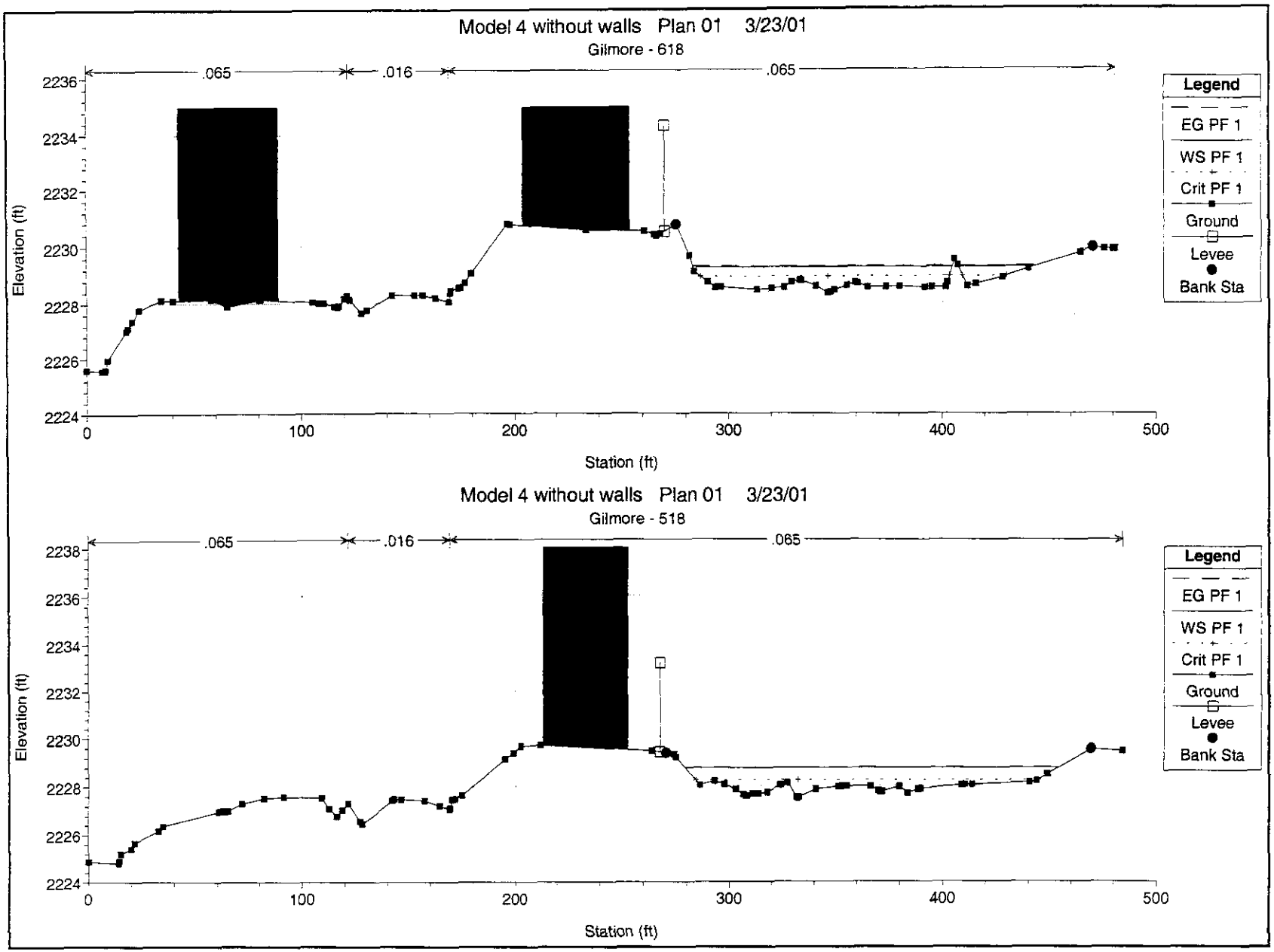

Model 4 without walls Plan 01 3/23/01
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.016
.065
Elevation (ft)
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2246
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2242
2240
2238
100
150
200
250
300
350
400
450
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Model 4 without walls Plan 01 3/23/01
Cutty - 1751
.065
.016
.065
Elevation (ft)
2250
2248
2246
2244
2242
2240
2238
100
150
200
250
300
350
400
450
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta

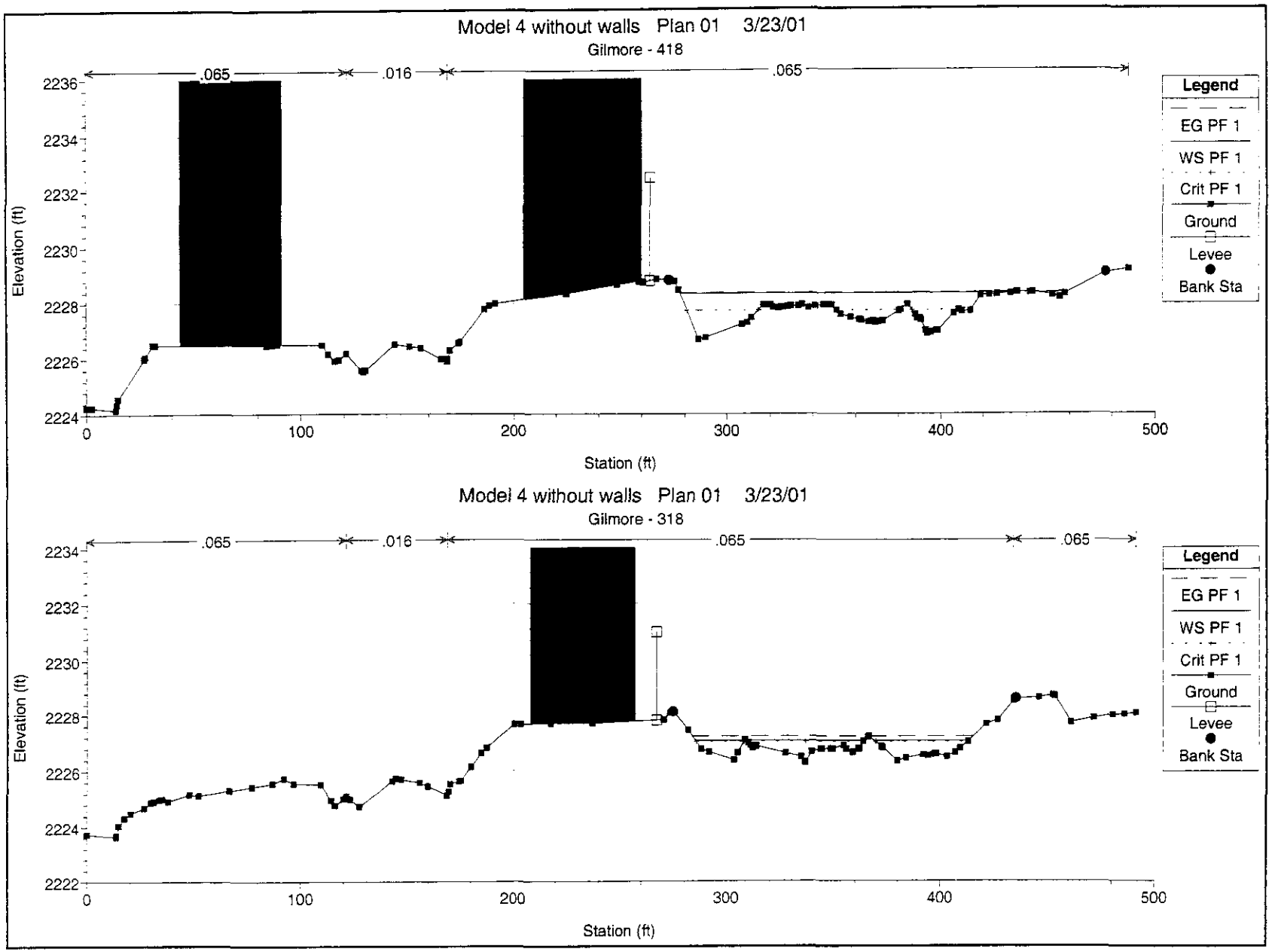

Model 4 without walls Plan 01 3/23/01
Cutty - 1651
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.016
.065
Elevation (ft)
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2248
2246
2244
2242
2240
2238
100
150
200
250
300
350
400
450
500
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Ineff
Bank Sta
Model 4 without walls Plan 01 3/23/01
Cutty - 1551
.065
.016
.065
Elevation (ft)
2246
2244
2242
2240
2238
2236
0
50
100
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400
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta

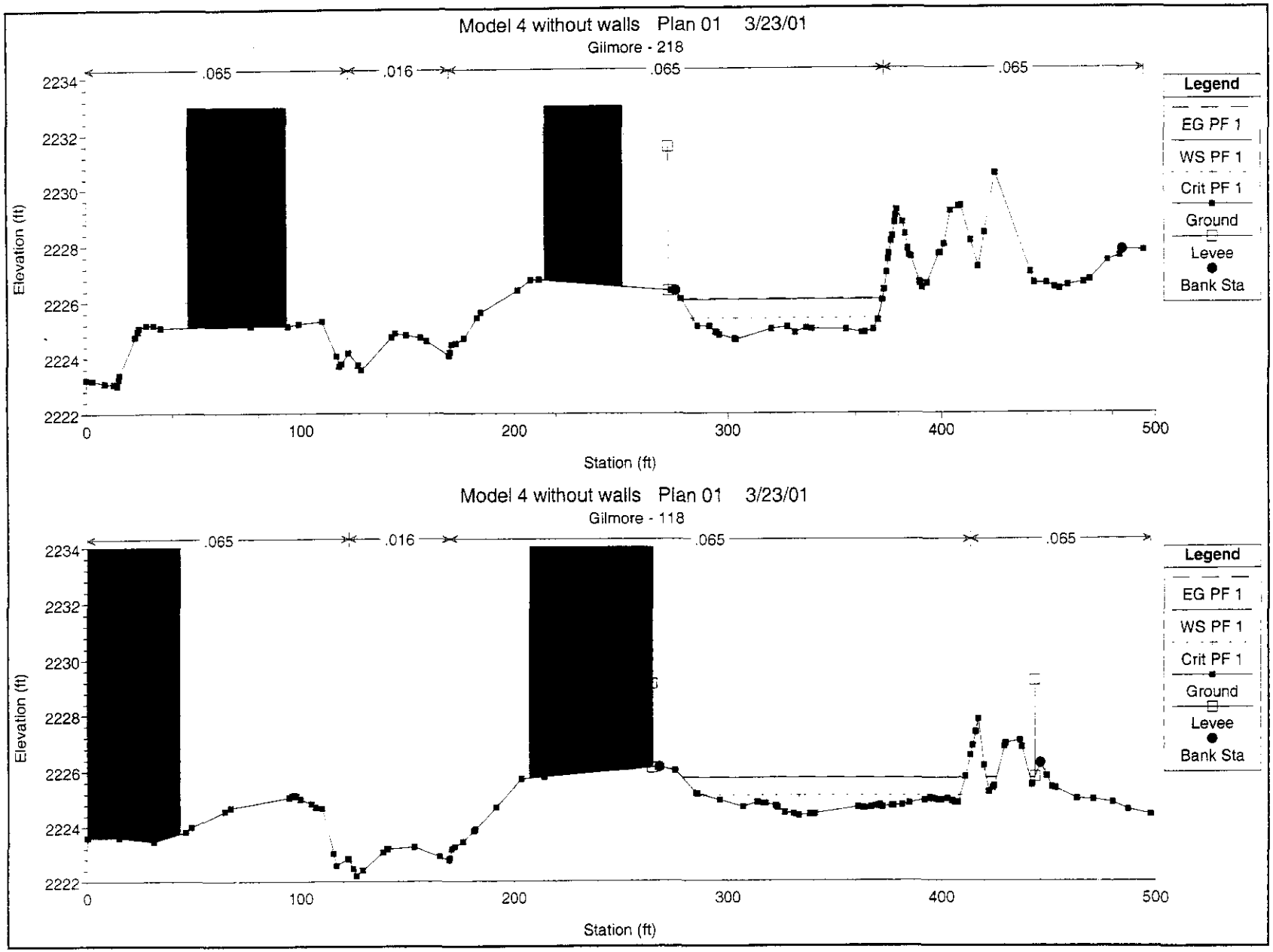

Model 4 without walls Plan 01 3/23/01
E. of Thom - 1451
.065
.065
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Model 4 without walls Plan 01 3/23/01
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Legend
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Ground
Bank Sta
Elevation (ft)
Station (ft)

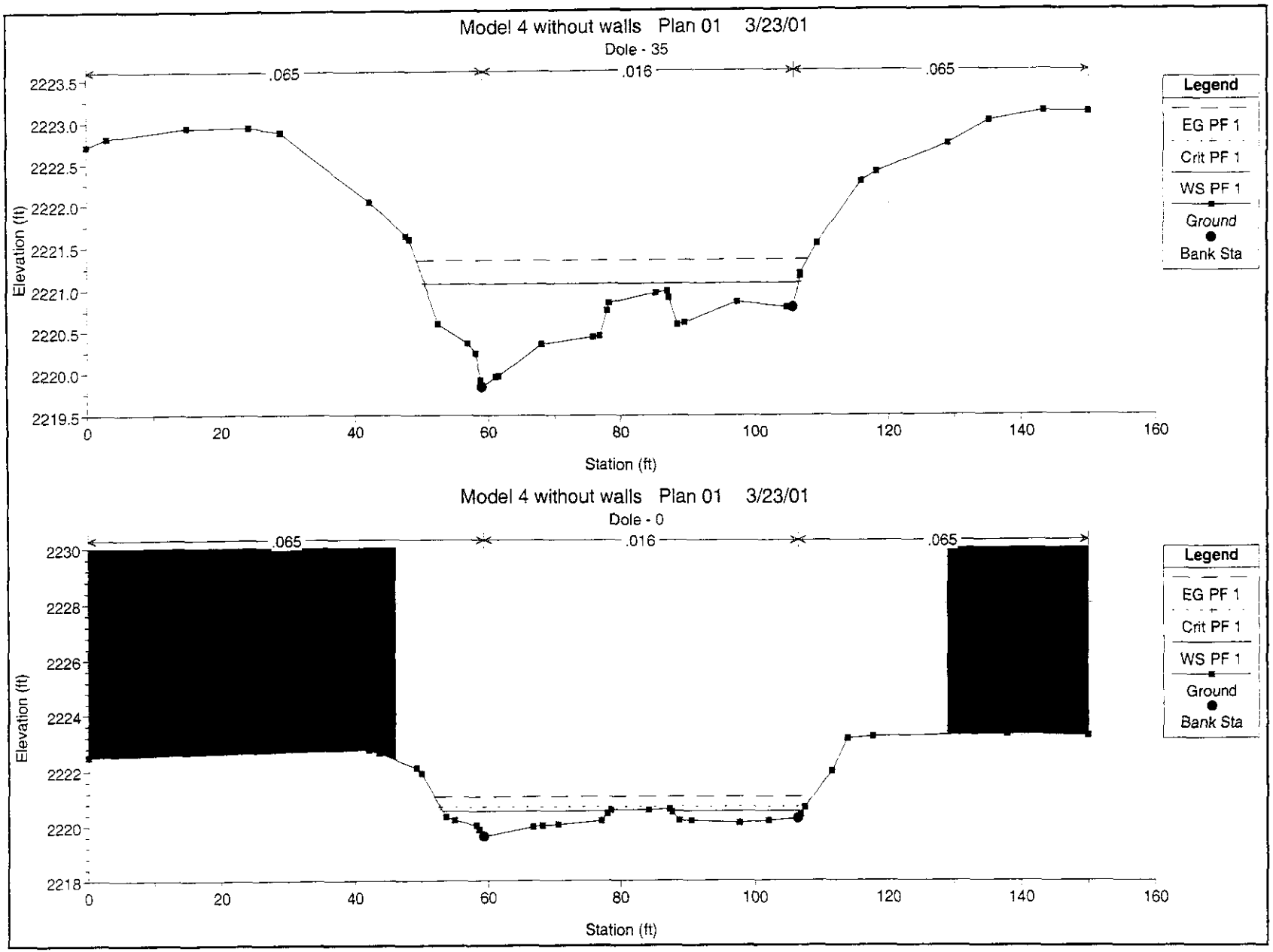

Model 4 without walls Plan 01 3/23/01
E. of Thom - 1251
.065
.065
.065
Elevation (ft)
2246
2244
2242
2240
2238
2236
2234
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Model 4 without walls Plan 01 3/23/01
E. of Thom - 1151
.065
.065
.065
Elevation (ft)
2246
2244
2242
2240
2238
2236
2234
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta


Model 4 without walls Plan 01 3/23/01
E. of Thom - 1051
.065
.065
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2244
2242
2240
2238
2236
2234
2232
0
100
200
300
400
500
600
Station (ft)
Model 4 without walls Plan 01 3/23/01
E. of Thom - 951
.065
.016
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2236
2235
2234
2233
2232
2231
2230
2229
0
100
200
300
400
500
600
Station (ft)


Model 4 without walls Plan 01 3/23/01
Gilmore - 618
.065
.016
.065
2236
2234
2232
2230
2228
2226
2224
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 4 without walls Plan 01 3/23/01
Gilmore - 518
.065
.016
.065
2238
2236
2234
2232
2230
2228
2226
2224
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta


Model 4 without walls Plan 01 3/23/01
Gilmore - 418
.065
.016
.065
2236
2234
2232
2230
2228
2226
2224
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 4 without walls Plan 01 3/23/01
Gilmore - 318
.065
.016
.065
.065
2234
2232
2230
2228
2226
2224
2222
Elevation (ft)
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100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta


Model 4 without walls Plan 01 3/23/01
Gilmore - 218
.065
.016
.065
.065
2234
2232
2230
2228
2226
2224
2222
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Model 4 without walls Plan 01 3/23/01
Gilmore - 118
.065
.016
.065
.065
2234
2232
2230
2228
2226
2224
2222
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta


Model 4 without walls Plan 01 3/23/01
Dole - 35
.065
.016
.065
Elevation (ft)
2223.5
2223.0
2222.5
2222.0
2221.5
2221.0
2220.5
2220.0
2219.5
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Model 4 without walls Plan 01 3/23/01
Dole - 0
.065
.016
.065
Elevation (ft)
2230
2228
2226
2224
2222
2220
2218
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

Section 3

FIS Report Text

SECTION 3

Gowan/Bradley
Flood Insurance Study

SECTION 3

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3.1 Introduction

The Louis Berger Group, Inc. (LBG) has been selected by the Clark County Regional Flood Control District (CCRFCD) to perform the Gowan/Bradley Flood Insurance Study (GBFIS). The purpose of the GBFIS is to investigate and delineate the 100-year flood hazard zones in an area of the City of Las Vegas, Nevada bound by Gowan Road on the south, Alexander Road on the north, Rancho Drive on the west, and Decatur Boulevard on the east. This study is an extension of the U.S. 95/Rancho Flood Insurance Study Restudy (US 95 FISR), case number 99-09-025P, submitted by Post, Buckley, Schuh, and Jernigan (PBS&J, 1998).

The study area is presently designated a special flood hazard area, Zone A, delineated by unknown methods. This study presents a hydraulic analysis based on detailed topographic data and modeling procedures to more accurately define the flood hazard in the study area. The information will be made available to local and regional planners to further promote sound land use and floodplain management.

3.1.2 Authority and Acknowledgements

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

3.1.3 Coordination

An inventory of available data pertinent to the study from local, county, regional, and state agencies and firms, as well as from the general public, was conducted early in the study and continued throughout. Identification of the areas requiring study were identified at meetings held

with the CCRFCD, City of Las Vegas, and the Northwest Area Resident's Association (NARA). The NARA represents the neighborhood for which the study was conducted.

3.2 Area Studied

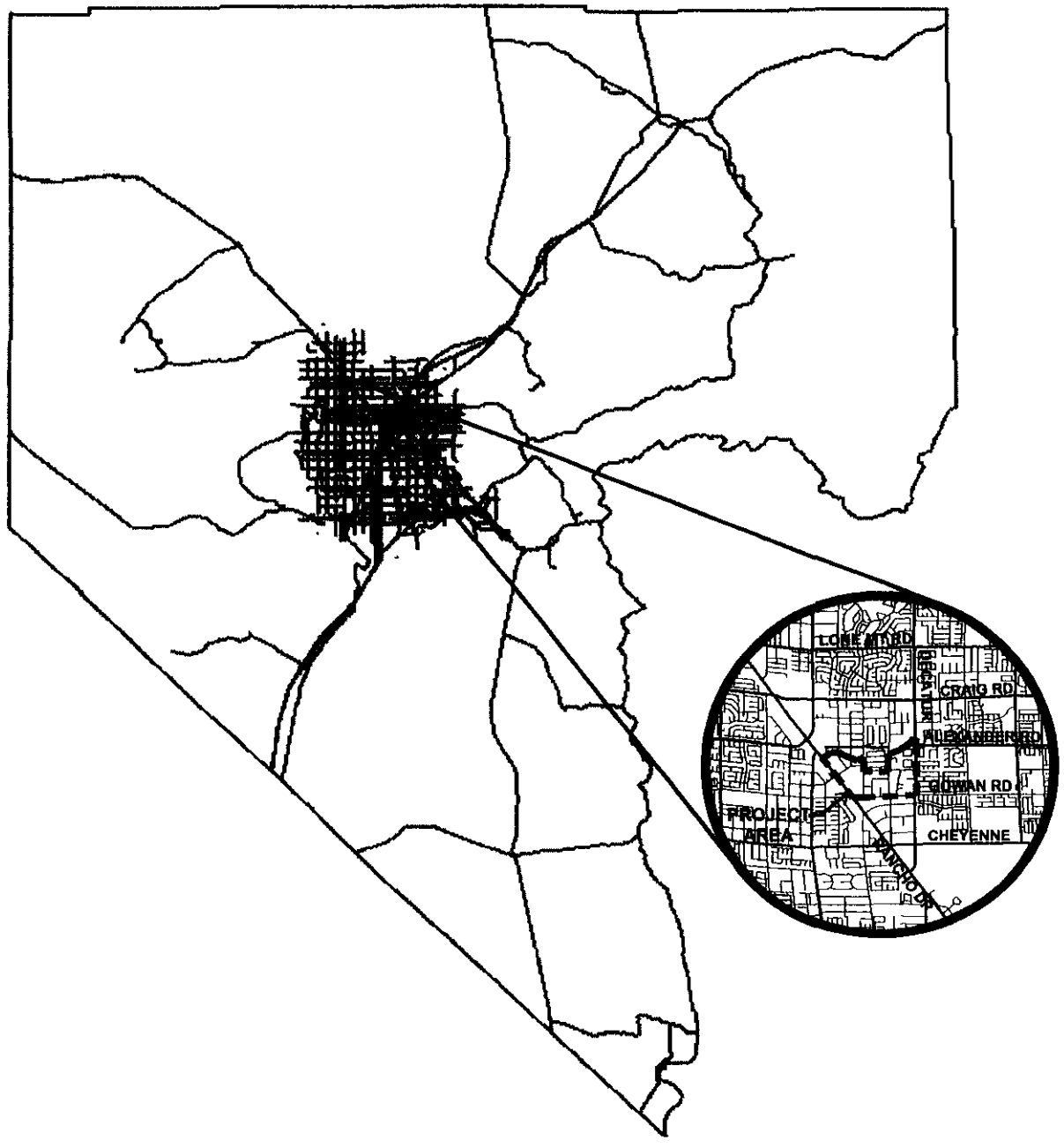
3.2.1 Scope of Study

The study area is defined by the existing flood hazard zone area between Rancho Drive, Gowan Road, Decatur Boulevard and Alexander Road (Figure 1). Since the existing flood zone was delineated in the 1980's, drainage improvements have been constructed upstream reducing the watershed area contributing to the flood hazard. The US 95 FISR evaluated the effects of the upstream drainage facilities through a detailed hydrologic analysis of the watershed area. A LOMR was issued under case number 99-09-025P on 11/2/99. The Gowan/Bradley FIS is an extension of this previous study, incorporating the calculated flow rates from the US 95 FISR along Gowan Road and Rancho Drive.

3.2.2 Community Description

The study area is located within the corporate boundaries of the City of Las Vegas, Clark County, Nevada. With a population of approximately 1.1-million, the Las Vegas valley accounts for approximately 55% of the total population of Nevada. Development within the study area consists of single and multiple family residences and some business office and commercial development. Most of the study area has been developed, although a few vacant lots remain. The residential developments are primarily medium density (2 to 4 homes/acre). Figure 2 shows some photographs of the study area.

CLARK COUNTY, NEVADA



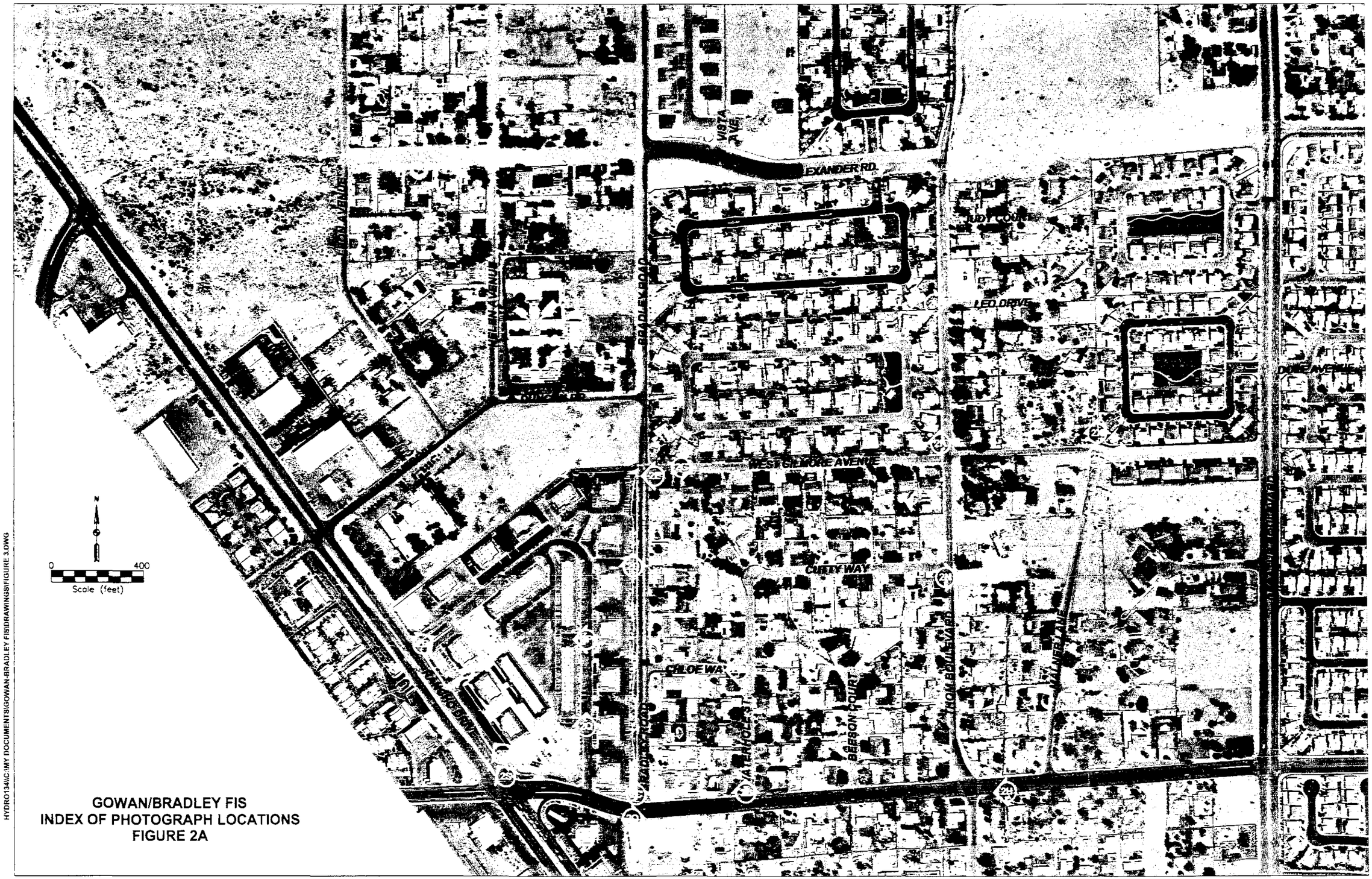
STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

GOWAN BRADLEY FLOOD INSURANCE STUDY
VICINITY MAP

THE LOUIS BERGER GROUP, INC.
LAS VEGAS, NEVADA

FIGURE 1

HYDRO134\\...DOCUMENTS\GOWAN BRADLEY FIS\DRAWINGS\FIGURE 1.DWG



HYDRO134IC:\MY DOCUMENTS\GOWAN-BRADLEY FIS\DRAWINGS\FIGURE 3.DWG

GOWAN/BRADLEY FIS
INDEX OF PHOTOGRAPH LOCATIONS
FIGURE 2A



Figure 2B – West Side of Rancho Business Park Looking North



Figure 2C – West Side of Bradley Road (Reach Bradley below Gowan) Looking North.



Figure 2D – East Side Wall Surrounding Rancho Business Park Looking North.

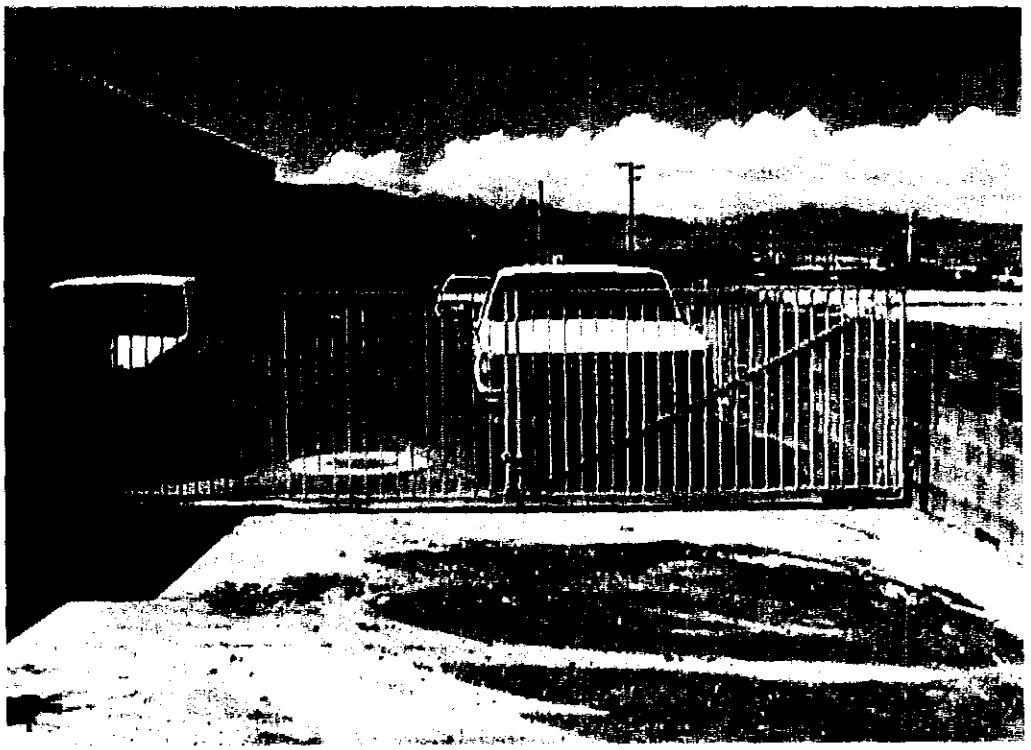


Figure 2E – Opening in Block Wall at Northeast Corner of Rancho Business Park.



Figure 2F – North of Rancho Business Park Looking West.

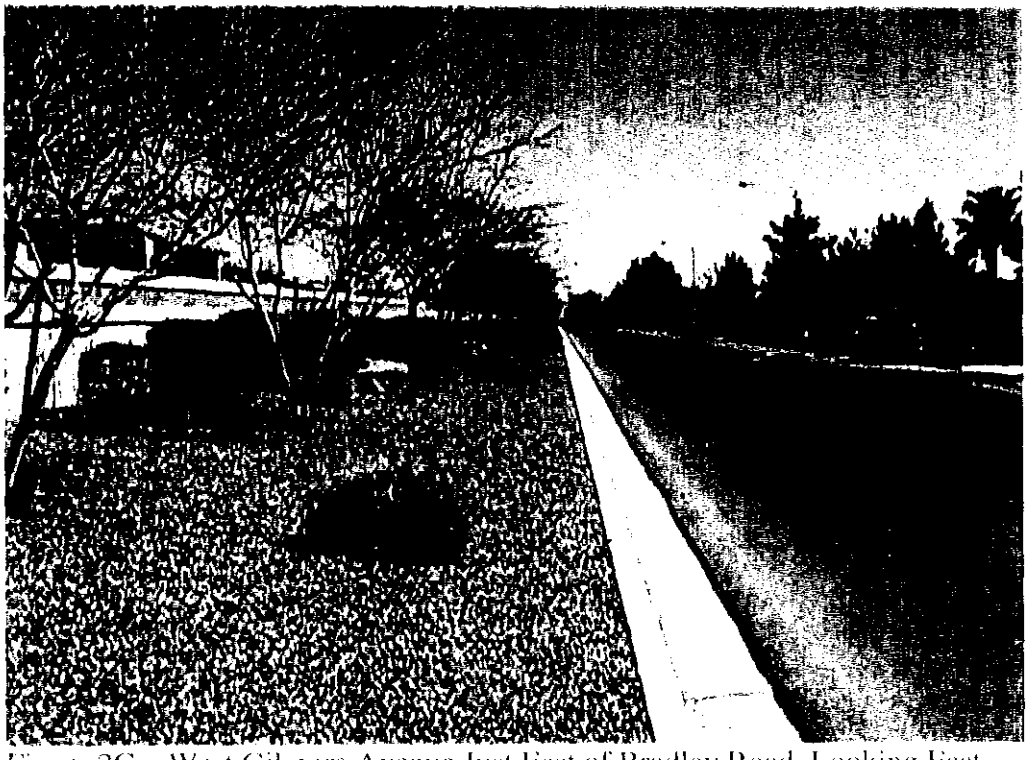


Figure 2G – West Gilmore Avenue Just East of Bradley Road, Looking East



Figure 2H – Gowan Road Looking West

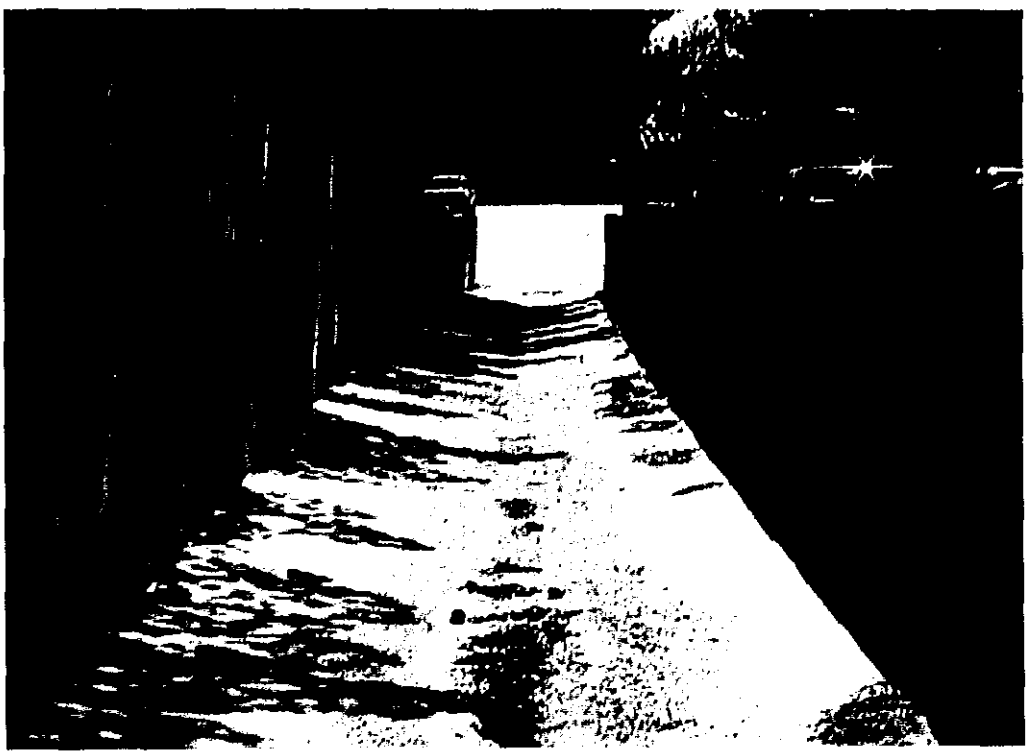


Figure 2I – Concrete Channel North of Leo Drive



Figure 2J – North of Judy Court Looking South



Figure 2K – Thom Boulevard Just North of West Gilmore Avenue, Looking North



Figure 2L – Waterhole Street Looking North

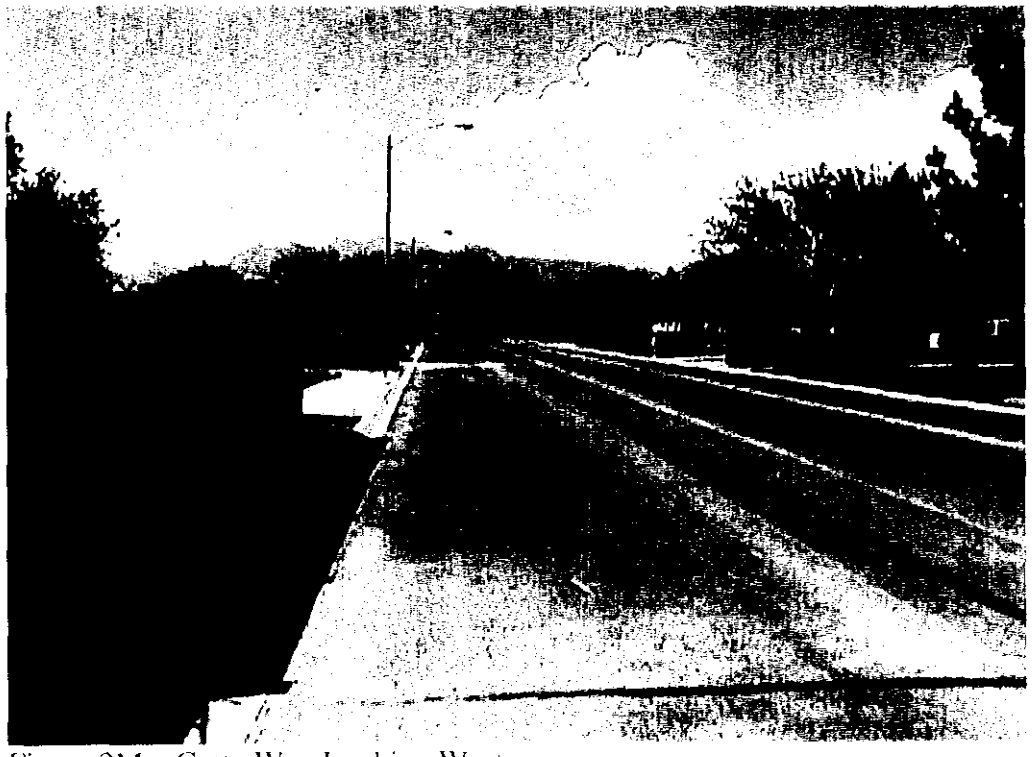


Figure 2M – Cutty Way Looking West



Figure 2N – Intersection of Thom Boulevard and Cutty Way Looking East

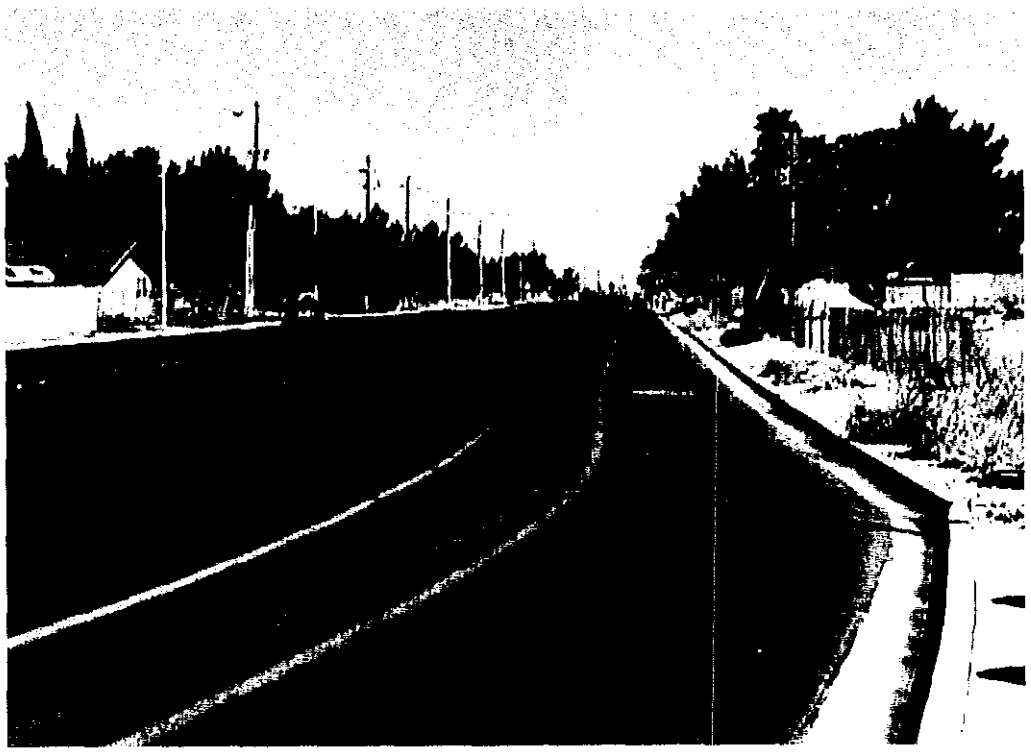


Figure 2O – Gowan Road Looking East



Figure 2P – Breakout Between reach RBP and RBPE in Rancho Business Park



Figure 2Q – Reach RBPE Looking North



Figure 2R – Reach RBP Looking Northeast



Figure 2S – East Side of Rancho Drive Looking Northwest.



Figure 2T - Sweetwater Floodwall Close Up.



Figure 2U - Sweetwater Floodwall, Looking East



Figure 2V - Intersection of Leo Drive and Thom Boulevard looking east



Figure 2W - Intersection of Leo Drive and Thom Boulevard looking south.

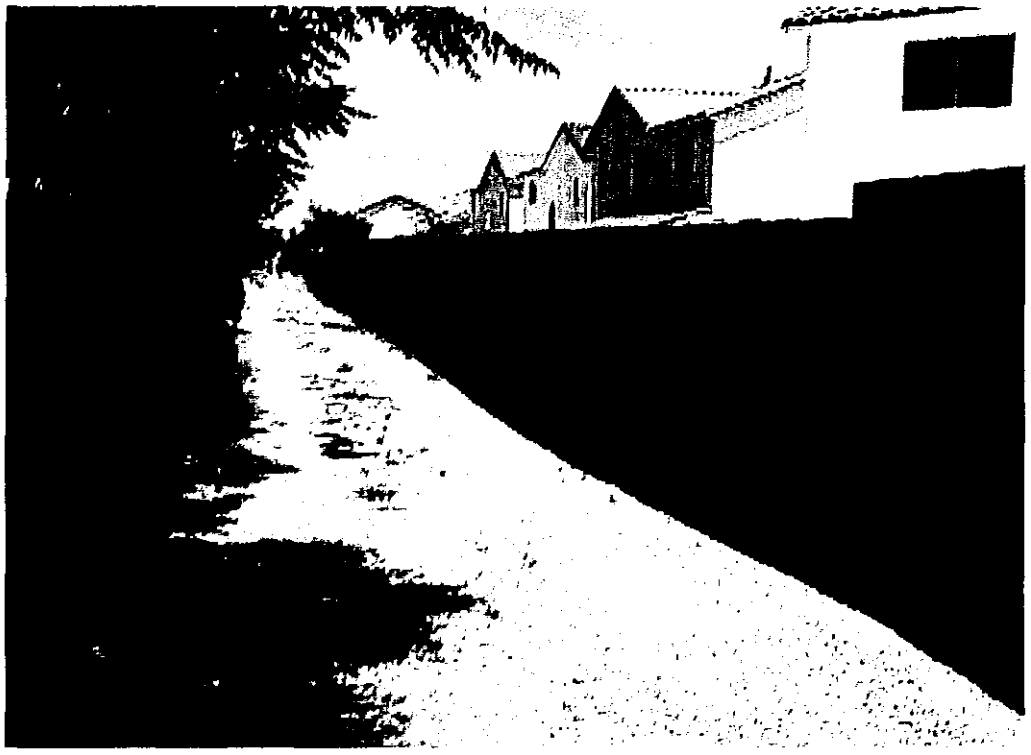


Figure 2X - Wall west of Sweetwater I development.

Las Vegas is situated in a valley that is surrounded by mountains of both sedimentary and igneous origin on all four sides. A system of ephemeral and perennial washes cross the valley floor, generally trending to the east. The Las Vegas valley annual mean precipitation is about 4 inches per year. The climate is extremely hot and dry with daytime temperatures often exceeding 100^{o} F in the summer. Daytime temperatures range from 60 to 70^{o} F in the winter.

3.2.3 Principal Flood Problems

There are several distinct types of storm events that occur in the Las Vegas Valley and the surrounding region. The two most common events are high intensity-short duration localized thunderstorms in the summer and low intensity-long duration storms in the winter. Historically, the majority of the major flood events have occurred as a result of high intensity-short duration summer thunderstorms.

The study area has a potential for flooding because the area of watershed upstream is over 20 square miles, extending to the base of the Spring Mountains. Rancho Drive is elevated above the surrounding areas. Sheet flow from the west collects along the roadway and travels southeast parallel to Rancho Drive. Both US 95 and Rancho Drive are collectors of sheet flow from the west directing flow toward the intersection of Rancho Drive and Gowan Road. During minor floods, storm water is trapped on the west side of Rancho Drive and flows southeast past Gowan Road. However, during major flood events, hydraulic models have shown that it is possible for flow to overtop Rancho Drive into the study area. East of Rancho Drive, the flow would be conveyed within the improved street network toward Decatur Boulevard.

3.2.4 Flood Protection Measures

The currently effective flood maps were originally published in the 1980's based on a flood source much larger that today. Several major flood control facilities have been constructed in the upstream watershed since the original Flood Insurance Rate Maps (FIRM's) were completed including five detention basins and associated conveyance facilities. The US 95 FISR accounted for these facilities and concluded that their construction has reduced the 100-year flow rate to the Gowan/Bradley Study Area to 1,142 cfs. The US 95 FISR establishes the currently effective hydraulics and hydrology for the Gowan/Bradley study area and FEMA accepted their findings, LOMR case number 99-09-025P dated 11/2/99. Future flood control measures in the upstream watershed are proposed in the Clark County Regional Flood Control District Master Plan to entirely eliminate the flood hazard within the next 10 years.

3.3 Engineering Methods

Flooding in the study area occurs as sheet and shallow concentrated flow conveyed within the improved streets. Information concerning methods for analysis of sheet flow in urban areas is limited. The Flood Insurance Study Guidelines and Specifications for Study Contractors suggests using historic data, reports from local engineers, and residents to identify such areas, and use field reconnaissance and engineering judgement to delineate flood hazards.

According to representatives of the NARA, flow over Rancho Drive at Gowan Road has not been observed by residents of the study area. The special flood hazard area appears to be the result of hydraulic models conducted for the intersection of Rancho Drive and Gowan Road.

Based on meetings with the CCRFCD and City of Las Vegas, it was decided that the best approach to defining flood zone boundaries in the study area would be through detailed analysis. The analysis would require more detailed survey than would normally be acquired for an approximate method flood insurance study. The study area was flown to obtain 1 foot contours which was used to prepare a HEC-RAS (River Analysis System) model. HEC-RAS is a standard water surface profile model developed by the US Army Corp of Engineers.

3.3.1 Aerial Topography and Proposed Flood Zones

Topography based on the North American Vertical Datum (NAVD) of 1988 obtained by photogrammetric methods was used for the study. The aerial photography used was taken in October 2000 and contours were generated on 1 foot intervals for the detailed study area. The topography includes spot elevations and major land marks, and was received in AutoCAD file format. Street names, HEC-RAS cross sections, station and 100-year base flood elevations, and proposed 100-year Zone A flood limits have been added to the AutoCAD file. This file has been further broken down into 7 topographic work maps (see Exhibits 1 and 2). The horizontal alignment of the file has been converted to State Plane Coordinates.

The proposed flood zone ties into the effective flood zone (limit of study by the US 95/Rancho FISR) at the intersection of Gowan Road and Rancho Drive, and at the intersection of West Gilmore Avenue and Bradley Road. Exhibits 3 and 4 show the current Flood Insurance Rate Map (FIRM) and annotated FIRM.

3.3.2 Hydrologic Analyses

Hydrologic analyses were performed in the US 95 FISR for the 100-year storm event using HEC-1 Flood Hydrograph Package to establish peak discharges affecting the study area.


N
0
400
Scale (feet)
SWEETWATER
SWEETWATER
EXANDER RD
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EED DRIVE
CREEWAY
CREEWAY
CREEWAY

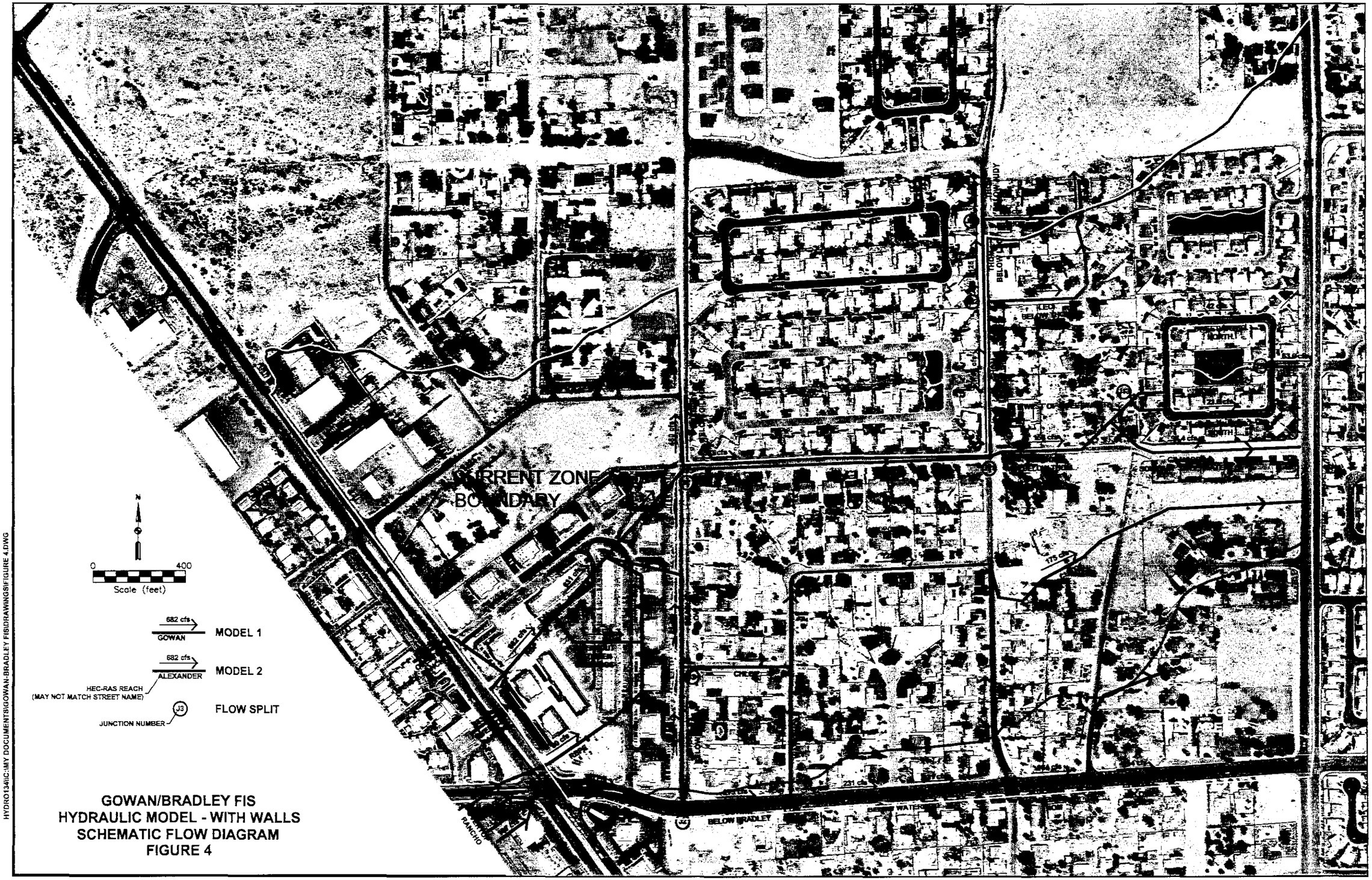
The hydrologic methodology used was in accordance with the local standards outlined in the Hydrologic Criteria and Drainage Design Manual (CCRFCD, 1996). The 100-year peak flows entering the study area, via overtopping and culverts, developed in the US 95 FISR and have been approved by FEMA, case number 99-09-025P dated 11/2/99.

PBS&J (1998) developed a HEC-RAS model to evaluate conveyance along Rancho Drive between US 95 to Gowan Road. In the US 95 FISR, water surface elevations obtained from the HEC-RAS were then input into a spreadsheet (Exhibits 5 and 6 in Section 5) to evaluate weir flow over the median of Rancho Drive. The weir flows were then input back into HEC-RAS and new water surface elevations calculated in an iterative process until they matched. The weir flows rates overtopping the median of Rancho Drive were taken directly from the previously approved US 95 FISR and input directly into the GBFIS HEC-RAS model. HEC-The US 95 FISR HEC-RAS cross sections are represented by dashed lines on the work maps prepared for this study.

3.3.3 Hydraulic Analyses – With Walls

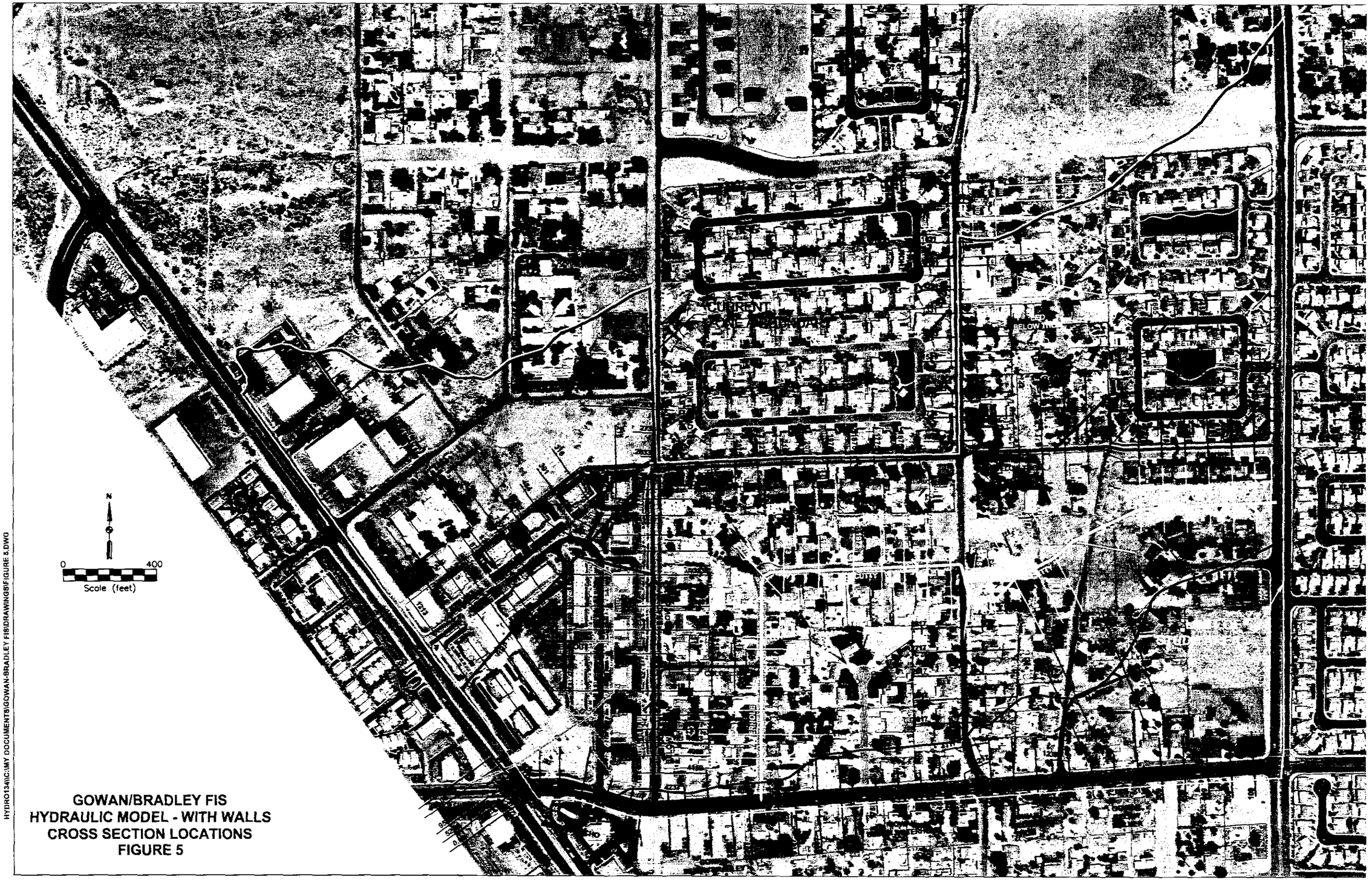
3.3.3.1 Methods

A wall exists which has the potential to affect flood hazards in the area. It is located along the east boundary of the Rancho Business Park. HEC-RAS models were developed for 2 scenarios, one with walls and one without. The worst condition was used to map the resulting 100-year flood hazard boundary. In cases where the modeled maximum flow depth exceeded 1' the area was designated as a special hazard flood zone. It should be noted that the FEMA Guidelines for Study Contractors (FEMA 1999) defines the flood hazard zone based on an



HYDRO134\C:\MY DOCUMENTS\GOWAN-BRADLEY FIS\DRAWINGS\FIGURE 4.DWG

GOWAN/BRADLEY FIS
HYDRAULIC MODEL - WITH WALLS
SCHEMATIC FLOW DIAGRAM
FIGURE 4



GOWAN/BRADLEY FIS
HYDRAULIC MODEL - WITH WALLS
CROSS SECTION LOCATIONS
FIGURE 5

HYDRO134\C:\MY DOCUMENTS\GOWAN-BRADLEY FIS\DRAWINGS\FIGURE 5.DWG

average flow depth of 1 foot for shallow flooding. The detailed topographic data allowed for more accurate estimates of the base flood elevations in this study.

Analyses of the hydraulic characteristics of flooding were conducted using HEC-RAS to provide estimates of the base flood elevation within the study area. The HEC-RAS model was broken up into two models named MODEL1 and MODEL2 to make them more manageable. Figure 4 shows the locations of each model.

Survey points taken from the aerial topography were loaded into softdesk and a Triangular Irregular Network (TIN) was generated from this data to create a 3-dimensional model of the topography in the area. Cross sections for the hydraulic model were then drawn using AutoCAD.

A set of points for each cross section location, consisting of an offset (from the left side looking downstream) and elevation, was then generated by softdesk and copied into the Hydrologic Engineering Center's River Analysis System (HEC-RAS). Cross sections based on the topography were located at about 100-foot intervals along streets and washes potentially conveying floodwater to provide a high degree of accuracy in the model. Locations of the cross sections are shown on Figure 5 and Exhibit 1.

Roughness coefficients (Manning's "n") for streets and overbank areas were estimated by field inspection. Values range from 0.016 for streets to 0.065 for overbank areas. Flow splits at street intersections were calculated by balancing the energy at the two downstream cross sections. Table 1 summarizes the flow splits at the balanced junctions.

Table 1 – Flow Split Energy Balance, With Walls Scenario

	Junction Number	Reach 1	Reach 2	Energy Elev 1 (ft)	Energy Elev 2 (ft)	Inflow (cfs)	Outflow 1 (cfs)	Outflow 2 (cfs)
Model 1	J2	Gowan below Bradley	Bradley below Gowan	2248.24	2248.22	380	275	105
	J4	Gowan below Waterhole	Waterhole	2246.00	2245.98	275	231	44
	J20	Gowan below Thom	Thom	2240.49	2240.49	231	184	47
	J3	Bradley below Chloe	Chloe	2245.99	2245.99	105	21	84
	J6	Gowan below Malner	Malner	2238.11	2238.11	184	114	70
Model 2	J32	Thom below Judy	Judy	2228.56	2228.57	125	94	31
	J11	Thom below Gilmore	Gilmore below Thom	2235.12	2235.13	303	145	158
	J12	Thom below Leo	Leo below Thom	2231.31	2231.32	145	125	20
	J7	Bradley below Gilmore	Gilmore	2244.42	2244.42	783	480	303
	J13	Sweetwater North	Sweetwater South	*	*	63.6	42	21.6

* The flow split was determined from the conveyance of the left and right side at cross section 689 of reach Gilmore.

Flows overtopping Rancho Drive were taken from the US 95 FISR starting just north of Duncan Drive and continuing along Rancho Drive to Gowan Road (see Table 2). This ties the effective US 95 FISR model to the GBFIS model. The sections used in the US 95 FISR model extended east only as far as the median of Rancho Drive.

Table 2 – Flows Overtopping Rancho Drive

Locations (from northwest to southeast)	Overtopping Flow (cfs)	Comments
Ranch Business Park (RBP)	99	Added to MODEL1 at RBP
Rancho Business Park	583	Added to MODEL1 at RBP
Rancho Business Park East (RBPE)	80	Added to MODEL1 at RBPE
Gowan Road	150	Added to MODEL1 at Gowan Road
Gowan Road	123	Added to MODEL1 at Gowan Road
Gowan Road	107	Added to MODEL1 at Gowan Road
Total	**1142**	

After examining the cross sections along Rancho Drive, it was determined that there was no conveyance east of the median until about 179 feet north of the intersection with Gowan Road and all the flow overtopping the median would continue eastward into either the Rancho Business Park or down Gowan Road east of Rancho Drive.

Flow overtopping Rancho Drive or discharging from culverts to the north of Rancho Business Park are conveyed northeast and do not cause additional flooding along West Gilmore Avenue or other streets to the south.

Based on structural analysis of block walls built according to Clark County Standards, a typical block wall can withstand 2 feet of hydrostatic pressure before failing (see Section 5). This value of 2 feet was used as a boundary condition when evaluating flow against walls, regardless of whether they were categorized as approved flood walls or not. As a check on the effect of this assumption, two models were generated in HEC-RAS, one with walls and one without walls, and it was determined that the model with walls gave a more conservative (i.e.

generally higher Base Flood Elevations) result than the model without walls since the water had more area to spread out. Several specific differences between the two models are:

- Without the walls in the model along the northern and northwestern boundaries of Rancho Business Park, the water tended to spread out north of the Rancho Business Park reducing the flow concentrating at the intersection of West Gilmore Avenue and Bradley Road.
- Without the walls in the model to the east of Thom Boulevard just north of Gowan Road to contain a breakout to the east, there was no flow split at the intersection of Thom Boulevard and Gowan Road and all the water continued east on Gowan Road.
- Similarly, without the walls in the model to the east of Thom Boulevard just north of West Gilmore Avenue to contain a breakout to the east, there was no flow split at the intersection of Thom Boulevard and West Gilmore Avenue and all the water continued east on Gilmore Road.

3.3.3.2 Street Flow

Based on the results of the model, 380 cfs impacts Gowan Road at the intersection with Rancho Drive (see Figures 4 and 5). At Bradley Road, 105 cfs turns north and 275 cfs continues east on Gowan Road. At Waterhole Street another 44 cfs turns north and 231 cfs remains in Gowan Road. Beeson Court is elevated with respect to Gowan Road and drains to the south towards Gowan Road. At Thom Boulevard, 47 cfs turns north and the remaining flow continues east on Gowan Road. There is a short reach along Gowan Road between Thom Boulevard and Malner Lane where the water is not contained by the street and could spread across the lot on the north side of the street. At Malner Lane, 70 cfs splits from Gowan Road. The remaining 114 cfs continues east on Gowan Road to Decatur Boulevard and out of the area of interest.

For the purposes of the model, the Rancho Business Park was divided into the Rancho Business Park (RBP) and Rancho Business Park East (RBPE). The dividing line between the two is roughly along two buildings running north and south (see Figure 3). The northwest, north, and east sides of the combined RBP and RBPE is surrounded by a 6 foot high concrete block wall with an opening in the northeast corner. According to the US 95 FISR, 682 cfs overtops Rancho Drive and flows into RBP at the southwest end. A breakout flow of 51 cfs occurs between the two buildings separating the RBP and RBPE reaches. This value was determined using the broadcrested weir equation (equation 3.1) where the discharge coefficient (C) is assumed to be 2.7 for a side weir (Chen, 1995).

$$Q = C\,L\,D^{1.5} \qquad (3.1)$$

Table 3 – Breakout Flow Between Buildings, With Walls Model

Watersurface		Cross Section				L	D	Q
Upstream Elevation (ft)	Downstream Elevation (ft)	Upstream Elevation (ft)	Downstream Elevation (ft)	Upstream Station (ft)	Downstream Station (ft)	Distance Between x-secs (ft)	Depth of Water (ft)	Overflow (cfs)
1249.73	1249.77	1248.88	1249.17	46.0	18.0	28	0.726	46.8
1249.77	1249.79	1249.17	1249.80	18.0	9.0	9	0.294	3.9
Total								**51**

The length of wall for which the water depth exceeds two feet in height is determined from equation 3.1 where C was assumed to be 3.0 for a standard weir section. Using the total flow rate of Q equal to 783 cfs, a depth of 2 feet for D, and equation 3.1 is solved for L to determine

the length of wall that could fail or 92 feet. The failure of the wall was assumed to occur at the northeast corner parallel to Bradley Road.

Based on the weir flow analysis in the US 95 FISR, a flow of 80 cfs overtops Rancho Drive and impacts RBPE at the southwest end. This combined with the 51 cfs breakout flow from RBP produces total of 131 cfs at RBPE section 3561 (the RBPE sections 3330, 3461, 3561, 3661, and 3818 are superimposed on the sections of the same stations for reaches Bradley below Gowan and Bradley below Chloe). Starting at RBP section 484, the flow exceeds a height of 2 feet against the east wall of the business park and sections downstream of this section, inclusive, extend across Bradley Road. Accordingly, the flow from reaches RBPE and Bradley below Chloe are added to that of RBP for a combined total of 783 cfs at RBP section 484 (see Figures 4 and 5).

Water flowing east on Chloe Way and north on Waterhole Street combine at their intersection for a total of 128 cfs before continuing north on Waterhole Street (reach Cutty in Model 2, north of Chloe Way). This combines with the flow of 47 cfs from Thom Boulevard for a total of 175 cfs flowing east of Thom Boulevard (which is still part of reach Cutty in Model 2).

The flow through the block wall opening on the western wall of the Sweetwater I site was determined using the orifice equation (equation 3.2).

$$Q=C\ A\ (2gh)^{0.5} \qquad (3.2)$$

Where C is the orifice coefficient, 0.65, A is the area of the opening in square feet, and h is the height of the water above the center of the opening. The water height was taken from cross section 750 of reach "Gilmore b. Thom". Each block wall opening is 16" x 48", giving an area

of 5.33 square feet. The total flow of 62.6 cfs through both openings was then subtracted from the total of 158 cfs on Gilmore avenue, leaving 94.4 cfs flowing east on Gilmore south of the Sweetwater I site.

The flow passing to reach Sweetwater North and Sweetwater South was determined from the conveyance of the left and right overbanks of section 689 of reach Gilmore below Thom in Models 2 and 4. These flows recombine at Dole Avenue on the east edge of the Sweetwater I development.

At the intersection of Thom Boulevard and Leo Drive 20 cfs turns to the east. The cul-de-sac drains through a 5 ft wide concrete U-channel (see Figure 3). The ponding depth at the entrance to the concrete channel was determined by solving the standard weir Equation 3.1 (C=3.0) yielding a depth of 1.3 feet.

3.3.4 Hydraulic Analyses – Without Walls

3.3.4.1 Methods

The methods were similar to those used in the "with walls" scenario (see Section 3.3) with the difference being that no credit was taken for the containment provided by concrete walls. Flow splits were determined using energy balances at intersection, where applicable, just as in the "with walls" scenario. Without the containment provided by the walls the water tends to spread out, and it was necessary to extend the HEC-RAS section boundaries to account for this. In some cases the water took a completely different path, but the majority of the sections and flow paths are common to both models. Since the water tended to spread out without the walls in the model, the water surface elevations were lower, and as a result, the model "with walls" generally controlled the flood zone boundary.

Table 4 – Flow Split Energy Balance, Without Walls Model

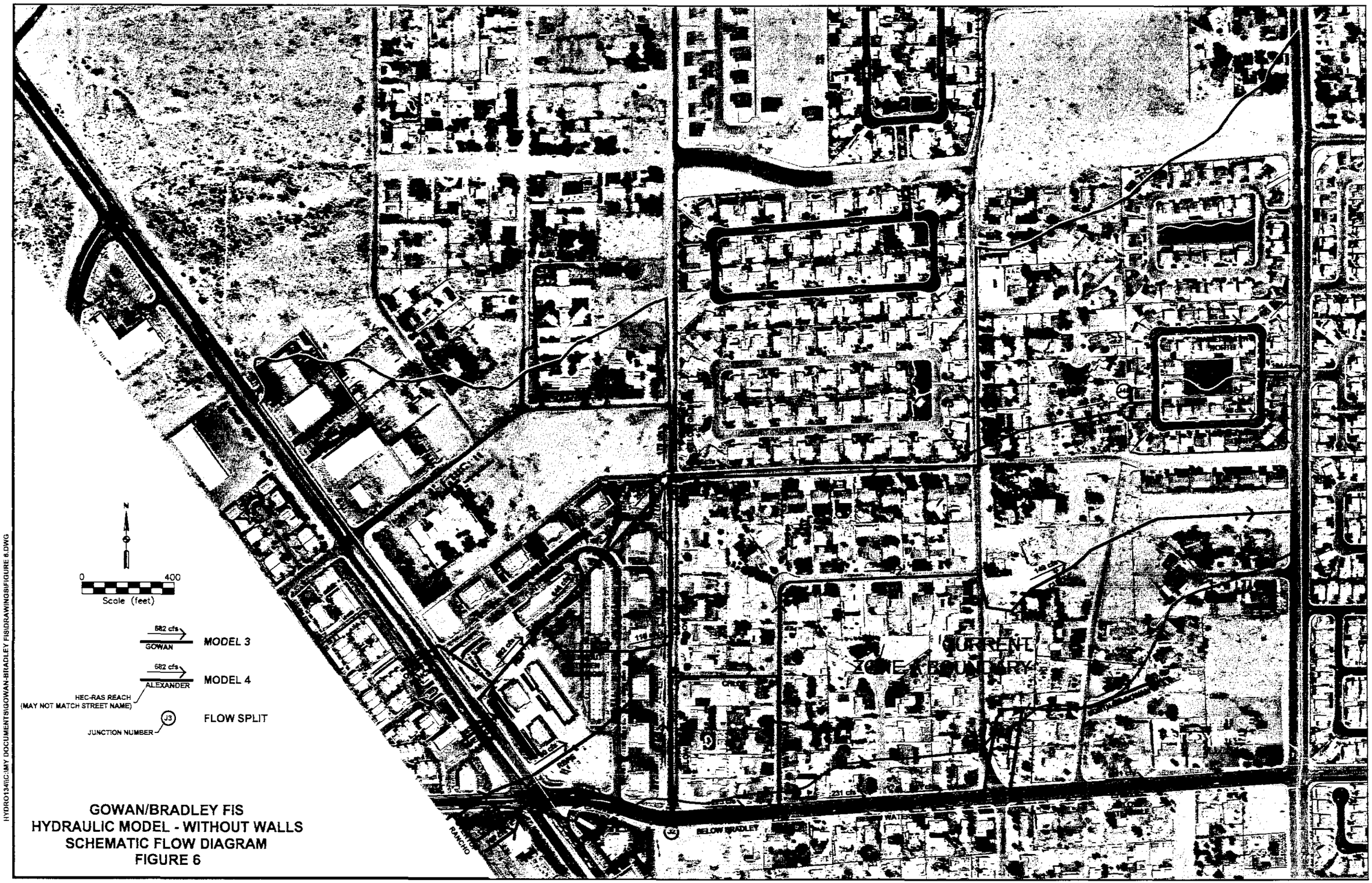
	Junction Number	Reach 1	Reach 2	Energy Elev 1 (ft)	Energy Elev 2 (ft)	Inflow (cfs)	Outflow 1 (cfs)	Outflow 2 (cfs)
Model 3	J2	Gowan below Bradley	Bradley below Gowan	2248.23	2248.22	380	275	105
	J4	Gowan below Waterhole	Waterhole	2245.98	2245.98	275	231	44
	J5	Bradley below Gilmore	Gilmore	2243.50	2243.50	283	179	104
Model 4	J40	Sweetwater North	Sweetwater South	*	*	104	55	49

* The flow split was determined from the conveyance of the left and right side at cross section 689 of reach Gilmore.

The flows overtopping Rancho Drive were the same as those used in the "with walls" scenario (see Section 3.3.1).

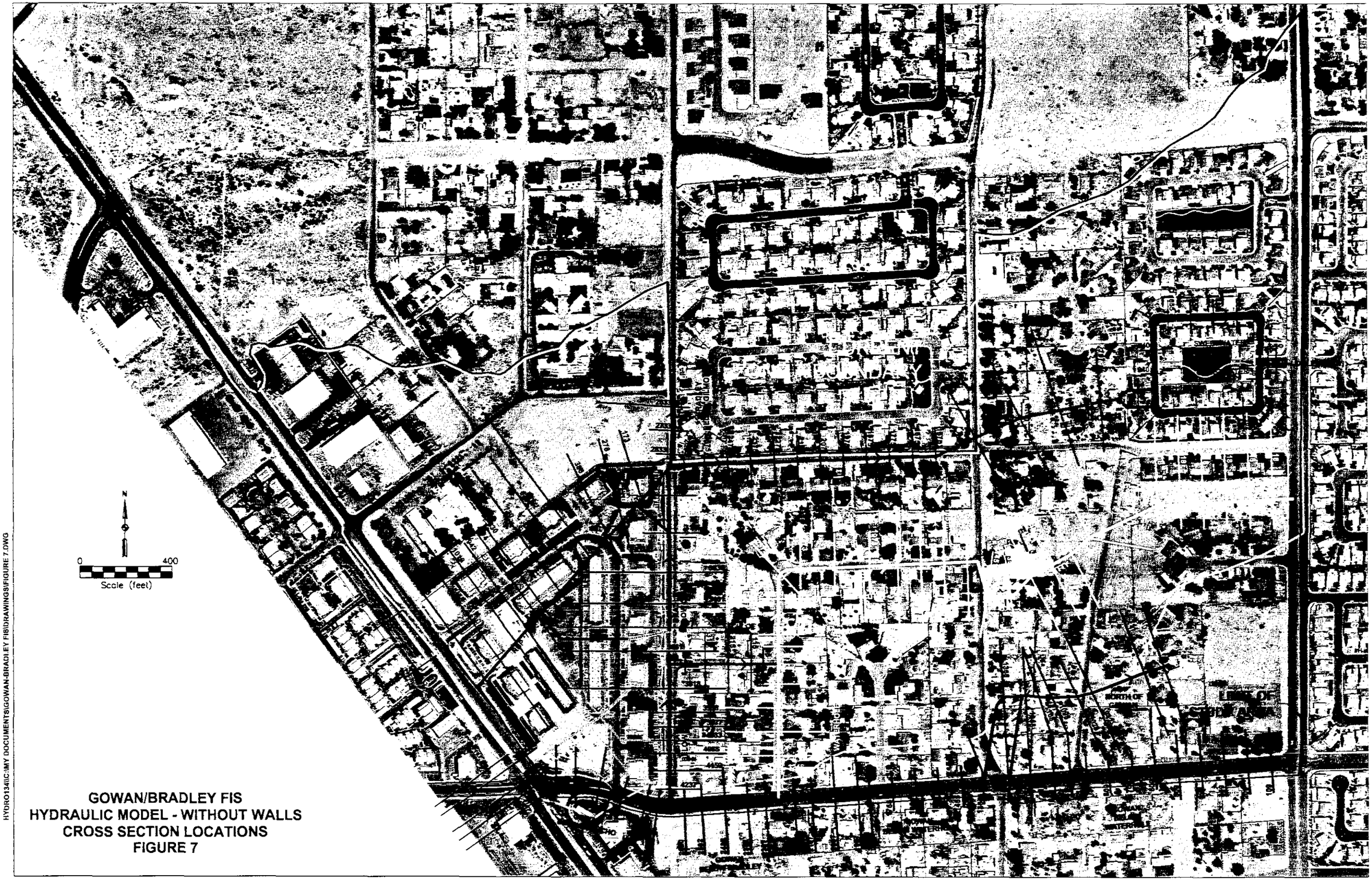
3.3.4.2 Street Flow

The flow split at the intersections of Waterhole Street and Bradley Road with Gowan Road are the same as in the "with walls" model, 105 cfs and 44 cfs, respectively (see Figures 6 and 7). Beeson Court drains to the south towards Gowan Road, just as in the "with walls" case, and is not included in the model. There is no flow split at Thom Boulevard since the walls east of the street are no longer able to contain the flow, and the flow would break out to the east, rather than turning north as in the "with walls" case. At section 1252 of reach Gowan below Waterhole, the flow is reduced from 231 cfs to 226 cfs. The flow rate of 5 cfs was determined from the conveyance of the left overbank at station 1365 of reach Gowan below Waterhole in Model 3. The flow rate of 55 cfs at station 1152 of reach Gowan below Waterhole in model 3 was determine from the maximum on the left side of the street. The remaining flow of 171 cfs is added to section 1268 of reach North of Gowan for a total of 176 cfs.



GOWAN/BRADLEY FIS
HYDRAULIC MODEL - WITHOUT WALLS
SCHEMATIC FLOW DIAGRAM
FIGURE 6

H:\DRO134\C:\MY DOCUMENTS\GOWAN-BRADLEY FIS\DRAWINGS\FIGURE 6.DWG



GOWAN/BRADLEY FIS
HYDRAULIC MODEL - WITHOUT WALLS
CROSS SECTION LOCATIONS
FIGURE 7

HYDRO134\C:\MY DOCUMENTS\GOWAN-BRADLEY FIS\DRAWINGS\FIGURE 7.DWG

The absence of walls significantly changes the model in the Rancho Business Park. Without the wall along the north and northwest side of the RBP to contain the flow, there is a breakout of 479 cfs (which was taken as the conveyance of the left overbank at section 536 of reach RBP in Model 3). Since the water can spread out to the north, the water surface elevations are lower than in the "with walls" case and as a result, the breakout flow between the buildings separating RBP from RBPE is 31 cfs as shown in the table below:

Table 5 – Breakout Flow Between Buildings, Without Walls Model

Watersurface		Cross Section				L	D	Q
Upstream Elevation (ft)	Downstream Elevation (ft)	Upstream Elevation (ft)	Downstream Elevation (ft)	Upstream Station (ft)	Downstream Station (ft)	Distance Between x-secs (ft)	Depth of Water (ft)	Overflow (cfs)
1249.53	1249.59	1248.88	1249.17	49.0	18.0	28	0.535	29.6
1249.59	1249.61	1249.17	1249.80	18.0	9.0	9	0.117	1.0
Total								**31**

Just as in the "with walls" case, a flow of approximately 80 cfs overtops Rancho Drive and impacts RBPE at the southwest end. This combines with the 31 cfs breakout flow from RBP for a combined total of 116 cfs at RBPE section 3561. At RBPE section 3561, the flow exceeds a height of the elevation of the existing ground on the east side and the flow of 116 cfs is added to the flow of section 3561 of reach Bradley below Chloe. The additional flow at this section in turn increases the energy grade line to a level that forces the 105 cfs flowing north on Bradley Road east on Chloe Way. Table 6 shows a comparison of street flows for both models at selected reaches.

Table 6 – Comparison of Flow Rates from Both Models

Location	Q "With Walls" Model (cfs)	Q "Without Walls" Model (cfs)
Gowan below Rancho	380	380
Gowan below Bradley	275	275
Gowan below Waterhole	231	231
Bradley below Gowan	105	105
Bradley below Chloe	21	116
Chloe	84	105
Waterhole	44	44
Thom	47	0
Breakout Between RBP and RBPE	51	36
Gilmore	303	104
Sweetwater North	42	55
Sweetwater South	21.6	49
Dole	63.6	104
Thom below Gilmore	145	0
Thom below Leo	125	0
Thom below Judy	94	0
Leo below Thom	20	0

3.4 Floodplain Management Applications

This study provides 100-year flood elevations and delineations 100-year flood boundary to assist local communities in developing sound floodplain management measures. Although detailed methods were used in the model for the GBFIS, the proposed flood hazard zone is designated as Zone A (which ordinarily would signify that approximate methods were used). The 500-year floodplain model was beyond the scope of this study. Although, the CCRFCD has

requested that all areas proposed to be removed from the existing flood zone be designated as Zone X (shaded) indicating the 500-year flood plain.

The 100-year (1-percent annual chance) flood plain boundary has been adopted by FEMA as a national standard in order to evaluate different regions without regional bias. For the reaches studied within the detailed study area, the boundaries of the 100-year flood zone have been delineated using the flood elevations determined at each cross section. Between cross sections the boundaries were interpolated using topographic data. The proposed 100-year floodplain boundary is shown on the FIRM (see Exhibit 4). On this map, the 100-year floodplain boundary corresponds to the boundary of special flood hazards. Areas north of the existing flood boundary and Alexander Road, and the Rancho Business Park between Rancho Drive and Gowan Road are not modeled. These areas are proposed to remain Zone A as depicted on the effective FIRM.

3.5 Insurance Application

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

- Zone A – This is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or depths are shown within this zone.
- Zone AE – This is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

- Zone AH - This is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of pending) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.
- Zone X– This is the flood insurance rate zone that corresponds to areas outside of the 500-year floodplain, areas within the 500-year floodplain, areas of 100-year flooding where average depths area less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No BFEs or depths are shown within this zone. Zone X areas that are within the limits of the 500-year flood plain are shaded on the work map, and the Zone X areas outside of the limits of the 500-year floodplain are not shaded on the work map.
- Zone D – This is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

3.6 Other Studies

Other studies are the Northwest Las Vegas Flood Insurance Study Restudy for the project area and the US95/Rancho Flood Insurance Study Restudy for the area to the west of the project area.

3.7 Bibliography and References

1. CCRFCD, 1996. *Flood Control Master Plan Update.* Prepared by: Post, Buckley, Schuh and Jernigan, Inc. and VTN Nevada, Inc. For: Clark County Regional Flood Control District.

2. Chen, 1995. *The Civil Engineering Handbook*, W.F. Chen, editor, CRC Press, 1995.

3. FEMA, 1999. *Guidelines for Study Contractors.* Federal Emergency Management Agency, 1999.

4. LBG, 2000. *Gowan/Bradley Flood Insurance Study–Data Collection Summary.* Prepared by: Louis Berger Group, Inc. For: Clark County Regional Flood Control District. November 2000.

5. PBS&J, 1998. *US 95/Rancho Flood Insurance Study Restudy, Volumes I-III and Addendum.* Prepared by Post, Buckley, Schuh & Jernigan, Inc. Prepared for: Clark County Regional Flood Control District. September 1998.

6. SE, 1999. *Plans for Aisha Gardens (Sweetwater I).* Prepared by Southwest Engineering. February, 1999.

7. HEC, 1998. *Hydrologic Engineering Center – River Analysis System (HEC-RAS) Computer Program, Version 2.2.* September 1998.

Section 4

Mapping Information

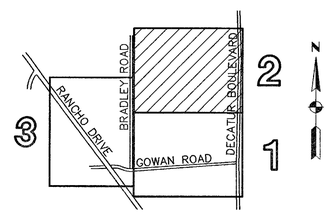


CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

GOWAN / BRADLEY FLOOD INSURANCE STUDY

2258.8	AERIAL TOPOGRAPHY SPOT ELEVATION
104 2261.48	AERIAL TOPOGRAPHY CONTROL POINT
	CORPORATE BOUNDARY
STA 100 / 2252.22	HEC-RAS STATION WATER SURFACE ELEVATION HEC-RAS CROSS-SECTION
STA 100	US 95/RANCHO FIS HEC-2 CROSS-SECTION
	ZONE X (SHADED)
	ZONE A

WITH WALLS



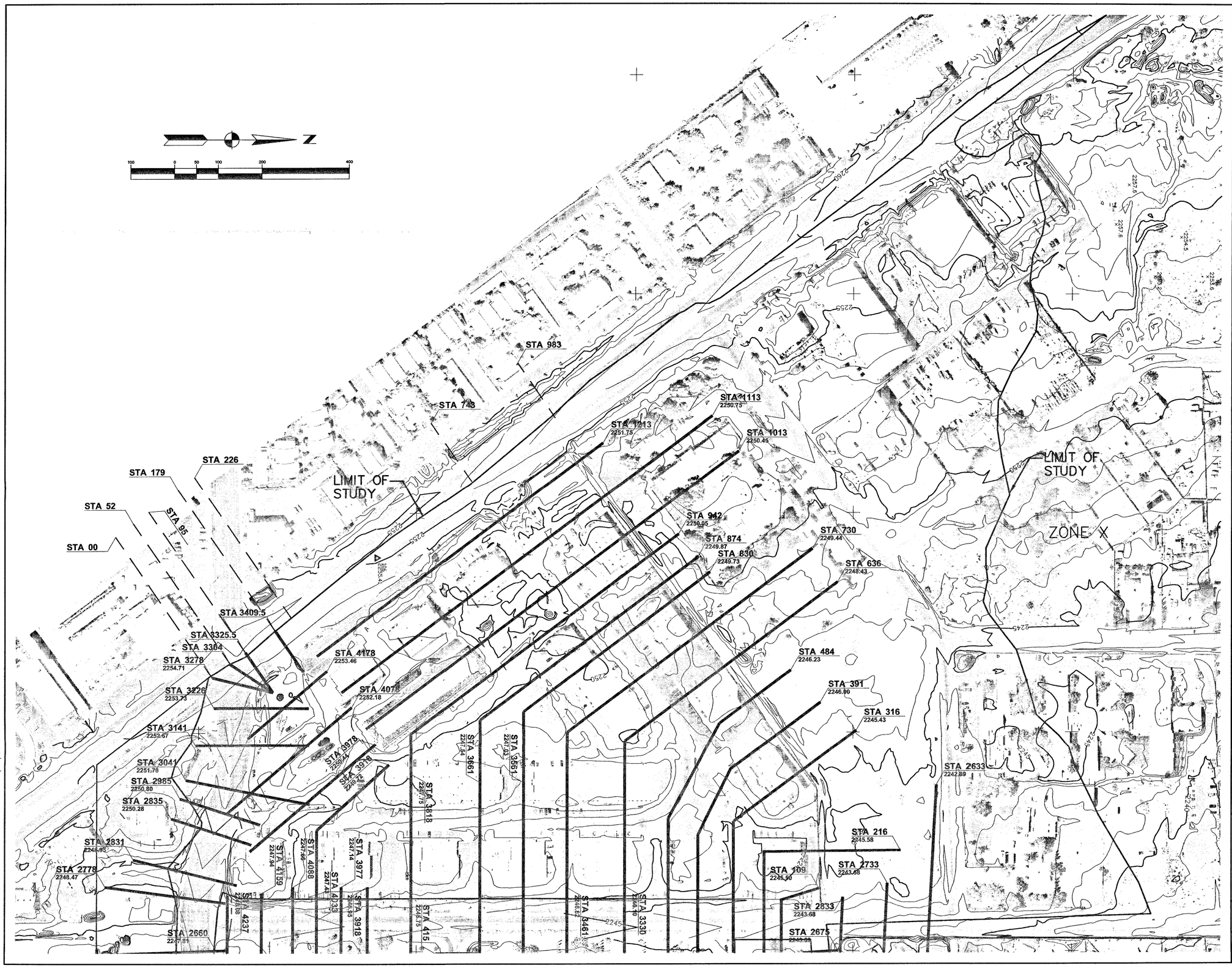
KEY MAP
N.T.S

THE LOUIS BERGER GROUP, INC.
500 AMIGO COURT SUITE 100
LAS VEGAS, NEVADA 89119

FLOOD INSURANCE STUDY
CONTOUR INTERVAL = 1FOOT.
ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.

JOB NUMBER	DRAWN BY	SCALE
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SHEET NUMBER	CHECKED BY	FILE No.
2 OF 3	RFR	849-DR03
	DATE 03/29/01	

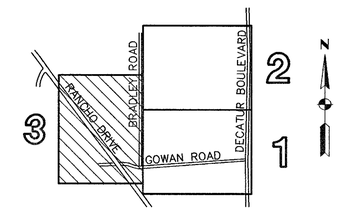
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CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

GOWAN / BRADLEY FLOOD INSURANCE STUDY

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	ZONE X (SHADED)
	ZONE A
	WITH WALLS



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C L A R K C O U N T Y
REGIONAL FLOOD CONTROL DISTRICT

GOWAN / BRADLEY FLOOD INSURANCE STUDY

2258.8 ×	AERIAL TOPOGRAPHY SPOT ELEVATION
104 △ 2261.48	AERIAL TOPOGRAPHY CONTROL POINT
	CORPORATE BOUNDARY
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STA 100	US 95/RANCHO FIS HEC-2 CROSS-SECTION
	ZONE X (SHADED)
	ZONE A

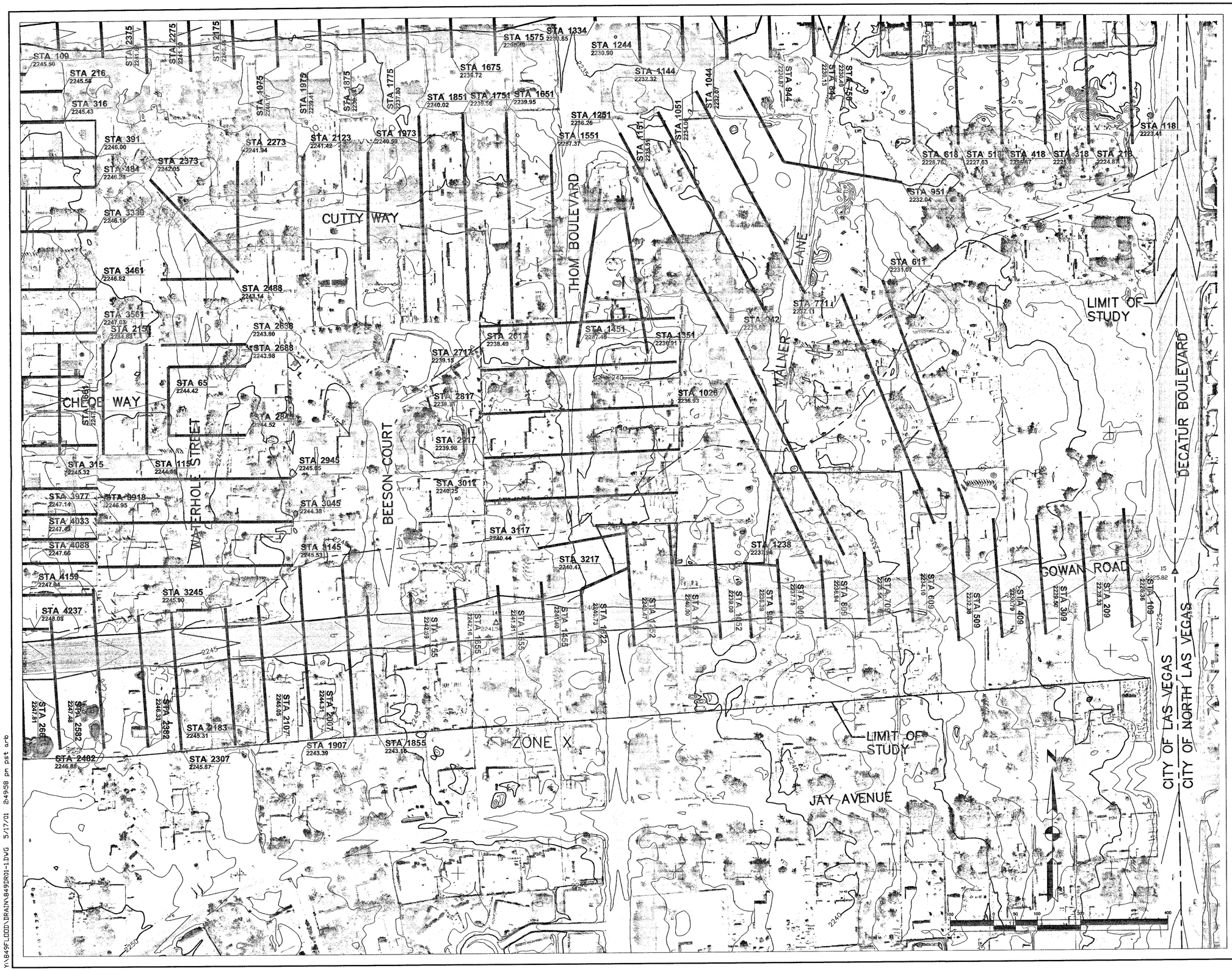
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THE LOUIS BERGER GROUP, INC.
500 AMIGO COURT SUITE 100
LAS VEGAS, NEVADA 89119

FLOOD INSURANCE STUDY
CONTOUR INTERVAL = 1FOOT.
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SHEET NUMBER	CHECKED BY	FILE No.
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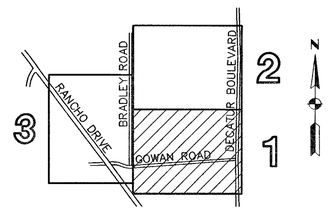

CUTTY WAY
THOM BOULEVARD
MALNER LANE
DECATUR BOULEVARD
CHEROKEE WAY
WATERHOLE STREET
BEESON COURT
LIMIT OF STUDY
LIMIT OF STUDY
GOWAN ROAD
JAY AVENUE
CITY OF LAS VEGAS
CITY OF NORTH LAS VEGAS
ZONE X
STA 109
STA 216
STA 316
STA 391
STA 484
STA 3330
STA 3461
STA 3561
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STA 2373
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CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

GOWAN / BRADLEY FLOOD INSURANCE STUDY

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STA 100	US 95/RANCHO FIS HEC-2 CROSS-SECTION
	ZONE X (SHADED)
	ZONE A

WITH OUT WALLS



KEY MAP
N.T.S

THE LOUIS BERGER GROUP, INC.
500 AMIGO COURT SUITE 100
LAS VEGAS, NEVADA 89119

FLOOD INSURANCE STUDY
CONTOUR INTERVAL = 1FOOT.
ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.

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CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

GOWAN / BRADLEY FLOOD INSURANCE STUDY

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	ZONE X (SHADED)
	ZONE A

DFIRM

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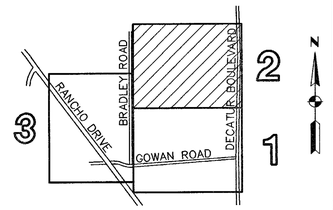
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CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

GOWAN / BRADLEY FLOOD INSURANCE STUDY

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STA 100	US 95/RANCHO FIS HEC-2 CROSS-SECTION
	ZONE X (SHADED)
	ZONE A

WITH OUT WALLS



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LAS VEGAS, NEVADA 89119

FLOOD INSURANCE STUDY CONTOUR INTERVAL = 1FOOT. ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.

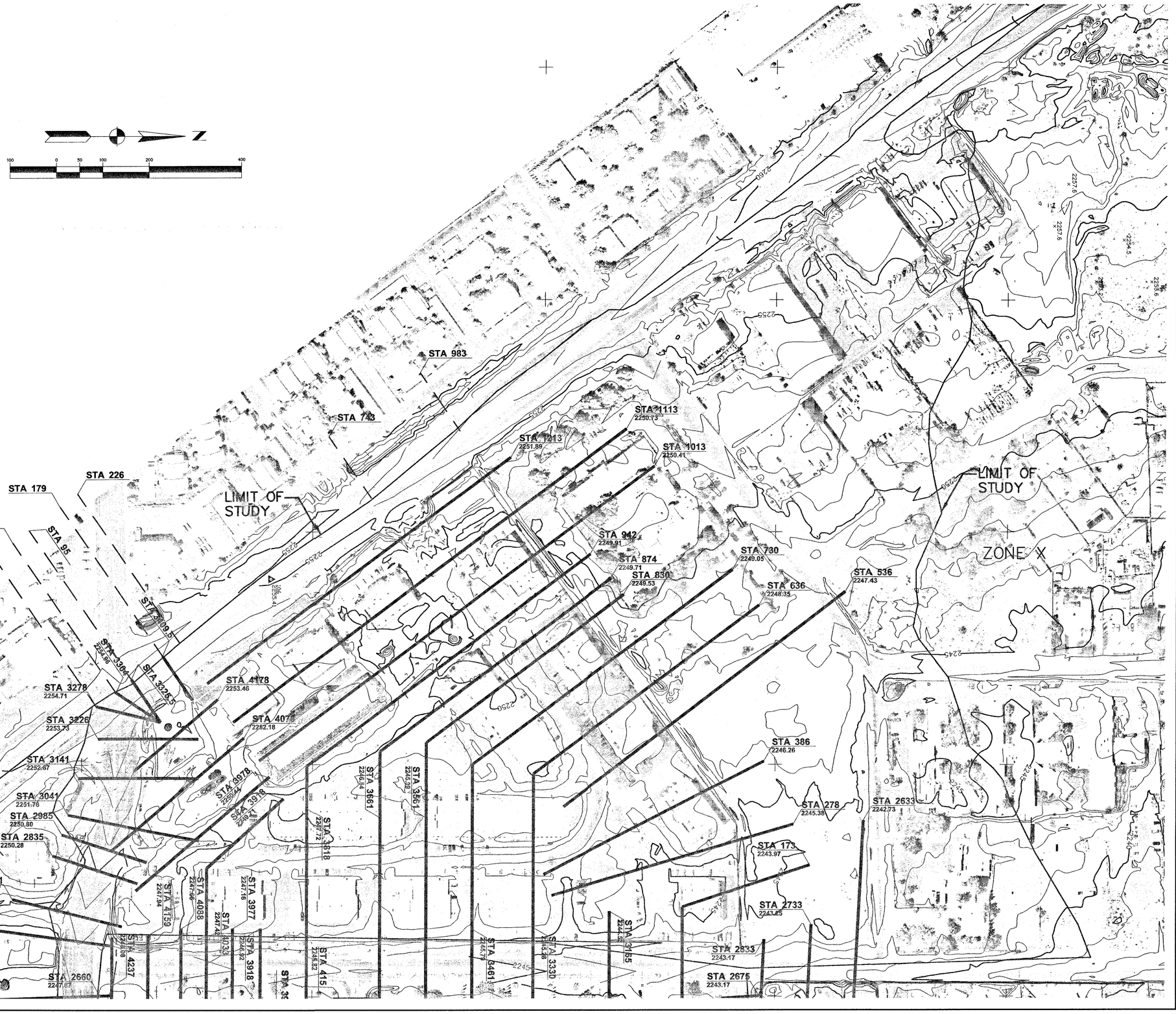
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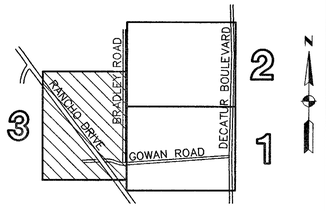
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CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

GOWAN / BRADLEY FLOOD INSURANCE STUDY

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	ZONE X (SHADED)
	ZONE A
WITH OUT WALLS	





KEY MAP
N.T.S

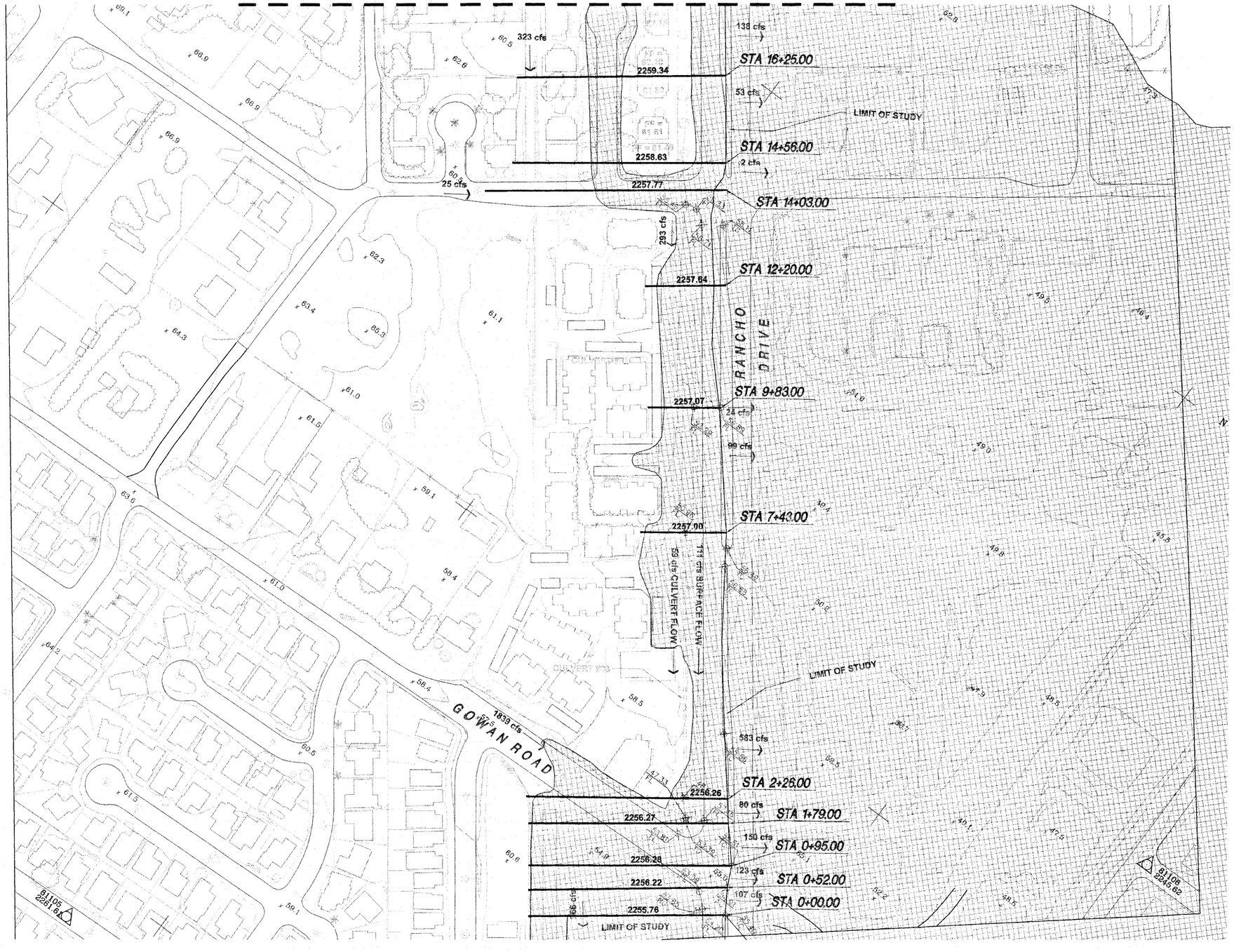
THE LOUIS BERGER GROUP, INC.
500 AMIGO COURT SUITE 100
LAS VEGAS, NEVADA 89119

FLOOD INSURANCE STUDY
CONTOUR INTERVAL = 1FOOT.
ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.

JOB NUMBER	DRAWN BY	SCALE
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SHEET NUMBER	CHECKED BY	FILE No.
3 OF 3	RFR/SJD	849-DR03-2
	DATE 03/29/01	

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MATCHLINE SEE SHEET 8



GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

1 inch = 100 ft.

Avoid cutting underground utility lines. It's costly.

Call before you Dig

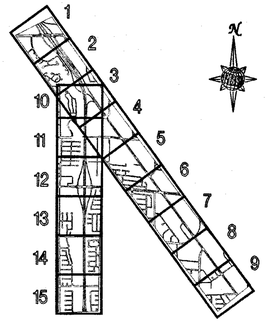
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CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

U. S. 95 and RANCHO ROAD FLOOD INSURANCE STUDY RESTUDY

FLOODPLAIN DELINEATION FOR U.S. 95 / RANCHO ROAD

	100-YEAR, ZONE AE FLOOD ZONE
	CULVERT
2326.11 — STA 0+00.00	HEC-RAS CROSS-SECTION MARKER, STATION AND 100-YEAR BFE
2326.11 — STA 0+00.00 W.S.P.G.	W.S.P.G. STATION MARKER
20.12 CONC	GROUND SURVEY SPOT ELEVATION AND MARKER
204 cfs →	100-YEAR FLOW INDICATOR
FF=24.24	FINISH FLOOR ELEVATION
20.8 x	AERIAL TOPOGRAPHY SPOT ELEVATION AND MARKER
	2 FOOT CONTOUR LINES



KEY MAP

N.T.S.

PBSJ

901 N. Green Valley Pkwy.
Suite 100
Henderson, Nevada 89014
Telephone: 702/263-7275
Fax: 702/263-7200

ENGINEERING PLANNING SURVEYING CONSTRUCTION SERVICES

FLOOD INSURANCE STUDY, RESTUDY
CONTOUR INTERVAL = 2 FEET.
ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.

Job Number	Drawn by	Scale
51635	ERR	1" = 100'
Sheet Number	Checked by	File No.
9 OF 15	MSB	635-C9
	Date 03/12/99	

Section 5

Miscellaneous Reference Materials

Forms

FEDERAL EMERGENCY MANAGEMENT AGENCY **REVISION REQUESTER AND COMMUNITY OFFICIAL**	O.M.B No. 3067-0148 Expires April 30, 2001

Public reporting burden for this form is estimated to average 2.13 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments *regarding the accuracy of the burden estimate and* any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

1. REQUESTED RESPONSE FROM FEMA

This request is for a:

☐ CLOMR A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, *Parts 60,65 & 72*).

☒ LOMR A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, floodway or flood elevations. *LOMRs typically decrease flood hazards.* (See 44 CFR Ch. 1 Parts 60 & 65.)

☐ Other Describe: _____

2. OVERVIEW

1. The basis for this revision request is (are): (check all that apply)

☐ Physical Change ☒ Improved Methodology/Data ☐ Floodway Revision

☐ Other Describe: _____

Note: A photograph is not required, but is very helpful during review.

2. Flooding Source: RANCHO/95 BASIN BETWEEN ANN ROAD AND GOWAN AVENUE

3. Project Name/Identifier: GOWAN/BRADLEY FLOOD INSURANCE STUDY

4. FEMA zone designations affected: ZONE A, ZONE AE
(example: A, AH, AO, A1-A30, A99, AE, V, V1-V30, VE, B, C, D, X)

5. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301	Katy, City	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
32003	CLARK COUNTY	NV	32003C	2155D	8/16/95
325276	CITY OF LAS VEGAS	NV	32003C	2155D	8/16/95

6. The area of revision encompasses the following types of flooding and structures. Check all that apply.

Types of Flooding	Structures
☐ Riverine	☐ Channelization
☐ Coastal	☐ Levee/Floodwall
☐ Alluvial fan	☐ Bridge/Culvert
☒ Shallow Flooding (e.g. Zones AO and AH)	☐ Dam
☐ Lakes	☐ Fill
☐ Other (describe)	☐ Other (describe)

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

4. ENCROACHMENT INFORMATION

1. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP?
☐ Yes ☒ No

Yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the approval of the revised floodway by the appropriate State agency.

2. Does the development in the floodway cause the 1% annual chance (base) elevation to increase at any location by more than 0.000 feet? ☐ Yes ☒ No ☐ N/A

3. Does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the base flood elevation to increase at any location by more than one foot (or other increase limit if community or state has adopted more stringent criteria - *even if a floodway has not been delineated by FEMA*)? ☐ Yes ☒ No

If the answer to either items is Yes, please attach documentation that all requirements of Section 65.12 of the NFIP regulations have been met, regarding evaluation of alternatives, notice to individual legal property owners, concurrence of CEO, and certification that no insurable structures are impacted.

5. MAINTENANCE RESPONSIBILITY

The community is willing to assume responsibility for ☐ performing ☐ overseeing compliance with the maintenance and operation plans of the

(Name)

flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Operation and maintenance plans are attached. ☐ **Yes** ☐ **No** ☒ **N/A**

6. REVIEW FEE

The review fee for the appropriate request category has been included. ☒ Yes Fee amount: $3100

OR

This request is based on a federally sponsored flood-control project where 50 percent or more of the project's cost is federally sponsored, or the request is based on detailed hydrologic and hydraulic studies conducted by Federal, State, or local agencies to replace approximate studies conducted by FEMA and shown on the effective FIRM; thus the project is fee exempt.
☐ *Yes*

Please see Instructions for Fee Amounts

7. SIGNATURE

Note:* I understand that my signature indicates that all information *submitted in support of this request is correct

Signature of Revision Requester

SYNDI DUDLEY, Ph.D, P.E., PROJECT MANAGER
Printed Name and Title of Revision Requester

The Louis Berger Group, Inc.
Company Name

Telephone No.: 702-736-6632 Date: 3/28/01

***Note:* Signature indicates that the community understands, from the revision requester, the impacts of the revision on flooding conditions in the community.**

Signature of Community Official

KEVIN EUBANKS, ASSISTANT GENERAL MANAGER, CCRFCD
Printed Name and Title of Community Official

CLARK COUNTY, NEVADA
Community Name

Telephone No.: 702-455-3139 Date:

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is in accordance with 44 CFR Ch. 1, Sect 65.2

Signature

SYNDI DUDLEY, Ph.D, P.E., PROJECT MANAGER
Printed Name and Title of Revision Requester

Registr No. 11070 Expires (Date) 6/30/2001 State NV

Type of License/Expertise: CE

Check which forms have been included with this request

Form Name and (Number)	Required if .....
☐ **Hydrologic** (3)	new or revised discharges
☒ **Hydraulic** (4)	new or revised water-surface elevations
☒ **Mapping** (5)	floodplain/floodway changes
☐ **Channelization** (6)	channel is modified
☐ **Bridge/Culvert** (7)	addition/revision of bridge/culvert
☐ **Levee/Floodwall** (8)	addition/revision of levee/floodwall
☐ **Coastal** (9)	new or revised coastal elevations
☐ **Coastal Structures** (10)	addition/revision of coastal structure
☐ **Dam** (11)	addition/revision of dam
☐ **Alluvial Fan** (12)	structures proposed on alluvial fan

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: CITY OF LAS VEGAS, CLARK COUNTY, NEVADA

Flooding Source: RANCHO/95 BASIN BETWEEN ANN ROAD AND GOWAN AVENUE

Project Name/Identifier: GOWAN/BRADLEY FLOOD INSURANCE STUDY

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: DECATUR BOULEVARD

Upstream Limit: RANCHO DRIVE

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☒ **Natural** **File Name** Model 1,2,3, and 4 ☐ **Floodway** **File Name** ____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☐ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☒ Yes ☐ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☒ Supercritical depth ☒ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☒ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☒ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. **Profile Transition**

   a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

   Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
   Cross-Section # *Cross-Section #*

   b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

   Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
   Cross-Section # *Cross-Section #*

   c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

   Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
   Cross-Section # *Cross-Section #*

2. **Profile Checklist (check box if information has been provided on profile)**

   The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

   ☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

   ☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

   ☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

   ☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

   *All recurrence intervals in the effective study must also be profiled.

   Floodway Data Table

   Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

   Floodway Data Table Attached ☐ **Yes** ☐ **Not Required**

3. Explanation of Starting Water Surface Elevations

Reach	Method
Gowan below Rancho	Normal Depth
Rancho Business Park (RBP)	Critical Depth was used since the source was modeled as weir flow overtopping the median of Rancho Drive.
Rancho Business Park East (RBPE)	Critical Depth was used since the source was modeled as weir flow overtopping the median of Rancho Drive.

4. Explanation of Results

Supercritical Depth	Supercritial flows can be expected due to the slopes of the paved streets.
Critical Depth	Critical depths can be expected due to abrupt changes in geometry from one cross section to the next.
Water surface elevations higher Than the cross section endpoints.	This occurs only in situations where the cross section end is adjacent to other cross sections at an intersection with a flow split or where the hydraulic depth is less than one foot and does not constitute a special flood hazard zone.

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE / COASTAL MAPPING**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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Note: Fill out one form for each flooding source studied

Community Name: CITY OF LAS VEGAS, CLARK COUNTY, NEVADA

Flooding Source: RANCHO/95 BASIN BETWEEN ANN ROAD AND GOWAN AVENUE

Project Name/Identifier: GOWAN/BRADLEY FLOOD INSURANCE STUDY

This is a ☒ Manual ☐ Digital submission. *Digital map submissions may be used to update digital FIRMs (DFIRMs). For updating DFIRMs, these submissions must be coordinated with FEMA Headquarters as far in advance as possible.*

1. MAPPING CHANGES

1. A topographic workmap must be submitted showing the following information (check N/A when not applicable):

a. Revised approximate 100-year floodplain boundaries (Zone A)	☒ Yes	☐ No	☐ N/A
b. Revised detailed 100- and 500-year floodplain boundaries.	☒ Yes	☐ No	☐ N/A
c. Revised floodway boundaries	☒ Yes	☐ No	☐ N/A
d. Location and alignment of all cross sections with stationing control indicated.	☒ Yes	☐ No	☐ N/A
e. Stream alignments, road alignments and dam alignments.	☒ Yes	☐ No	☐ N/A
f. Current community boundaries.	☒ Yes	☐ No	☐ N/A
g. Effective 100- year floodplain and floodway boundaries from FIRM/FBFM reduced or enlarged to the scale of the topographic workmap	☒ Yes	☐ No	☐ N/A
h. Tie-ins between the effective and revised 100-, 500-year and floodway boundaries	☒ Yes	☐ No	☐ N/A
i. The requester's property boundaries and community easements	☐ Yes	☐ No	☒ N/A
j. The signed certification of a registered professional engineer	☒ Yes	☐ No	☐ N/A
k. Location and description of reference marks	☒ Yes	☐ No	☐ N/A
l. Vertical datum (example: NGVD, NAVD)	☒ Yes	☐ No	☐ N/A
m. Coastal zone designations tie into adjacent areas not being revised	☐ Yes	☐ No	☒ N/A
n. Location and alignment of all coastal transects used to revise the coastal analyze	☐ Yes	☐ No	☒ N/A
o. V-zone has been delineated to extend landward to the heel of the primary frontal dune	☐ Yes	☐ No	☒ N/A

If any items are marked No or N/A please attach an explanation.

2. What is the source and date of the updated topographic information (example: orthophoto maps, July 1985; filed survey, May 1979, beach profile, June 1987 etc.)? NEW AERIAL PHOTOGRAPHIC TOPOGRAPHY, OCTOBER, 2000

3. What is the scale and contour interval of the following workmaps?

Effective FIS Scale 1"=40' Contour Interval 1'

Revision Request Scale 1"=40; Contour Interval 1'

NOTE: Revised topographic information must be of equal or greater detail than effective.

4. Attach an annotated FIRM/FBFM at the scale of the effective FIRM/FBFM showing the revised 100- and 500-year floodplain and the floodway boundaries and how they tie into those shown on the effective FIRM/FBFM downstream and upstream of the revisions or adjacent to the area of revision for coastal studies. **FIRM/FBFM attached?** ☒ **Yes** ☐ **No**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed

2. Has fill been/will be placed in the regulatory floodway? ☐ Yes ☐ No
If Yes, please attach completed Riverine Hydraulic Analysis Form (Form 4).

3. Has fill been/will be placed in floodway fringe (*area between the floodway and 100-year floodplain boundaries*)? ☐ Yes ☐ No

If Yes, then complete A, B, C, and D below.

a. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? ☐ Yes ☐ No

If Yes, justify steeper slopes

b. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? (*Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.)*

☐ Yes ☐ No

If No, describe erosion protection provided

c. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? ☐ Yes ☐ No

d. Can structures conceivably be constructed on the fill at any time in the future? ☐ Yes ☐ No

If Yes, attach certification of fill compaction (Item 3c. above) by the community's NFIP permit official, a registered professional engineer, or an accredited soils engineer in accordance with Subparagraph 65.5(a)(6) of the NFIP regulations.

Fill certification attached ☐ **Yes** ☐ **No**

4. Has fill been/will be placed in a V zone? ☐ Yes ☐ No

If Yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall?

☐ Yes ☐ No

If Yes, attach the Coastal Structures Form (Form 10).

Explanation of item 1

Item 1.i	The request is being made by Clark County, Nevada on behalf of the City of Las Vegas and the local community.
Item 1.m, 1.n, and 1.o	These apply to coastal areas. The proposed changes are not near a coastal area.

Exhibit 5
Weir Calculations from US 95/Rancho FIS

ITERATION 1 Weir Flow Coefficient = 2.7

Upstream and Downstream Cross-Section Stations	Water Surface Elevation Upstream	Water Surface Elevation Downstream	Cross-Section Elevation Upstream at U.S. 95	Cross-Section Elevation Downstream at U.S. 95	Weir Depth Upstream (feet)	Weir Depth Downstream (feet)	Average Weir Depth (feet)	Weir Length (feet)	Calculated Wier Flow (cfs)	Total Flow at Downstream Cross-section (cfs)	Flow Used in HEC-RAS (cfs)	Difference in Flow (cfs)	Weir Flow Used (cfs)	Culvert Flow Diverted (cfs)	Net Incoming Flow (cfs)	Change in Upstream Water Surface Elev. From Previous to Current Iteration
3836-3756	2272.20	2271.91	2272.10	2271.70	0.10	0.21	0.15	80	13	1340	1340	0	13	0	0	0.00
3756-3666	2271.91	2271.49	2271.70	2271.30	0.21	0.19	0.20	90	22	1318	1319	1	21	0	0	0.00
3666-3479	2271.49	2270.51	2271.30	2270.50	0.19	0.01	0.10	187	16	1302	1302	0	17	0	0	0.00
3479-3145	2270.51	2269.11	2270.50	2268.80	0.01	0.31	0.16	334	58	1230	1229	-1	59	14	0	0.00
3145-2801	2269.11	2267.53	2268.80	2266.90	0.31	0.63	0.47	344	299	883	879	-4	302	48	0	0.00
2801-2549	2267.53	2265.55	2266.90	2265.30	0.63	0.25	0.44	252	199	685	680	-5	199	0	0	0.00
2549-2280	2265.55	2263.25	2265.30	2263.50	0.25	-0.25	0.00	269	0	636	631	-5	0	117	68	0.00
2280-2206	2263.25	2262.76	2263.50	2263.00	-0.25	-0.24	0.00	74	0	636	631	-5	0	0	0	0.00
2206-1932	2262.76	2261.61	2263.00	2261.10	-0.24	0.51	0.14	274	37	599	594	-5	37	0	0	0.00
1932-1823	2261.61	2261.07	2261.10	2260.40	0.51	0.67	0.59	109	133	465	461	-4	133	0	0	0.00
1823-1625	2261.07	2259.34	2260.40	2259.20	0.67	0.14	0.41	198	138	328	323	-5	138	0	0	0.00
1625-1456	2259.34	2258.63	2259.20	2258.30	0.14	0.33	0.24	169	52	276	270	-6	53	0	0	0.00
1456-1403	2258.63	2257.77	2258.30	2258.00	0.33	-0.23	0.05	53	2	299	293	-6	2	0	25	0.00
1403-1220	2257.77	2257.64	2258.00	2258.00	-0.23	-0.36	0.00	183	0	299	293	-6	0	0	0	0.00
1220-983	2257.64	2257.07	2258.00	2256.89	-0.36	0.18	0.00	237	0	275	269	-6	0	24	0	-0.01
983-743	2257.07	2257.00	2256.89	2256.60	0.18	0.40	0.29	240	101	174	170	-4	99	0	0	0.00
743-226	2257.00	2256.27	2256.60	2255.54	0.40	0.73	0.57	517	593	1420	1429	9	580	0	1839	0.00
226-179	2256.27	2256.28	2255.54	2255.53	0.73	0.75	0.74	47	81	1339	1349	10	80	0	0	-0.01
179-95	2256.28	2256.28	2255.53	2255.51	0.75	0.77	0.76	84	150	1189	1199	10	150	0	0	-0.01
95-52	2256.28	2256.22	2255.51	2254.91	0.77	1.31	1.04	43	123	1066	1076	10	123	0	0	0.00
52-0	2256.22	2255.76	2254.91	2255.40	1.31	0.36	0.84	52	107	959	968	9	108	0	0	-0.01

ITERATION 2 Weir Flow Coefficient = 2.7

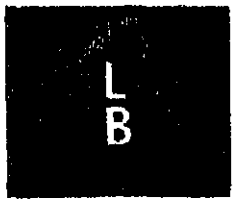
Upstream and Downstream Cross-Section Stations	Water Surface Elevation Upstream	Water Surface Elevation Downstream	Cross-Section Elevation Upstream at U.S. 95	Cross-Section Elevation Downstream at U.S. 95	Weir Depth Upstream (feet)	Weir Depth Downstream (feet)	Average Weir Depth (feet)	Weir Length (feet)	Calculated Wier Flow (cfs)	Total Flow at Downstream Cross-section (cfs)	Flow Used in HEC-RAS (cfs)	Difference in Flow (cfs)	Weir Flow Used (cfs)	Culvert Flow Diverted (cfs)	Net Incoming Flow (cfs)	Change in Upstream Water Surface Elev. From Previous to Current Iteration
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3756-3666	2271.91	2271.49	2271.70	2271.30	0.21	0.19	0.20	90	22	1318	1319	1	21	0	0	0.00
3666-3479	2271.49	2270.51	2271.30	2270.50	0.19	0.01	0.10	187	16	1302	1302	0	17	0	0	0.00
3479-3145	2270.51	2269.11	2270.50	2268.80	0.01	0.31	0.16	334	58	1230	1229	-1	59	14	0	0.00
3145-2801	2269.11	2267.53	2268.80	2266.90	0.31	0.63	0.47	344	299	883	879	-4	302	48	0	0.00
2801-2549	2267.53	2265.55	2266.90	2265.30	0.63	0.25	0.44	252	199	685	680	-5	199	0	0	0.00
2549-2280	2265.55	2263.25	2265.30	2263.50	0.25	-0.25	0.00	269	0	636	631	-5	0	117	68	0.00
2280-2206	2263.25	2262.76	2263.50	2263.00	-0.25	-0.24	0.00	74	0	636	631	-5	0	0	0	0.00
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1932-1823	2261.61	2261.07	2261.10	2260.40	0.51	0.67	0.59	109	133	465	461	-4	133	0	0	0.00
1823-1625	2261.07	2259.34	2260.40	2259.20	0.67	0.14	0.41	198	138	328	323	-5	138	0	0	0.00
1625-1456	2259.34	2258.63	2259.20	2258.30	0.14	0.33	0.24	169	52	276	270	-6	53	0	0	0.00
1456-1403	2258.63	2257.77	2258.30	2258.00	0.33	-0.23	0.05	53	2	299	293	-6	2	0	25	0.00
1403-1220	2257.77	2257.64	2258.00	2258.00	-0.23	-0.36	0.00	183	0	299	293	-6	0	0	0	0.00
1220-983	2257.64	2257.07	2258.00	2256.89	-0.36	0.18	0.00	237	0	275	269	-6	0	24	0	0.00
983-743	2257.07	2257.00	2256.89	2256.60	0.18	0.40	0.29	240	101	174	170	-4	99	0	0	0.00
743-226	2257.00	2256.26	2256.60	2255.54	0.40	0.72	0.56	517	585	1428	1426	-2	583	0	1839	0.00
226-179	2256.26	2256.27	2255.54	2255.53	0.72	0.74	0.73	47	79	1349	1346	-3	80	0	0	0.01
179-95	2256.27	2256.28	2255.53	2255.51	0.74	0.77	0.75	84	149	1200	1196	-4	150	0	0	0.01
95-52	2256.28	2256.22	2255.51	2254.91	0.77	1.31	1.04	43	123	1077	1073	-4	123	0	0	0.00
52-0	2256.22	2255.76	2254.91	2255.40	1.31	0.36	0.84	52	107	970	966	-4	107	0	0	0.00

IN PUT INTO
BRADLEY
HEC-RAS MODELS

Exhibit 6
FIS Work Map from US 95/Rancho FIS

Structural Analysis of Concrete Block Wall

The **LOUIS BERGER GROUP**, Inc.
810 West San Mateo, Suite 200A
Santa Fe, New Mexico 87505



FACSIMILE TRANSMITTAL SHEET

TO: Syndi Durbin / LBG	FROM: Robert Bodwaldt
COMPANY:	DATE: 1/31/01
FAX NUMBER:	TOTAL NO. OF PAGES INCLUDING COVER: 3
PHONE NUMBER:	SENDERS PHONE NUMBER 505-989-7788
RE: Masonry walls w/ H2O Load.	SENDERS FAX NUMBER: 505-989-7787

☐ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☐ FOR RECORD ☐ PLEASE RECYCLE

MESSAGE:

LOUIS BERGER GROUP MEMO

DATE: 1/31/01

TO: SYNDI DUDLEY / LBG, LAS VEGAS

CC: TOM DENSFORD / LBG

FROM: ROBERT BOOKWALTER / LBG, SANTA FE

RE: REVIEW OF YARD WALL W/ WATER ON ONE SIDE

Syndi,

We have looked at the capacity of the walls shown on the "REGULAR C.M.U. AND MORTARLESS HEADJOINT MASONRY WALL" drawings with a water level on one side of the walls. In the design with the wall centered on the footing we looked at an overturning safety factor of 1.5 and of 1.0. The following table gives the height of the water behind the wall when it fails in the different configurations listed in the chart on the drawing .

Wall Height (ft)	H20 Height w/ SF = 1.5	H20 Height w/ SF = 1.0	Comments
4'	1.75'	2.25'	Fails by overturning and excessive soil pressure.
5'	2.00'	2.50'	Fails by overturning and sliding.
6'	2.25'	3.00'	Fails by overturning and sliding.
7'	3.00'	3.75'	Fails by overturning and sliding.
8'	3.00'	4.00'	Fails by overturning and sliding.

For the other wall design with a six foot height and the wall to the edge of the footing, the wall will fail by different means at different heights. These are listed below.

Height of H2O behind wall (ft)	Comments
2.00'	Fails by excessive soil pressure.
2.50'	Fails by overturning with a Safety Factor of 1.5.
2.75'	Fails by overturning with a Safety Factor of 1.0.

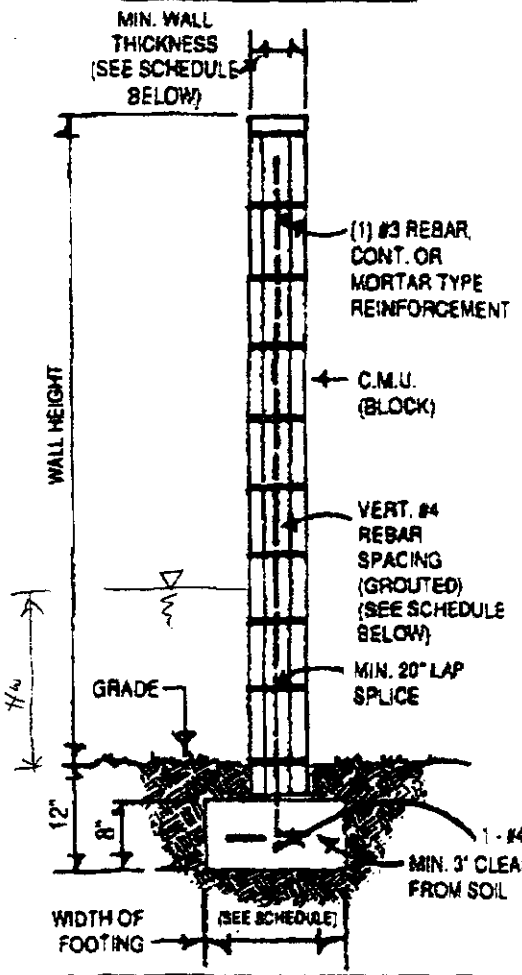
Call with comments or questions.

Sincerely,

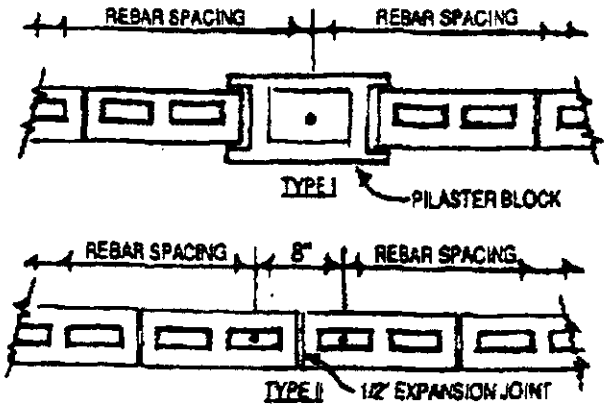
Robert Bookwalter, PE

The LOUIS BERGER GROUP

REGULAR FOOTING



WALL HEIGHT	MIN. WALL THICKNESS	REBAR SPACING	WIDTH OF FOOTING
4' - 0"	6"	48"	12"
5' - 0"	6"	48"	14"
6' - 0"	6"	48"	16"
7' - 0"	8"	32"	20"
8' - 0"	8"	32"	22"



EXPANSION JOINT DETAILS
Expansion Joints Recommended From 30' to 50' Intervals, Plans For Intervals Greater Than 100' Shall Be Accompanied By Engineering Calc's.

NOTES:

1. **A GOOD CONCRETE MIXTURE** for footings is by volume: 1 part portland cement, 2.75 parts sand, 4 parts gravel not larger than 1.5 inches, and just enough water to make the mixture "mushy" and workable, but not "soupy." The water content should not be more than 7.5 gallons per sack of cement for the above mix. Where salts are present in the soil, Type V cement is required.

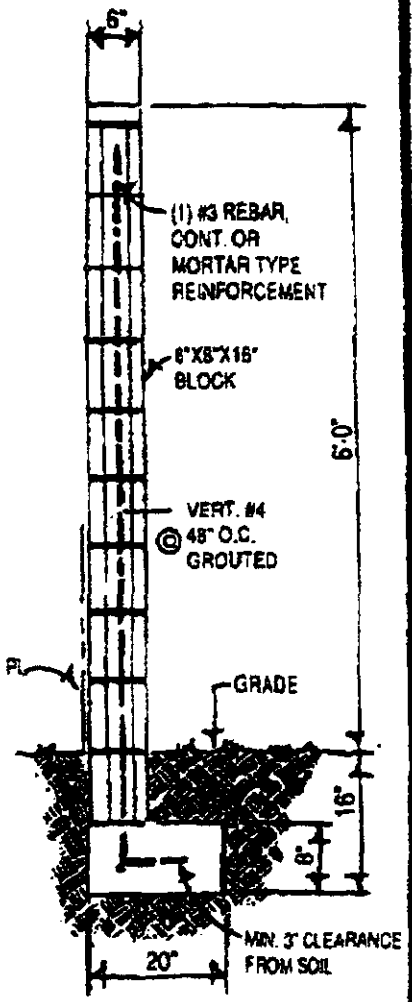
   A GOOD MORTAR MIXTURE should be in proportions of 1 part portland cement, 1/3 part lime (hydrated), and 3 parts sand. The water content should be according to absorption and suction ability to assure normal flow and spreading with a trowel.

   A GOOD GROUT MIXTURE should be composed by volume of 1 part portland cement, 2 parts sand, and 1 part pea gravel. Sufficient water shall be added to produce consistency for pouring without segregation.

2. **UNSUPPORTED ENDS OF WALLS** shall terminate in a reinforced pilaster column or the end cell shall be reinforced and grouted solid.

3. **THIS WALL** has been designed to be supported by soil that develops 1500 p.s.f. bearing capacity. Where a location has soil that cannot support this design or has special soil conditions, this design cannot be used. Contact your local Building Department.

ECCENTRIC FOOTING



INSPECTIONS REQUIRED:
1. Footing inspection prior to placing concrete.
2. Wall steel inspection prior to grouting.
3. Final inspection.

REGULAR C.M.U. AND MORTARLESS HEADJOINT MASONRY WALL

Jan 31 01 09:40a THE LOUIS BERGER GROUP 505 989-7787 p.3

The Louis Berger Group
500 Amigo Court, Suite 100
Las Vegas, NV 89119

Telephone: (702) 736-6632
Fax: (702) 736-0704

FACSIMILE MESSAGE

DATE: 1/29/01

TO: Tom Desaford

FROM: Sandi Dudley

Company: LBG

Project #

Fax No.: 505 989 7787

Subject:

cc:

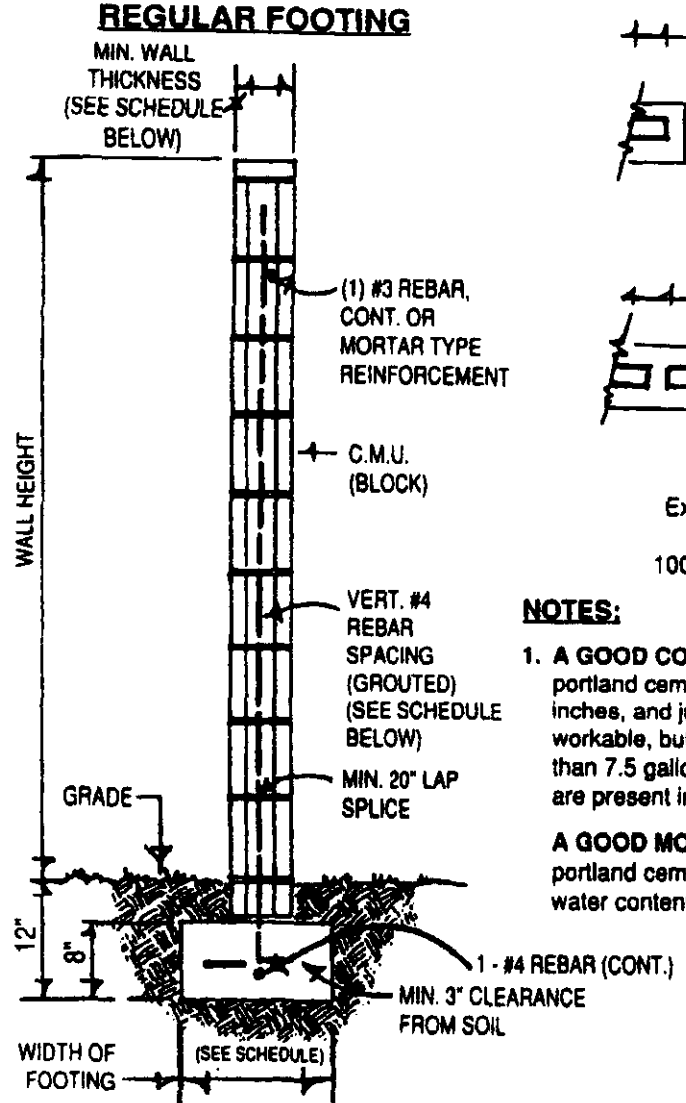
Number of pages sent (including cover sheet)

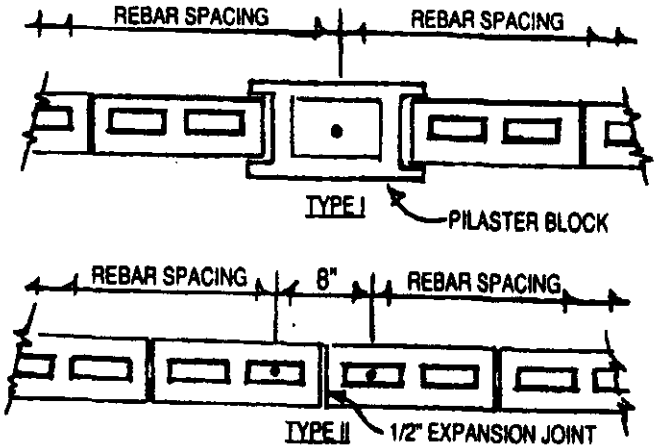
COMMENTS/REMARKS

Thanks.

PLEASE ADVISE US IMMEDIATELY IF YOU DO NOT RECEIVE ALL PAGES BEING TRANSMITTED

REGULAR FOOTING





EXPANSION JOINT DETAILS

Expansion Joints Recommended From 30' to 50' Intervals, Plans For Intervals Greater Than 100' Shall Be Accompanied By Engineering Calc's.

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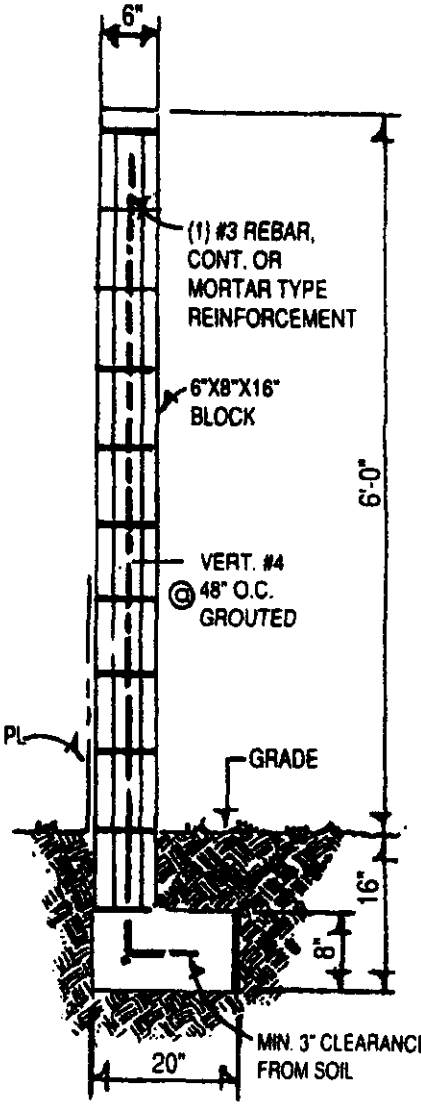
   A GOOD GROUT MIXTURE should be composed by volume of 1 part portland cement, 2 parts sand, and 1 part pea gravel. Sufficient water shall be added to produce consistency for pouring without segregation.

2. **UNSUPPORTED ENDS OF WALLS** shall terminate in a reinforced pilaster column or the end cell shall be reinforced and grouted solid.

3. **THIS WALL** has been designed to be supported by soil that develops 1500 p.s.f. bearing capacity. Where a location has soil that cannot support this design or has special soil conditions, this design cannot be used. Contact your local Building Department.

WALL HEIGHT	MIN. WALL THICKNESS	REBAR SPACING	WIDTH OF FOOTING
4' - 0"	6"	48"	12"
5' - 0"	6"	48"	14"
6' - 0"	6"	48"	16"
7' - 0"	8"	32"	20"
8' - 0"	8"	32"	22"

ECCENTRIC FOOTING

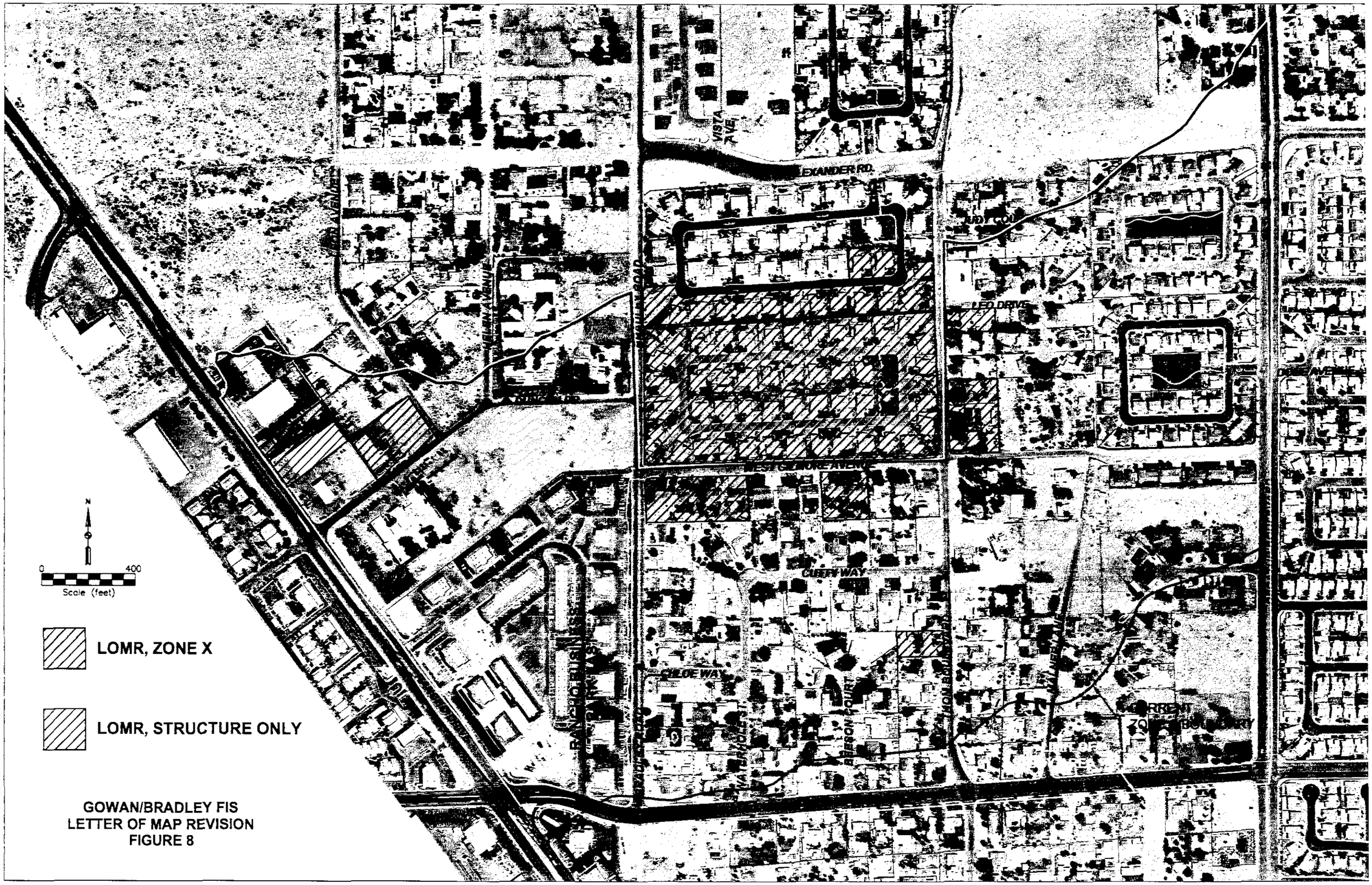


INSPECTIONS REQUIRED:

1. Footing inspection prior to placing concrete.
2. Wall steel inspection prior to grouting.
3. Final inspection.

REGULAR C.M.U. AND MORTARLESS HEADJOINT MASONRY WALL

Previous Letter of Map Revisions



HYDRO134\IC:\MY DOCUMENTS\GOWAN-BRADLEY FIS\DRAWINGS\FIGURE 3.DWG

GOWAN/BRADLEY FIS
LETTER OF MAP REVISION
FIGURE 8

Orifice Calculations for Sweetwater I Site

Orifice Calculation for Openings in Block Wall West of Sweetwater I Site

	Stage (ft)	1st h (orifice) (ft)	1st Q orifice (cfs)	2nd h (orifice) (ft)	2nd Q orifice (cfs)	h (weir) (ft)	Q weir (cfs)	Q total (cfs)
1st orifice	2228.35	0.0	0.0					0.0
	2230.48	1.5	33.6			0	0	33.6
2nd orifice	2228.65	0.0	0.0					0.0
	2230.48	1.2	30.0			0	0	30.0

Previous Letter of Map Revisions

LOMR BW 1-12-00

99-09-025P

Federal Emergency Management Agency

Washington, D.C. 20472

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Oscar Goodman
Mayor, City of Las Vegas
400 East Stewart Avenue
Las Vegas, NV 89101

IN REPLY REFER TO:
Case No.: 99-09-025P

Community: City of Las Vegas, Nevada
Community No.: 325276
Panels Affected: 32003C1745 D, 1765 D, and 2155 D
Effective Date of This Revision: NOV 02 1999

102-I-A-C

Dear Mayor Goodman:

This responds to a request that the Federal Emergency Management Agency (FEMA) revise the effective Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) report for Clark County, Nevada and Incorporated Areas (the effective FIRM and FIS report for your community), in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated October 1, 1998, Mr. Kevin L. Eubanks, P.E., Assistant General Manager, Clark County Regional Flood Control District, requested that FEMA revise the FIRM and FIS report to show the effects of detailed hydrologic and hydraulic analyses for the unnamed wash along U.S. Highway 95 (wash 1) from just upstream of Gowan Road to just upstream of Ann Road and for the unnamed wash along North Rancho Drive (wash 2) from just downstream of Gowan Road to just downstream of U.S. Highway 95 (US95). The detailed analyses are based on construction of US95 and Lone Mountain, Village 26, and Gowan Detention Basins; installation of 33 culverts along the above-referenced washes; and channelization of a portion of wash 1 from approximately 100 feet downstream to approximately 1,200 feet downstream of Ann Road.

All data required to complete our review of this request were submitted with letters from Mr. Randy Fultz, P.E., Project Manager, Flood Control Section, Public Works Department, City of Las Vegas; Mr. Peter Jackson, Senior Engineering Associate, Flood Control Section, Public Works Department, City of Las Vegas; Mr. Matthew Baird, P.E., Project Manager, Post, Buckley, Schuh & Jernigan, Inc.; and Mr. Eubanks.

We have completed our review of the submitted data and the flood data shown on the effective FIRM and FIS report. We have revised the FIRM and FIS report to modify the floodplain boundary delineations and zone designations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) for wash 1 from just upstream of Gowan Road to just upstream of Ann Road and for wash 2 from just downstream of Gowan Road to just downstream of US95. As a result of the modifications, base flood elevations (BFEs) were added for wash 1 from just upstream of Gowan Road to approximately 3,200 feet downstream of Ann Road; BFEs were added for wash 2 from just downstream of Gowan Road to approximately 300 feet downstream of US95; a Special Flood Hazard Area (SFHA), the area that would

to approximately 300 feet downstream of US95; a Special Flood Hazard Area (SFHA), the area that would be inundated by the base flood, was added along wash 1 from just upstream of Gowan Road to approximately 4,500 feet downstream of Ann Road; the width of the SFHA for wash 2 increased in some areas and decreased in other areas; a portion of wash 1 was channelized from approximately 100 feet downstream to approximately 1,200 feet downstream of Ann Road; and the flood zone designation was changed from Zone A, an SFHA with no BFEs determined, to Zone AE, an SFHA with BFEs determined, along washes 1 and 2. The modifications are shown on the enclosed annotated copies of FIRM Panel(s) 32003C1745 D, 32003C1765 D, and 32003C2155 D, and Profile Panels 102P through 105P for the above-mentioned flooding sources were added to the FIS report. This Letter of Map Revision (LOMR) hereby revises the above-referenced panel(s) of the effective FIRM and the affected portions of the FIS report, both dated August 16, 1995.

The modifications are effective as of the date shown above. The map panel(s) as listed above and as modified by this letter will be used for all flood insurance policies and renewals issued for your community.

The following table is a partial listing of existing and modified BFEs:

Location	Existing BFE (feet)*	Modified BFE (feet)*
Wash 1:		
Just upstream of Gowan Road	None	2,315
Approximately 3,200 feet downstream of Ann Road	None	2,332
Wash 2:		
Just downstream of Gowan Road	None	2,253
Approximately 300 feet downstream of US95	None	2,322

*Referenced to the National Geodetic Vertical Datum, rounded to the nearest whole foot

Public notification of the proposed modified BFEs will be given in the *Las Vegas Review Journal* on or about December 8, and December 15, 1999. A copy of this notification is enclosed. In addition, a notice of changes will be published in the *Federal Register*. Within 90 days of the second publication in the *Las Vegas Review Journal*, a citizen may request that FEMA reconsider the determination made by this LOMR. Any request for reconsideration must be based on scientific or technical data. All interested parties are on notice that, until the 90-day period elapses, the determination to modify the BFEs presented in this LOMR may itself be modified.

Because this LOMR will not be printed and distributed to primary users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout the community, so that interested persons, such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare a related article for publication in your community's local newspaper. This article should describe the assistance that officials of your community will give to interested persons by providing these data and interpreting the NFIP maps.

Upon the second publication of notice of these changes in this newspaper, any person has 90 days in which he or she can request, through the Chief Executive Officer of the community, that the Mitigation Directorate reconsider the determination. Any request for reconsideration must be based on knowledge of changed conditions or new scientific or technical data. All interested parties are on notice that until the 90-day period elapses, the Mitigation Directorate's determination to modify the BFEs may itself be changed.

Any person having knowledge or wishing to comment on these changes should immediately notify:

The Honorable Oscar Goodman
Mayor, City of Las Vegas
400 East Stewart Avenue
Las Vegas, Nevada 89101

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This LOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development, and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

The basis of this LOMR is, in whole or in part, a channel-modification/culvert project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management regulations. Consequently, the ultimate responsibility for maintenance of the modified channel and culverts rests with your community.

This determination has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed minimum NFIP criteria. These criteria are the minimum and do not supersede any State or local requirements of a more stringent nature. This includes adoption of the effective FIRM to which the regulations apply and the modifications described in this LOMR. Our records show that your community has met this requirement.

A Consultation Coordination Officer (CCO) has been designated to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Sally Ziolkowski
Director, Mitigation Division
Federal Emergency Management Agency, Region IX
The Presidio of San Francisco, Building 105
San Francisco, California 94129-1250
(415) 923-7177

FEMA makes flood insurance available in participating communities; in addition, we encourage communities to develop their own loss reduction and prevention programs. Our Project Impact initiative, developed by FEMA Director James Lee Witt, seeks to focus the energy of businesses, citizens, and communities in the United States on the importance of reducing their susceptibility to the impact of all natural disasters, including floods, hurricanes, severe storms, earthquakes, and wildfires. Natural hazard mitigation is most effective when it is planned for and implemented at the local level, by the entities who are most knowledgeable of local conditions and whose economic stability and safety are at stake. For your information, we are enclosing a Project Impact Fact Sheet. For additional information on Project Impact, please visit our Web site at www.fema.gov.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the CCO for your community at the telephone number cited above. If you have any technical questions regarding this LOMR, please contact Mr. Max Yuan of our staff in Washington, DC, either by telephone at (202) 646-3843 or by facsimile at (202) 646-4596.

Sincerely,

Max H. Yuan, P.E., Project Engineer
Hazards Study Branch
Mitigation Directorate

For: Matthew B. Miller, P.E., Chief
Hazards Study Branch
Mitigation Directorate

Enclosure(s)

cc: The Honorable Bruce Woodbury
Chair, Clark County Board
of Commissioners

Mr. Robert B. Thompson, P.E.
Civil Engineer III
Clark County Department
of Public Works

Mr. Kevin L. Eubanks, P.E.
Assistant General Manager
Clark County Regional Flood
Control District

Mr. Randy Fultz, P.E.
Project Manager
Flood Control Section
Public Works Department
City of Las Vegas

Mr. Peter Jackson
Senior Engineering Associate
Flood Control Section
Public Works Department
City of Las Vegas

Mr. Matthew Baird, P.E.
Project Manager
Post, Buckley, Schuh & Jernigan, Inc.

CHANGES ARE MADE IN DETERMINATIONS OF BASE FLOOD ELEVATIONS FOR THE CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, UNDER THE NATIONAL FLOOD INSURANCE PROGRAM

On August 16, 1995, the Federal Emergency Management Agency identified Special Flood Hazard Areas (SFHAs) in the City of Las Vegas, Clark County, Nevada, through issuance of a Flood Insurance Rate Map (FIRM). The Mitigation Directorate has determined that modification of the elevations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) for certain locations in this community is appropriate. The modified base flood elevations (BFEs) revise the FIRM for the community.

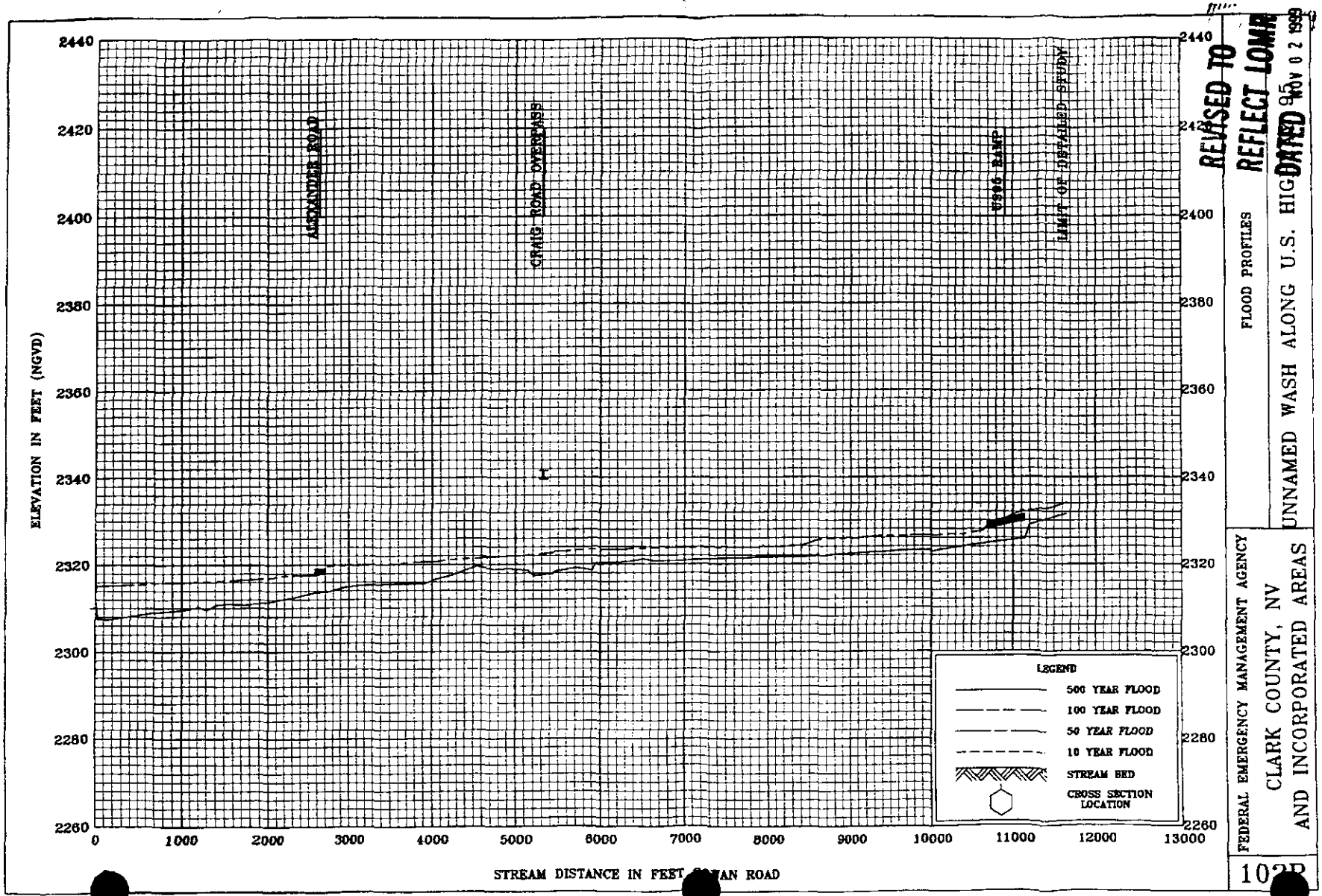
The changes are being made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and are in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65.

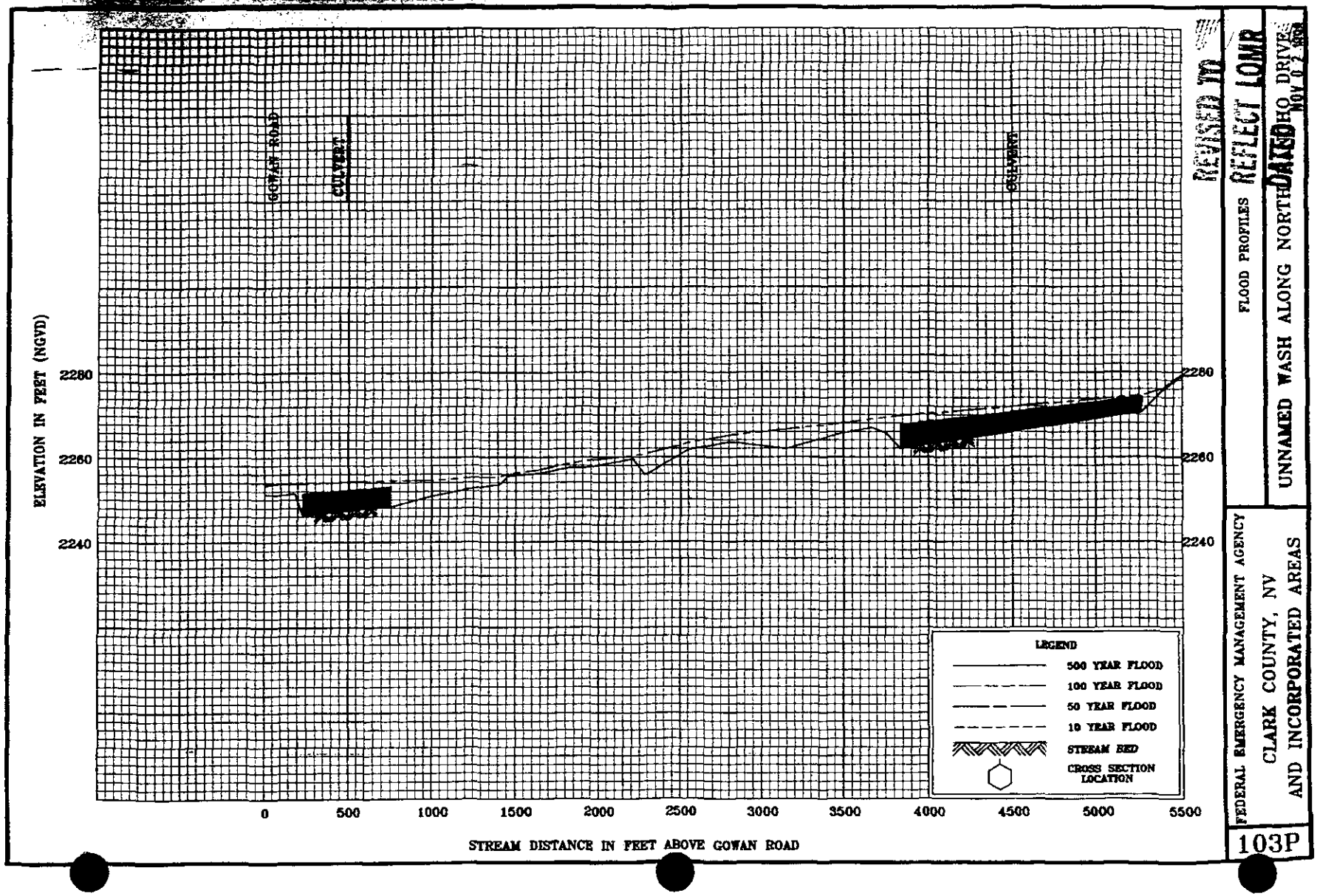
Detailed hydrologic and hydraulic analyses were performed to demonstrate the effects of construction of U.S. Highway 95, Lone Mountain Detention Basin, Village 26 Detention Basin, and Gowan Detention Basin for the unnamed wash along U.S. Highway 95 and the unnamed wash along North Rancho Drive. As a result, an SFHA was added along the unnamed wash along U.S. Highway 95, the width of the SFHA for the unnamed wash along North Rancho Drive increased in some areas and decreased in other areas, BFEs were added for the unnamed wash along U.S. Highway 95 and for the unnamed wash along North Rancho Drive, and a portion of the unnamed wash along U.S. Highway 95 was channelized. The aforementioned channelized portion of the unnamed wash along U.S. Highway 95 contains the base flood. The table below indicates existing and modified BFEs for selected locations along the affected lengths of the flooding source(s) cited above.

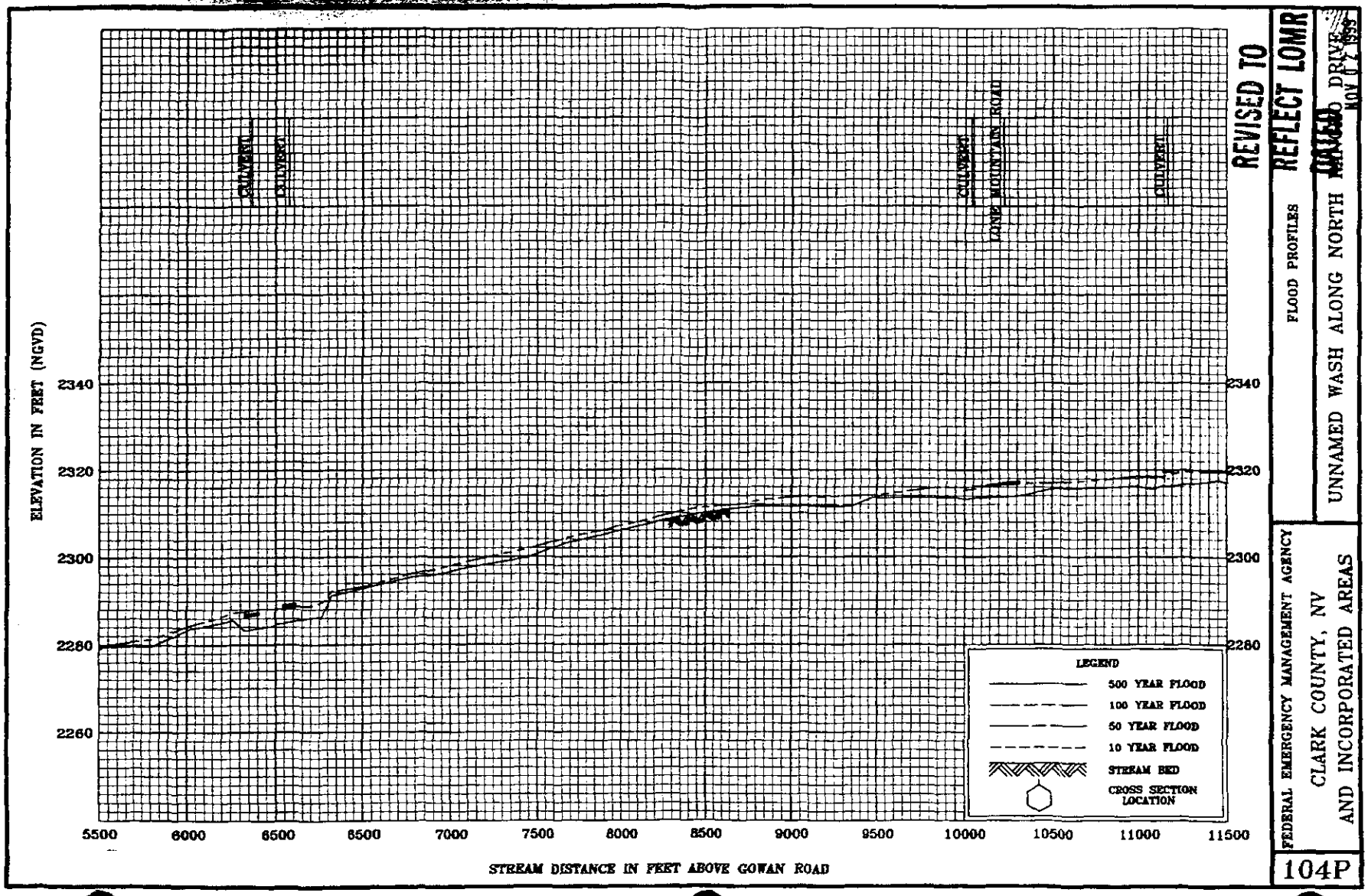
Location	Existing BFE (feet)*	Modified BFE (feet)*
Unnamed Wash Along U.S. Highway 95:		
Just upstream of Gowan Road	None	2,315
Approximately 3,200 feet downstream of Ann Road	None	2,332
Unnamed Wash Along North Rancho Drive:		
Just downstream of Gowan Road	None	2,253
Approximately 300 feet downstream of U.S. Highway 95	None	2,322

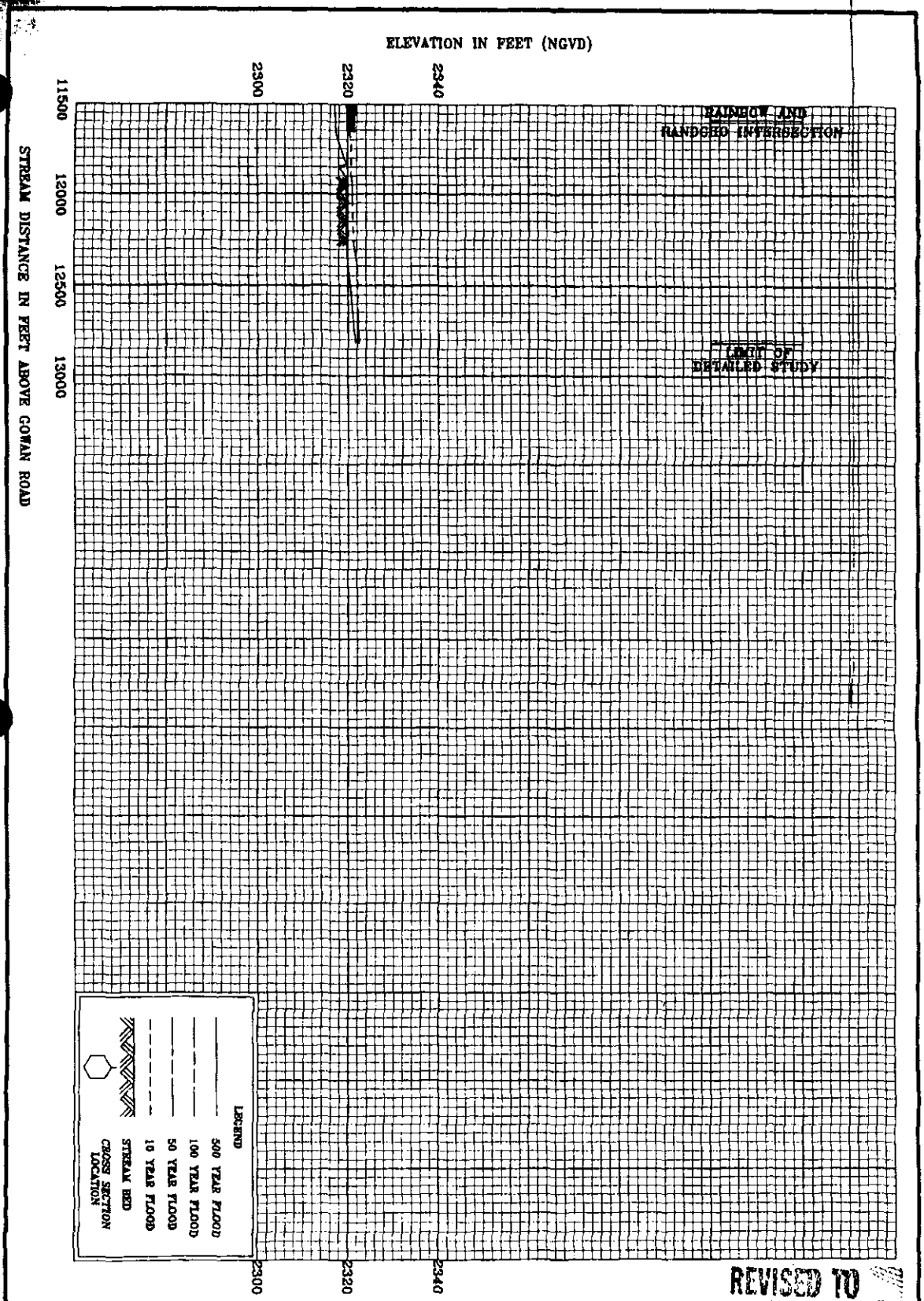
*National Geodetic Vertical Datum, rounded to nearest whole foot

Under the above-mentioned Acts of 1968 and 1973, the Mitigation Directorate must develop criteria for floodplain management. To participate in the National Flood Insurance Program (NFIP), the community must use the modified BFEs to administer the floodplain management measures of the NFIP. These modified BFEs will also be used to calculate the appropriate flood insurance premium rates for new buildings and their contents and for the second layer of insurance on existing buildings and contents.


ELEVATION IN FEET (NGVD)
2440
2420
2400
2380
2360
2340
2320
2300
2280
2260
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
STREAM DISTANCE IN FEET
ALEXANDRIA ROAD
CRAIG ROAD OVERPASS
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
REVISED TO REFLECT LOMR DATED
FLOOD PROFILES
UNNAMED WASH ALONG U.S. HIG
FEDERAL EMERGENCY MANAGEMENT AGENCY
CLARK COUNTY, NV
AND INCORPORATED AREAS


ELEVATION IN FEET (NGVD)
2280
2260
2240
GOWAN ROAD
CULVERT
CULVERT
2280
2260
2240
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
STREAM DISTANCE IN FEET ABOVE GOWAN ROAD
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
REVISED TO REFLECT LOMR DATED NOV 0 2 1994
FLOOD PROFILES
UNNAMED WASH ALONG NORTH HO DRIVE
FEDERAL EMERGENCY MANAGEMENT AGENCY
CLARK COUNTY, NV
AND INCORPORATED AREAS
103P


REVISED TO REFLECT LOMR
FLOOD PROFILES
UNNAMED WASH ALONG NORTH [redacted] DRIVE
NOV 17 1999
FEDERAL EMERGENCY MANAGEMENT AGENCY
CLARK COUNTY, NV
AND INCORPORATED AREAS
104P
ELEVATION IN FEET (NGVD)
2340
2320
2300
2280
2260
5500
6000
6500
7000
7500
8000
8500
9000
9500
10000
10500
11000
11500
STREAM DISTANCE IN FEET ABOVE GOWAN ROAD
CULVERT
CULVERT
CULVERT
LONE MOUNTAIN ROAD
CULVERT
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION



REVISED TO REFLECT LOMR DATED NOV 0 3 1993

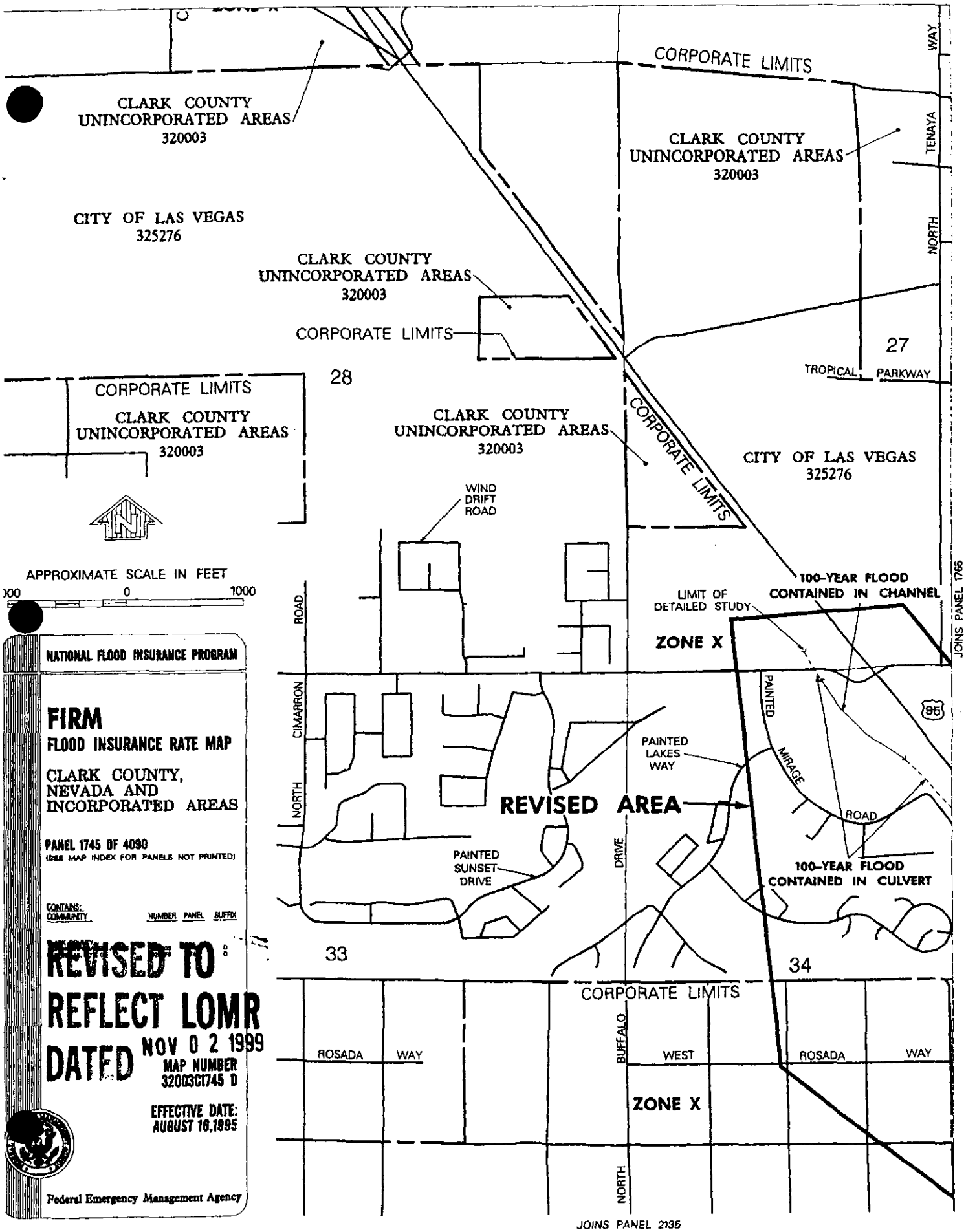
105P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, NV
AND INCORPORATED AREAS

FLOOD PROFILES

UNNAMED WASH ALONG NORTH RANCHO DRIVE



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS

PANEL 1745 OF 4090
(SEE MAP INDEX FOR PANELS NOT PRINTED)

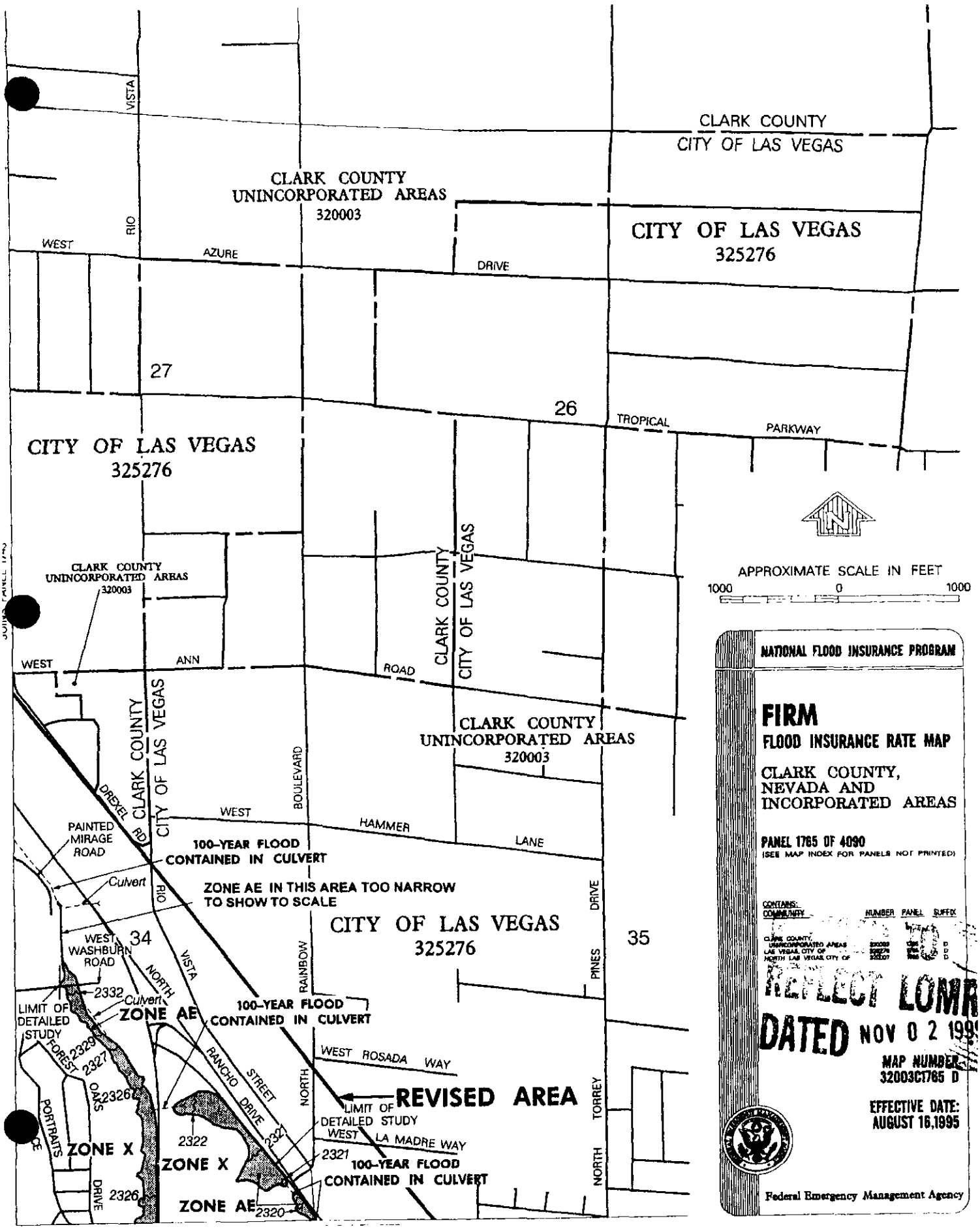
CONTAINS:
COMMUNITY | NUMBER | PANEL | SUFFIX

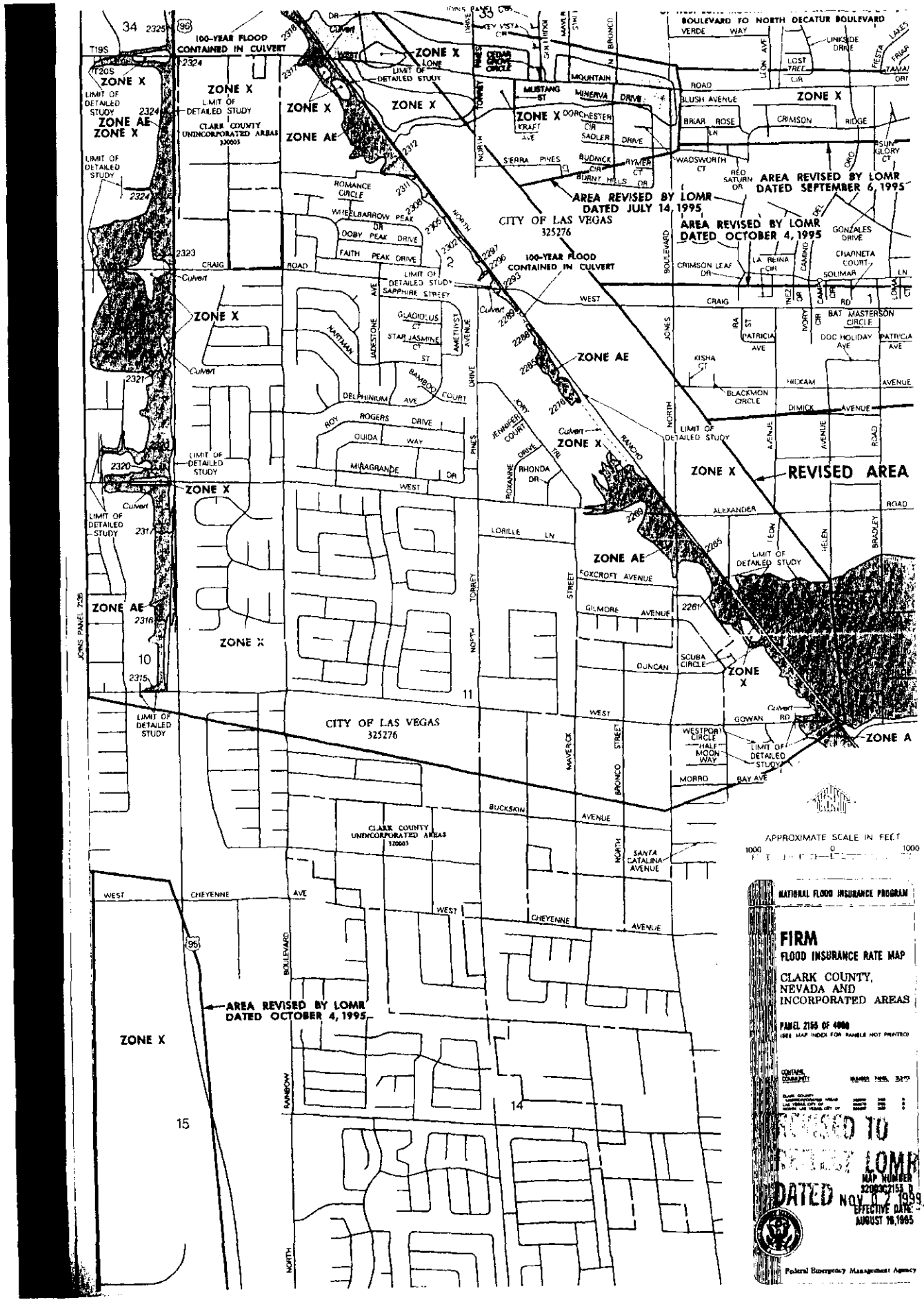
REVISED TO REFLECT LOMR DATED NOV 0 2 1999

MAP NUMBER
32003C1745 D

EFFECTIVE DATE:
AUGUST 16,1995

Federal Emergency Management Agency


CLARK COUNTY
CITY OF LAS VEGAS
CLARK COUNTY
UNINCORPORATED AREAS
320003
CITY OF LAS VEGAS
325276
VISTA
RIO
WEST
AZURE
DRIVE
27
26
TROPICAL
PARKWAY
CITY OF LAS VEGAS
325276
CLARK COUNTY
UNINCORPORATED AREAS
320003
CLARK COUNTY
CITY OF LAS VEGAS
APPROXIMATE SCALE IN FEET
1000
0
1000
WEST
ANN
ROAD
CLARK COUNTY
UNINCORPORATED AREAS
320003
DREXEL
RD
CLARK COUNTY
CITY OF LAS VEGAS
BOULEVARD
WEST
HAMMER
LANE
PAINTED
MIRAGE
ROAD
100-YEAR FLOOD
CONTAINED IN CULVERT
Culvert
ZONE AE IN THIS AREA TOO NARROW
TO SHOW TO SCALE
RIO
VISTA
DRIVE
CITY OF LAS VEGAS
325276
34
35
WEST
WASHBURN
ROAD
NORTH
RAINBOW
PINES
2332
Culvert
LIMIT OF
DETAILED
STUDY
ZONE AE
100-YEAR FLOOD
CONTAINED IN CULVERT
FOREST
2329
2327
OAKS
2326
RANCHO
DRIVE
STREET
WEST ROSADA WAY
NORTH
REVISED AREA
TORREY
PORTRAITS
ZONE X
2322
ZONE X
LIMIT OF
DETAILED STUDY
WEST LA MADRE WAY
2321
100-YEAR FLOOD
CONTAINED IN CULVERT
NORTH
DRIVE
2326
ZONE AE
2320
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS
PANEL 1765 OF 4090
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY
NUMBER
PANEL
SUFFIX
CLARK COUNTY
UNINCORPORATED AREAS
320029
1765
D
LAS VEGAS, CITY OF
320276
1765
D
NORTH LAS VEGAS, CITY OF
320007
1765
D
REFLECT LOMR
DATED NOV 0 2 199
MAP NUMBER
32003C1765 D
EFFECTIVE DATE:
AUGUST 16,1995
Federal Emergency Management Agency


100-YEAR FLOOD CONTAINED IN CULVERT
ZONE X
ZONE AE
LIMIT OF DETAILED STUDY
CLARK COUNTY UNINCORPORATED AREAS 320003
CITY OF LAS VEGAS 325276
AREA REVISED BY LOMR DATED JULY 14, 1995
AREA REVISED BY LOMR DATED SEPTEMBER 6, 1995
AREA REVISED BY LOMR DATED OCTOBER 4, 1995
REVISED AREA
BOULEVARD TO NORTH DECATUR BOULEVARD
CRAIG ROAD
WEST CHEYENNE AVENUE
ALEXANDER ROAD
GILMORE AVENUE
BUCKSKIN AVENUE
APPROXIMATE SCALE IN FEET
1000 0 1000
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS
PANEL 2155 OF 4000
MAP NUMBER 32003C2155 B
EFFECTIVE DATE: AUGUST 19, 1995
Federal Emergency Management Agency

95-09-855 A

Federal Emergency Management Agency

Washington, D.C. 20472

OCT 11 1995

The Honorable Jan Laverty Jones
Mayor, City of Las Vegas
400 East Stewart Avenue
Las Vegas, Nevada 89101-2986

IN REPLY REFER TO:
Case No. : **95-09-855A**
Community: City of Las Vegas, Nevada
Community No.: 325276
'Map Panel Affected: 2155 D

T-2 **18-65-RS** (REI)

Dear Mayor Jones:

This is in response to a letter dated July 2 1, 1995, from Mr. Randy L. Fultz, P.E., Flood Control Project Manager, Department of Public Works, City of Las Vegas, requesting that the Federal Emergency Management Agency reissue Letters of Map Revision **(LOMRs)** dated August 10 and November 15, 1994, for the following property:

Property Description: Lots 7 and 9, Block 2, Tonopah Terrace, as shown on the Plat recorded in Book 4 of Plats, Page 19, in the Office of the Recorder, Clark County, Nevada

Street Addresses: 3660 Andrassan Drive and 3800 North Rancho Drive

Community: City of Las Vegas

State: Nevada

The above-mentioned LOMRs that revised the National Flood Insurance Program (NFIP) map for the City of Las Vegas, Nevada, dated October 18, 1983, have been superseded by a new NFIP map dated August 16, 1995. Therefore, this letter issues a new determination for the property based on the new NFIP map.

On August 16, 1995, we received all information necessary to process Mr. Fultz' request. After comparing this information to the NFIP map for your community, we determined that although portions of the property described above would be inundated by the base flood, the **existing** structures on the property would not be inundated. Therefore, this letter revises the NFIP map for Clark County, Nevada and Incorporated Areas (NFIP Map Number **32003C2155** D, August 16, **1995),** to remove the structures from the Special Flood Hazard Area (SFHA). The structures are now located in Zone X (shaded), an area of moderate flooding outside the SFHA. Because portions of the property are in the SFHA, any future construction or substantial improvement on the property remains subject to Federal, State, and local regulations for floodplain management.

You should note that this property could be inundated by a flood greater than the base flood or by local flooding conditions not shown on the NFIP map. Also, although we have based our determination on the flood data presently available, we are currently revising the NFIP map for Clark County, Nevada and Incorporated Areas. New flood data could be generated that may affect this property. When the new

NFIP map is issued, it will supersede this letter. The Federal requirement for purchasing flood insurance will then be based on the newly issued NFIP map.

Even though this property is not included in an SFHA, it could be inundated by a flooding event of greater magnitude than the base flood. In fact, more than 25 percent of all losses in the NFIP occur to structures located outside the SFHA in Zones B, C, or X. More than 25 percent of all policies purchased under the NFIP protect structures located in these zones. This clearly illustrates that there is a risk of flooding in non-SFHAs. That risk is just not as great as the flood risk to structures located in SFHAs. In order *to* offer flood insurance protection to owners of such structures, the NFIP offers two types of flood insurance policies: the Standard Policy and the Preferred Risk Policy (PRP). The PRP is available at low cost for one- to four-family homes located outside the SFHA with little or no loss history. The Standard Policy is available for all other structures. Owners should discuss their individual flood risk situation and insurance needs with their insurance agent or company before making a final decision regarding flood insurance coverage.

To ensure continued eligibility to participate in the NFIP, your community must enforce its floodplain management regulations using, at a minimum, the flood elevations and zone designations shown on the **NFIP** map for your community, including the revision effected by this letter. This response is based on the minimum criteria established by the NFIP. State and community officials, based on knowledge of local conditions and in the interest of public safety, may set higher standards for construction in the floodplain. If the State of Nevada or your community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum Federal criteria.

This revision has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law **90-488),** 42 U.S.C. 40014128, and 44 CFR Part 65.

Because this LOMR will not be printed and distributed to primary map users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout your community so that interested persons, such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare an article for publication in your community's local newspaper that would describe the changes that have been made and the assistance that officials of your community will give to interested persons by providing these data and interpreting the NFIP maps.

A copy of this LOMR is being sent to your community's official NFIP map repository where, in accordance with regulations adopted by your community when it made application to join the NFIP, it should be attached to the community's official record copy of the NFIP map, which is available for public inspection.

If you have any questions or if we can be of further assistance, please contact Ms. Agnes De Coca of our staff in Washington, DC, either by telephone at (202) 646-2746 or by facsimile at (202) 646-4596.

Sincerely,

Michael Buckley

Michael K. Buckley, P.E., Chief
Hazard Identification Branch
Mitigation Directorate

cc: Community Map Repository
c/o Mr. Randy L. Fultz, P.E.

Mr. Kevin L. Eubanks, P.E.
Assistant General Manager
Clark County Regional Flood Control District

95-09-855A

Federal Emergency Management Agency

Washington, D.C. 20472

OCT 11 1995

The Honorable Jan Laverty Jones
Mayor, City of Las Vegas
400 East Stewart Avenue
Las Vegas, Nevada 89101-2986

IN REPLY REFER TO:
Case No.: 95-09-855A
Community: City of Las Vegas, Nevada
Community No.: 325276
Map Panel Affected: 2155 D

T-218-65-RS (REI)

Dear Mayor Jones:

This is in response to a letter dated July 21, 1995, from Mr. Randy L. Fultz, P.E., Flood Control Project Manager, Department of Public Works, City of Las Vegas, requesting that the Federal Emergency Management Agency reissue Letters of Map Revision (LOMRs) dated August 10 and November 15, 1994, for the following property:

Property Description: Lots 7 and 9, Block 2, Tonopah Terrace, as shown on the Plat recorded in Book 4 of Plats, Page 19, in the Office of the Recorder, Clark County, Nevada

Street Addresses: 5650 Duncan Drive and 3800 North Rancho Drive

Community: City of Las Vegas

State: Nevada

The above-mentioned LOMRs that revised the National Flood Insurance Program (NFIP) map for the City of Las Vegas, Nevada, dated October 18, 1983, have been superseded by a new NFIP map dated August 16, 1995. Therefore, this letter issues a new determination for the property based on the new NFIP map.

On August 16, 1995, we received all information necessary to process Mr. Fultz' request. After comparing this information to the NFIP map for your community, we determined that although portions of the property described above would be inundated by the base flood, the existing structures on the property would not be inundated. Therefore, this letter revises the NFIP map for Clark County, Nevada and Incorporated Areas (NFIP Map Number 32003C2155 D, August 16, 1995), to remove the structures from the Special Flood Hazard Area (SFHA). The structures are now located in Zone X (shaded), an area of moderate flooding outside the SFHA. Because portions of the property are in the SFHA, any future construction or substantial improvement on the property remains subject to Federal, State, and local regulations for floodplain management.

You should note that this property could be inundated by a flood greater than the base flood or by local flooding conditions not shown on the NFIP map. Also, although we have based our determination on the flood data presently available, we are currently revising the NFIP map for Clark County, Nevada and Incorporated Areas. New flood data could be generated that may affect this property. When the new

NFIP map is issued, it will supersede this letter. The Federal requirement for purchasing flood insurance will then be based on the newly issued NFIP map.

Even though this property is not included in an SFHA, it could be inundated by a flooding event of greater magnitude than the base flood. In fact, more than 25 percent of all losses in the NFIP occur to structures located outside the SFHA in Zones B, C, or X. More than 25 percent of all policies purchased under the NFIP protect structures located in these zones. This clearly illustrates that there is a risk of flooding in non-SFHAs. That risk is just not as great as the flood risk to structures located in SFHAs. In order to offer flood insurance protection to owners of such structures, the NFIP offers two types of flood insurance policies: the Standard Policy and the Preferred Risk Policy (PRP). The PRP is available at low cost for one- to four-family homes located outside the SFHA with little or no loss history. The Standard Policy is available for all other structures. Owners should discuss their individual flood risk situation and insurance needs with their insurance agent or company before making a final decision regarding flood insurance coverage.

To ensure continued eligibility to participate in the NFIP, your community must enforce its floodplain management regulations using, at a minimum, the flood elevations and zone designations shown on the NFIP map for your community, including the revision effected by this letter. This response is based on the minimum criteria established by the NFIP. State and community officials, based on knowledge of local conditions and in the interest of public safety, may set higher standards for construction in the floodplain. If the State of Nevada or your community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum Federal criteria.

This revision has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-488), 42 U.S.C. 4001-4128, and 44 CFR Part 65.

Because this LOMR will not be printed and distributed to primary map users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout your community so that interested persons, such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare an article for publication in your community's local newspaper that would describe the changes that have been made and the assistance that officials of your community will give to interested persons by providing these data and interpreting the NFIP maps.

A copy of this LOMR is being sent to your community's official NFIP map repository where, in accordance with regulations adopted by your community when it made application to join the NFIP, it should be attached to the community's official record copy of the NFIP map, which is available for public inspection.

If you have any questions or if we can be of further assistance, please contact Ms. Agnes De Coca of our staff in Washington, DC, either by telephone at (202) 646-2746 or by facsimile at (202) 646-4596.

Sincerely,

Michael Buckley

Michael K. Buckley, P.E., Chief
Hazard Identification Branch
Mitigation Directorate

cc: Community Map Repository
c/o Mr. Randy L. Fultz, P.E.

Mr. Kevin L. Eubanks, P.E.
Assistant General Manager
Clark County Regional Flood Control District

DW 1-20-98

97-09-396A

Federal Emergency Management Agency

Washington, D.C. 20472

JAN27 1997

The Honorable Jan Laverty Jones
Mayor, City of Las Vegas
400 East Stewart Avenue
Las Vegas, Nevada 89101

IN REPLY REFER TO CASE NO. 97-09-396A
Community: City of Las Vegas, Nevada
Community No.: 325276
Map Panel Affected: 2155 D
218-65-R-RS

Dear Mayor Jones:

This responds to a letter dated January 15, 1997, from Ms. Kristina L. Konrath, E.I.T., Hydrology and Traffic Services Manager, Hunsaker & Associates Nevada, Inc., requesting that the Federal Emergency Management Agency determine whether the property described below is located in a Special Flood Hazard Area (SFHA), an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This property has been elevated by the placement of fill after the date of the earliest National Flood Insurance Program (NFIP) map showing the area in the SFHA.

Property Description: Lots 44 and 45, Block 1, and Lots 5 through 17, Block 2, Rancho San Miguel-Unit 2; Lots 1 through 9, 13, and 17 through 30, Block 1, and Lots 31 through 46, Block 2, Rancho San Miguel-Unit 3, as shown on the Plats recorded as Instrument Nos. 02183 and 01209, in Book 61, Page 53, and Book 63, Page 87, respectively, in the Office of the Recorder, Clark County, Nevada

138-12-513 Unit 2
138-12-514 Unit 3

Community and State: City of Las Vegas, Nevada

This letter replaces the Letter of Map Revision (LOMR) dated October 18, 1996, and corrects the property description of Rancho San Miguel Unit 3.

On January 22, 1997, we received all information necessary to process this request. After comparing this information to the NFIP map for your community, we determined that Lots 44 and 45, Block 1, and Lots 7 ough 15, Block 2, Rancho San Migu ' el Unit 2, described above would not be inundated by the base flood. Therefore, this letter revises the NFIP map for Clark County, Nevada and Incorporated Areas (NFIP Map No. 32003C2155 D, dated August 16, 1995), to remove these lots from the SFHA. These lots are now located in Zone X (unshaded), an area of minimal flooding outside the SFHA.

Also, we determined that although portions of Lots 5, 6, 16, and 17, Block 2, Rancho San Miguel Unit 2; Lots 1 through 9, 13, and 17 through 30, Block 1, and Lots 31 through 46, Block 2, Rancho San Miguel Unit 3, described above would be inundated by the base flood, the existing structures on the property would not be inundated. Therefore, this letter revises the NFIP map for Clark County, Nevada and Incorporated Areas (NFIP Map No. 32003C2155 D, dated August 16, 1995) to remove the structures from the SFHA. The structures are now located in Zone X (unshaded), an area of minimal flooding outside the SFHA. Because portions of the property are in the SFHA, any future construction or substantial improvement on the property remains subject to Federal, State, and local regulations for floodplain management.

You should note that this property could be inundated by a flood greater than the base flood or by local flooding conditions not shown on the NFIP map. Also, although we have based our determination on the flood data presently available, flood conditions may change or new information may be generated that would supersede this determination.

Even though this property is not included in an SFHA, it could be inundated by a flooding event of greater magnitude than the base flood. In fact, more than 25 percent of all losses in the NFIP occur to structures located outside the SFHA in Zones B, C, or X. More than 25 percent of all policies purchased under the

NFIP protect structures located in these zones. This clearly illustrates that there is a risk of flooding in non-SFHAs. That risk is just not as great as the flood risk to structures located in SFHAs. To offer flood insurance protection to owners of such structures, the NFIP offers two types of flood insurance. Property owners should discuss their individual flood risk situation and insurance needs with their insurance agent or company before making a final decision regarding flood insurance coverage.

To ensure continued eligibility to participate in the NFIP, your community must enforce its floodplain management regulations using, at a minimum, the flood elevations and zone designations shown on the NFIP map for your community, including the revision effected by this letter. This response is based on the minimum criteria established by the NFIP. State and community officials, based on knowledge of local conditions and in the interest of public safety. may set higher standards for construction in the floodplain. If tie State. County, or community has adopted more restrictive or comprehensive floodplain management criteria. those criteria take precedence over the minimum Federal criteria.

This revision has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance An of 1968. as amended (Tide XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Pan 65.

Because this LOMR will not be printed and distributed to primary map users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout your community so that interested persons. such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare an article for publication in your community's local newspaper that would describe the changes that have been made and the assistance that officials of your community wilt give to interested persons by providing these data and interpreting the NFIP maps. When, in the future, a sufficient number of revisions have occurred on the affected panel, we will initiate a physical map revision to republish and distribute the panel to incorporate the changes that were made effective by letter.

A copy of this LOMR is being sent to your community's official NFIP map repository where, in accordance with regulations adopted by your community when it made application to join the NFIP, it should be attached to the community's official record copy of the NFIP map, which is available for public inspection.

If you have any questions or if we can be of further assistance, please contact Ms. Agnes De Coca of our staff in Washington, DC, either by telephone at (202) 646-2746 or by facsimile at (202) 646-4596.

Sincerely,

Frederick A. Sharrocks, Jr., Chief
Hazard Identification Branch
Mitigation Directorate

cc: Community Map Repository

Ms. Kristina L. Konrath, E.I.T.
Hydrology and Traffic Services Manager
Hunsaker & Associates Nevada, Inc.

RANCHO SAN MIGUEL -UNIT 3

Recorded in Book_63_ Page_87_ of Plats, 9/14/94

Fire Dept. District Map #1921::26,27

200 Scale Location Map: L-12-2

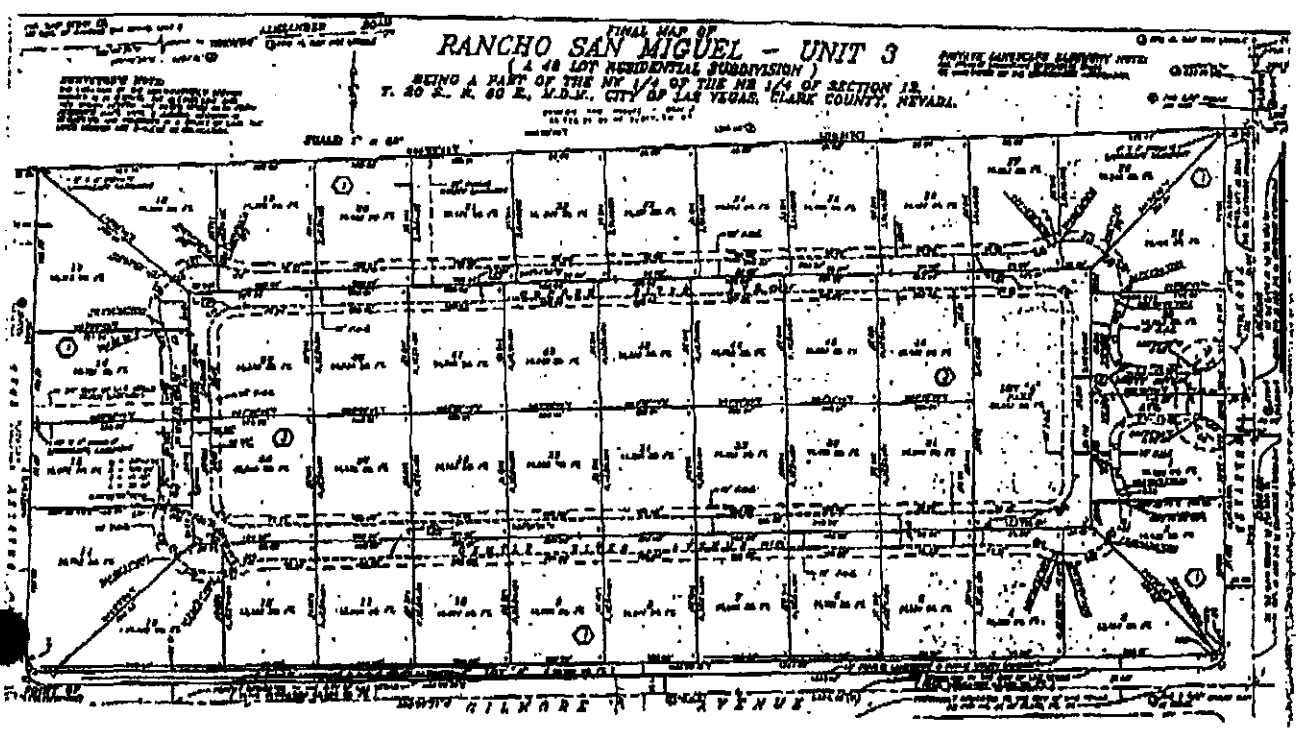
MASTER SUBDIVISION ADDRESS: 3817 **THOM BOULEVARD**

BLOCK 1	**LOT**	1	3804	**ROCKY RIVER STREET**	**N/S**	**PRIVATE DRIVE**
		2	3800			
B L O C K	1	3	5101	GENTLE RIVER AVENUE	E/W	PRIVATE DRIVE
		4	5105			
		5	5109			
		6	5113			
		7	5117			
		8	5121			
		9	5201			
		10	5205			
		11	5209			
		12	5213			
		13	5217			
BLOCK 1	LOT	14	3801	SILVER RIVER STREET	N/S	PRIVATE DRIVE
		15	3805			
		16	3809			
		17	3813			
BLOCK 1	**LOT**	18	5216	COPPER **RIVER** AVENUE	E/W	PRIVATE DRIVE
		19	5212			
		20	5208			
		21	5204			
		22	5200			
		23	5120			
		24	5116			
		25	5112			
		26	5108			
		27	5104			
		28	5100			
BLOCK 1	LOT	29	3816	ROCKY RIVER STREET	E/W	PRIVATE DRIVE
		30	3812			
BLOCK 2	LOT	31	5108	**GENTLE RIVER AVENUE**	**E / W**	PRIVATE **DRIVE**
		32	5112			
		33	5116			
		34	5120			

BLOCK	2	LOT	35	5200	GENTLE **RIVER** AVENUE	E/W	**PRIVATE DRIVE**
			36	5204			
			37	5208			
			38	5212			
BLOCK	2	LOT	39	5213	COPPER RIVER **AVENUE**	E/W	PRIVATE **DRIVE**
			40	5209			
			41	5205			
			42	5201			
			43	5121			
			44	5117			
			45	5113			
			46	5109	138-12-514-046		
COMMON		**AREAS:**					
(PARK)		LOT	A	3809	**ROCKY** RIVER STREET	N/S	**PRIVATE DRIVE**
		LOT	**B**	5202	**GILMORE AVENUE**	E/W	**PUBLIC STREET**
STREETS		**WITH** NO ADDRESSES:			**MISTY RIVER AVENUE**	E/W	PRIVATE DRIVE
					BRADLEY ROAD	N/S	PUBLIC STREET

CITY OF LAS VEGAS
DEPARTMENT OF COMMUNITY
PLANNING & DEVELOPMENT

KYLE C. WALTON
SENIOR PLANNER
SEPTEMBER 22, 1994
KCW/dr



RANCHO SAN MIGUEL - UNIT 2

APRIL 29, 1994

FIRE MAP **#1921::15**, 16, 17
200 **MAP:L-12-2**

BLOCK 1	LOT	**30**	**5113**	BIG RIVER AVENUE	**E/W**	PRIVATE DRIVE
		31	**5117**			
		32	**5121**			
		33	**5201**			
		34	5205			
		35	**5209**			
		36	5213			
BLOCK 1	LOT	37	**5212**	COLD **RIVER** AVENUE	E/W	PRIVATE DRIVE
		38	**5208**			
		39	**5204**			
		40	5200			
		41	**5120**			
		42	5116			
		43	**5112**			
		44	**5108**			
		45	**5104**			
BLOCK 2	LOT	**1**	**5100**	BIG RIVER **AVENUE**	**E/W**	PRIVATE DRIVE
BLOCK 2	LOT	2	3912	**WIDE RIVER ~~AVENUE~~** STREET	**E/W**	PRIVATE DRIVE
		3	**3908**			
		4	**3904**			
		5	**3900**			
BLOCK 2	LOT	**6**	**5101**	COLD RIVER AVENUE	E/W	**PRIVATE DRIVE**
		7	**5105**			
		8	5109			
		9	**5113**			
		10	**5117**			
		11	**5121**			
		12	5201			
		13				
		14	~~5205~~			
		15	~~5213~~			
		16	5217			
BLOCK 2	LOT	**17**	**3901**	WHISKEY RIVER STREET	N/S	PRIVATE DRIVE
		18	**3905**			
		19	**3909**			
		20	**3913**			

138-12-513-044
-045

138-12-513-005
-006

138-12-513-007
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ii
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-015
-016
-017

RANCHO SAN MIGUEL - UNIT 2
APRIL 29, 1994

FIRE MAP #1921::15, 16, 17
200 MAP: L-12-2

BLOCK 2	LOT	21	5216	BIG RIVER AVENUE	E/W	PRIVATE DRIVE
		22	5212			
		23	5208			
		24	5204			
		25	5200			
		26	5120			
		27	5116			
		28	5112			
		29	5 1 0 8			

COMMON **AREAS:**

(PARK)	MT	A	5105	BIG RIVER AVENUE	E/W	PRIVATE DRIVE
	LOT	B	5207	W. ALEXANDER ROAD	E/W	PUBLIC STREET

STREETS WITH NO ADDRESSES: MONICA JOY LANE
THOM BOULEVARD
BRADLEY ROAD

CITY OF LAS VEGAS
DEPARTMENT OF COMMUNITY
PLANNING & DEVELOPMENT

KYLE C. WALTON, SENIOR PLANNER
KCW/dr

MASTER SUBDMSION ADDRESS: 5103 W. ALEXANDER ROAD

Federal Emergency Management Agency

Washington, D.C. 20472

JAN27 1997

The Honorable Jan Laverty Jones
Mayor, City of Las Vegas
400 East Stewart Avenue
Las Vegas, Nevada 89101

IN REPLY REFER TO CASE NO. 97-09-396A
Community: City of Las Vegas, Nevada
Community No.: 325276
Map Panel Affected: 2155 D
218-65-R-RS

Dear Mayor Jones:

This responds to a letter dated January 15, 1997, from Ms. Kristina L. Konrath, E.I.T., Hydrology and Traffic Services Manager, Hunsaker & Associates Nevada, Inc., requesting that the Federal Emergency Management Agency determine whether the property described below is located in a Special Flood Hazard Area (SFHA), an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This property has been elevated by the placement of fill after the date of the earliest National Flood Insurance Program (NFIP) map showing the area in the SFHA.

Property Description: Lots 44 and 45, Block 1, and Lots 5 through 17, Block 2, Rancho San Miguel-Unit 2; Lots 1 through 9, 13, and 17 through 30, Block 1, and Lots 31 through 46, Block 2, Rancho San Miguel-Unit 3, as shown on the Plats recorded as Instrument Nos. 02183 and 01209, in Book 61, Page 53, and Book 63, Page 87, respectively, in the Office of the Recorder, Clark County, Nevada

Community and State: City of Las Vegas, Nevada

This letter replaces the Letter of Map Revision (LOMR) dated October 18, 1996, and corrects the property description of Rancho San Miguel Unit 3.

On January 22, 1997, we received all information necessary to process this request. After comparing this information to the NFIP map for your community, we determined that Lots 44 and 45, Block 1, and Lots 7 through 15, Block 2, Rancho San Miguel Unit 2, described above would not be inundated by the base flood. Therefore, this letter revises the NFIP map for Clark County, Nevada and Incorporated Areas (NFIP Map No. 32003C2155 D, dated August 16, 1995), to remove these lots from the SFHA. These lots are now located in Zone X (unshaded), an area of minimal flooding outside the SFHA.

Also, we determined that although portions of Lots 5, 6, 16, and 17, Block 2, Rancho San Miguel Unit 2; Lots 1 through 9, 13, and 17 through 30, Block 1, and Lots 31 through 46, Block 2, Rancho San Miguel Unit 3, described above would be inundated by the base flood, the existing structures on the property would not be inundated. Therefore, this letter revises the NFIP map for Clark County, Nevada and Incorporated Areas (NFIP Map No. 32003C2155 D, dated August 16, 1995), to remove the structures from the SFHA. The structures are now located in Zone X (unshaded), an area of minimal flooding outside the SFHA. Because portions of the property are in the SFHA, any future construction or substantial improvement on the property remains subject to Federal, State, and local regulations for floodplain management.

You should note that this property could be inundated by a flood greater than the base flood or by local flooding conditions not shown on the NFIP map. Also, although we have based our determination on the flood data presently available, flood conditions may change or new information may be generated that would supersede this determination.

Even though this property is not included in an SFHA, it could be inundated by a flooding event of greater magnitude than the base flood. In fact, more than 25 percent of all losses in the NFIP occur to structures located outside the SFHA in Zones B, C, or X. More than 25 percent of all policies purchased under the

NFIP protect structures located in these zones. This clearly illustrates that there is a risk of flooding in non-SFHAs. That risk is just not as great as the flood risk to structures located in SFHAs. To offer flood insurance protection to owners of such structures, the NFIP offers two types of flood insurance. Property owners should discuss their individual flood risk situation and insurance needs with their insurance agent or company before making a final decision regarding flood insurance coverage.

To ensure continued eligibility to participate in the NFIP, your community must enforce its floodplain management regulations using, at a minimum, the flood elevations and zone designations shown on the NFIP map for your community, including the revision effected by this letter. This response is based on the minimum criteria established by the NFIP. State and community officials, based on knowledge of local conditions and in the interest of public safety, may set higher standards for construction in the floodplain. If the State, County, or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum Federal criteria.

This revision has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65.

Because this LOMR will not be printed and distributed to primary map users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout your community so that interested persons, such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare an article for publication in your community's local newspaper that would describe the changes that have been made and the assistance that officials of your community will give to interested persons by providing these data and interpreting the NFIP maps. When, in the future, a sufficient number of revisions have occurred on the affected panel, we will initiate a physical map revision to republish and distribute the panel to incorporate the changes that were made effective by letter.

A copy of this LOMR is being sent to your community's official NFIP map repository where, in accordance with regulations adopted by your community when it made application to join the NFIP, it should be attached to the community's official record copy of the NFIP map, which is available for public inspection.

If you have any questions or if we can be of further assistance, please contact Ms. Agnes De Coca of our staff in Washington, DC, either by telephone at (202) 646-2746 or by facsimile at (202) 646-4596.

Sincerely,

Frederick H. Sharrocks, Jr., Chief
Hazard Identification Branch
Mitigation Directorate

cc: Community Map Repository

Ms. Kristina L. Konrath, E.I.T.
Hydrology and Traffic Services Manager
Hunsaker & Associates Nevada, Inc.

RANCHO SAN MIGUEL - UNIT 3

Recorded in Book 63 Page 87 of Plats, 9/14/94

Fire Dept. District Map #1921::26,27

200 Scale Location Map: L-12-2

MASTER SUBDIVISION ADDRESS: 3817 THOM BOULEVARD

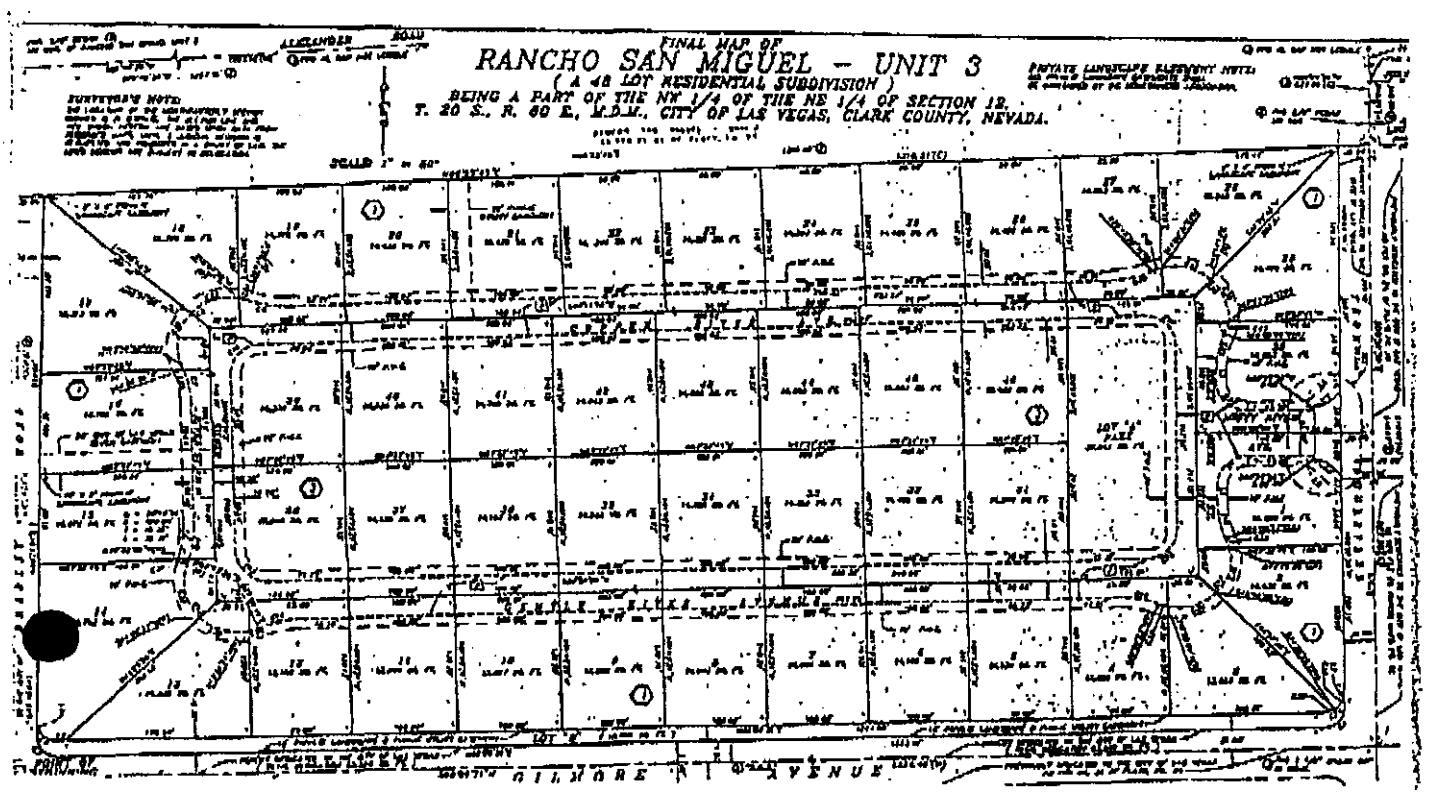
BLOCK 1	LOT	1	3804	ROCKY RIVER STREET	N/S	PRIVATE DRIVE
		2	3800			
BLOCK 1	LOT	3	5101	GENTLE RIVER AVENUE	E/W	PRIVATE DRIVE
		4	5105			
		5	5109			
		6	5113			
		7	5117			
		8	5121			
		9	5201			
		10	5205			
		11	5209			
		12	5213			
		13	5217			
BLOCK 1	LOT	14	3801	SILVER RIVER STREET	N/S	PRIVATE DRIVE
		15	3805			
		16	3809			
		17	3813			
BLOCK 1	LOT	18	5216	COPPER RIVER AVENUE	E/W	PRIVATE DRIVE
		19	5212			
		20	5208			
		21	5204			
		22	5200			
		23	5120			
		24	5116			
		25	5112			
		26	5108			
		27	5104			
		28	5100			
BLOCK 1	LOT	29	3816	ROCKY RIVER STREET	E/W	PRIVATE DRIVE
		30	3812			
BLOCK 2	LOT	31	5108	GENTLE RIVER AVENUE	E/W	PRIVATE DRIVE
		32	5112			
		33	5116			
		34	5120			

BLOCK 2	LOT	35	5200	GENTLE RIVER AVENUE	E/W	PRIVATE DRIVE
		36	5204			
		37	5208			
		38	5212			
BLOCK 2	LOT	39	5213	COPPER RIVER AVENUE	E/W	PRIVATE DRIVE
		40	5209			
		41	5205			
		42	5201			
		43	5121			
		44	5117			
		45	5113			
		46	5109	138-12-510 046		
COMMON AREAS:						
(PARK)	LOT	A	3809	ROCKY RIVER STREET	N/S	PRIVATE DRIVE
	LOT	B	5202	GILMORE AVENUE	E/W	PUBLIC STREET
STREETS WITH NO ADDRESSES:				MISTY RIVER AVENUE	E/W	PRIVATE DRIVE
				BRADLEY ROAD	N/S	PUBLIC STREET

CITY OF LAS VEGAS
DEPARTMENT OF COMMUNITY
PLANNING & DEVELOPMENT

KYLE C. WALTON
SENIOR PLANNER
SEPTEMBER 22, 1994

KCW/dr



RANCHO SAN MIGUEL - UNIT 2

APRIL 29, 1994

FIRE MAP #1921::15, 16, 17
200 MAP:L-12-2

BLOCK 1	LOT	30	5113	BIG RIVER AVENUE	E/W	PRIVATE DRIVE
		31	5117			
		32	5121			
		33	5201			
		34	5205			
		35	5209			
		36	5213			
BLOCK 1	LOT	37	5212	COLD RIVER AVENUE	E/W	PRIVATE DRIVE
		38	5208			
		39	5204			
		40	5200			
		41	5120			
		42	5116			
		43	5112			
		44	5108			
		45	5104			
BLOCK 2	LOT	1	5100	BIG RIVER AVENUE	E/W	PRIVATE DRIVE
BLOCK 2	LOT	2	3912	WIDE RIVER ~~AVENUE~~ STREET	E/W	PRIVATE DRIVE
		3	3908			
		4	3904			
		5	3900			
BLOCK 2	LOT	6	5101	COLD RIVER AVENUE	E/W	PRIVATE DRIVE
		7	5105			
		8	5109			
		9	5113			
		10	5117			
		11	5121			
		12	5201			
		13	5205			
		14	5209			
		15	5213			
		16	5217			
BLOCK 2	LOT	17	3901	WHISKEY RIVER STREET	N/S	PRIVATE DRIVE
		18	3905			
		19	3909			
		20	3913			

RANCHO SAN MIGUEL - UNIT 2
APRIL 29, 1994

FIRE MAP #1921::15, 16, 17
200 MAP: L-12-2

BLOCK 2	LOT	21	5216	BIG RIVER AVENUE	E/W	PRIVATE DRIVE
		22	5212			
		23	5208			
		24	5204			
		25	5200			
		26	5120			
		27	5116			
		28	5112			
		29	5108			
COMMON AREAS:						
(PARK)	LOT	A	5105	BIG RIVER AVENUE	E/W	PRIVATE DRIVE
	LOT	B	5207	W. ALEXANDER ROAD	E/W	PUBLIC STREET

STREETS WITH NO ADDRESSES: MONICA JOY LANE
THOM BOULEVARD
BRADLEY ROAD

CITY OF LAS VEGAS
DEPARTMENT OF COMMUNITY
PLANNING & DEVELOPMENT

KYLE C. WALTON, SENIOR PLANNER
KCW/dr

MASTER SUBDIVISION ADDRESS: 5103 W. ALEXANDER ROAD

LOMR stan a gener

Federal Emergency Management Agency

Washington, D.C. 20472

DEC 23 1996

97-09-267A
267A

The Honorable Jan Laverty Jones
Mayor, City of Las Vegas
400 East Stewart Avenue
Las Vegas, Nevada 89101

IN REPLY REFER TO
Case No.: 97-09-267A
Follows Case No.: 97-09-017A
Community: City of Las Vegas, Nevada
Community No.: 825276
Map Panel Affected: 32003C2155 D
Map Effective Date: August 16, 1995

Dear Mayor Jones:

We reviewed a request dated December 5, 1996, from Ms. Kristina L. Konrath, E.I.T., Hunsaker & Associates Nevada, Inc., for a Letter of Map Revision. All information required for this request, including the required processing fee, was received on December 16, 1996. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we determined portions of the property described below are located in the Special Flood Hazard Area (SFHA), the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood); however, the structures on the property are not in the SFHA. This property was elevated by the placement of fill after the date of the earliest NFIP map showing the area in the SFHA.

Property Description: Lots 10, 11, 12, 14, 15, and 16, Block 1, Rancho San Miguel Unit 3, as shown on the Plat recorded as Instrument No. 01209, in Book 63, Page 87, in the Office of the Recorder, Clark County, Nevada

This letter revises the above-referenced NFIP map to remove the structures from the SFHA. The structures are now located in Zone X (unshaded), an area of minimal flooding outside the SFHA. Flood insurance coverage for the structure may be available under a low-cost policy (see enclosed document). Because portions of the property remain in the SFHA, any future construction or substantial improvement on the property remains subject to Federal, State, and local regulations for floodplain management.

The enclosed document provides additional information about Letters of Map Revision. If you have any questions about this letter, please contact Ms. Agnes De Coca of our staff in Washington, DC, either by telephone at (202) 646-2746 or by facsimile at (202) 646-4596.

Sincerely,

Frederick H. Sharrocks, Jr., Chief
Hazard Identification Branch
Mitigation Directorate

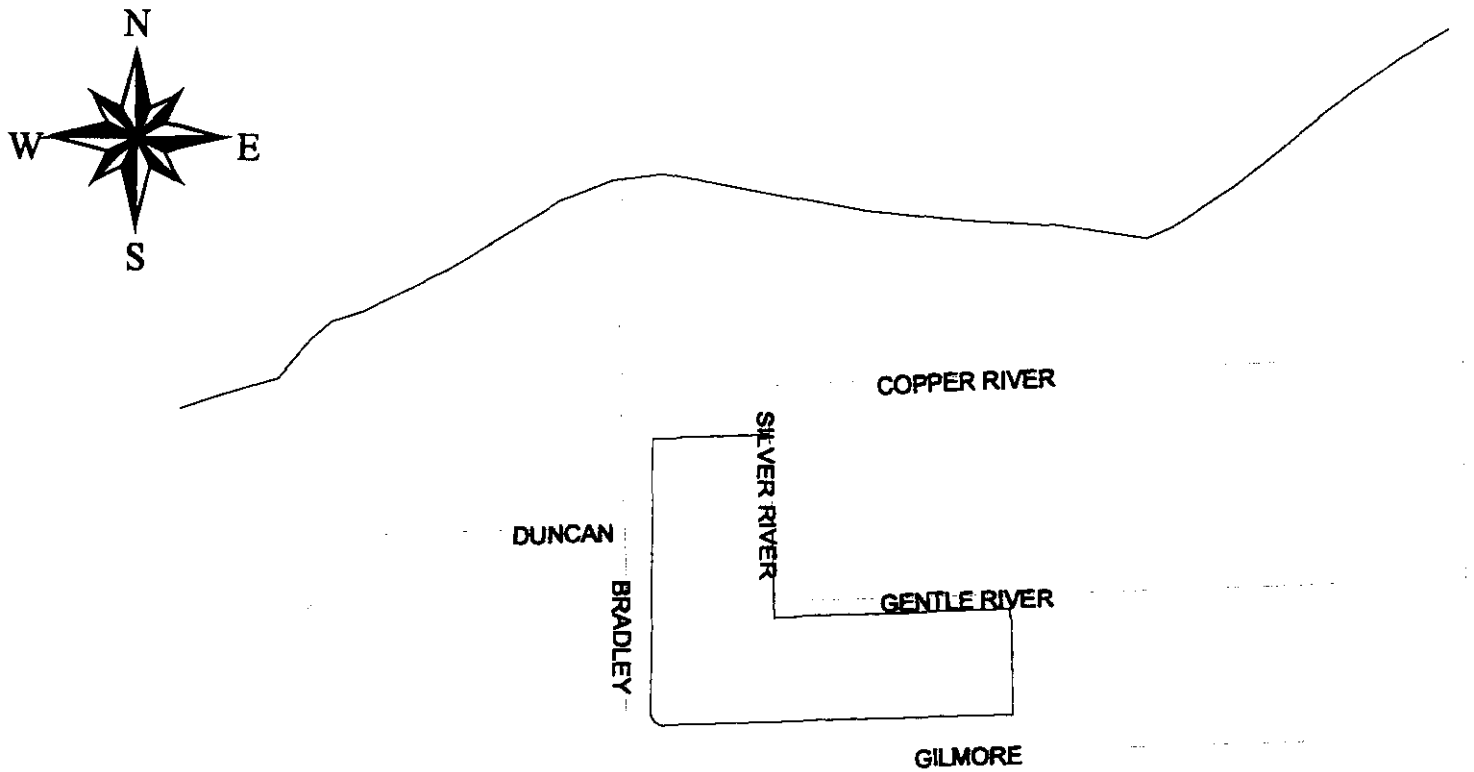
Enclosures

cc: Community Map Repository

Ms. Kristina L. Konrath, E.I.T.
Hunsaker & Associates Nevada, Inc.

218-65-RS

CASE # 97-09-267A





CASE # 97-09-267A



95-09-926P

Federal Emergency Management Agency

Washington, D.C. 20472

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Jan Laverty Jones
Mayor, City of Las Vegas
400 East Stewart Avenue
Las Vegas, Nevada 89101-2986

IN REPLY REFER TO:
Case No.: 95-09-926P

Community: City of Las Vegas, Nevada
Community No.: 325276
Panel Affected: 32003C2155 D
Effective Date of
This Revision: OCT 04 1995

102-D

Dear Mayor Jones:

This is in response to a letter dated July 21, 1995, from Mr. Randy L. Fultz, P.E., Flood Control Project Manager, Department of Public Works, City of Las Vegas, regarding the reissuance of a Letter of Map Revision (LOMR) dated May 22, 1995, for the City of Las Vegas, Nevada. The May 22 LOMR revised Panel 0015 C of the Flood Insurance Rate Map (FIRM) for the City of Las Vegas, Nevada, dated October 18, 1983. The FIRM has since been superseded by a FIRM for Clark County, Nevada and Incorporated Areas, dated August 16, 1995. The analysis used to amend the FIRM is still valid.

The May 22 LOMR was issued in response to a letter dated May 1, 1995, from Mr. Kevin L. Eubanks, P.E., Assistant General Manager, Clark County Regional Flood Control District, regarding the effective FIRM for the City of Las Vegas, Nevada. With his letter Mr. Eubanks provided additional information to support an October 14, 1994, request for a LOMR from Mr. Gale Wm. Fraser II, P.E., General Manager/Chief Engineer, Clark County Regional Flood Control District. Mr. Fraser requested that the Federal Emergency Management Agency (FEMA) revise the effective FIRM to show the effects of the construction of the Craig Road storm drain system on the Special Flood Hazard Area (SFHA) located east of North Rancho Drive, west of North Decatur Boulevard, and between Craig Road and Hickham Avenue. The SFHA is designated on the effective FIRM as Zone A, an area inundated by a flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).

All data required to complete our review of the May 22 LOMR were submitted with Mr. Fraser's October 14 letter and letters dated March 28, April 26, and May 1, 1995, from Mr. Eubanks. Because this LOMR is a reissuance of the May 22 LOMR, fees were not assessed for the review.

We have completed our review of the submitted data and the flood data shown on the effective FIRM and have revised the FIRM to modify the floodplain boundary delineations and zone designations of the base flood for the SFHA located east of North Rancho Drive, west of North Decatur Boulevard, and between Craig Road and Hickham Avenue. The newly constructed Craig Road storm drain system intercepts the base flood discharge at the intersection of Craig Road and North Rancho Drive and conveys the discharge east to the Gowan Detention Basin outfall pipe system. No base flood discharge affects the area bordered by Craig Road to the north, Hickham Avenue to the south, North Rancho Drive to the west, and North Decatur Boulevard to the east. The above-mentioned SFHA has been removed as a result of the construction of the Craig Road storm drain system.

The modifications are shown on the enclosed annotated copy of FIRM Panel 32003C2155 D for Clark County, Nevada and Incorporated Areas. This LOMR hereby revises this panel of the effective FIRM dated August 16, 1995.

The revisions are effective as of the date of this letter; however, a review of the determination made by this LOMR and any requests to alter this determination should be made within 30 days. Any request to alter the determination must be based on scientific or technical data.

Due to present funding constraints, we must limit the number of physical map revisions processed. Consequently, we will not republish the FIRM for your community to reflect the modifications described in this LOMR at this time. However, when changes to FIRM Panel 32003C2155 D for your community warrant a physical revision and republication in the future, we will incorporate the modifications described in this LOMR at that time.

This response to Mr. Fultz' request is based on minimum floodplain management criteria established under the National Flood Insurance Program (NFIP). Your community is responsible for approving all floodplain development, including this request, and for ensuring that necessary permits required by Federal or State law have been received. With knowledge of local conditions and in the interest of safety, State and community officials may set higher standards for construction, or may limit development in floodplain areas. If the State of Nevada or your community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence.

The basis of this LOMR is, in whole or in part, a culvert project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities assure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management regulations. Consequently, the ultimate responsibility for maintenance of the culvert rests with your community.

Because this LOMR will not be printed and distributed to primary users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout the community, so that interested persons, such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare an article for publication in your community's local newspaper. This article should describe the changes that have been made and the assistance that officials of your community will give to interested persons by providing these data and interpreting the NFIP maps.

The map panel as listed above and as revised by this letter will be used for all flood insurance policies and renewals issued for your community.

This determination has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria are the minimum requirements and do not supersede any State or local requirements of a more stringent nature. This includes adoption of the effective FIRM to which the regulations apply and the modifications made by this LOMR.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the Consultation Coordination Officer (CCO) for your community. Information on the CCO for your community may be obtained by contacting the Director, Mitigation Division of FEMA in San Francisco, California, at (415) 923-7177. If you have any technical questions regarding this LOMR, please contact Mr. John Magnotti of our staff in Washington, DC, either by telephone at (202) 646-3932 or by facsimile at (202) 646-4596.

Sincerely,

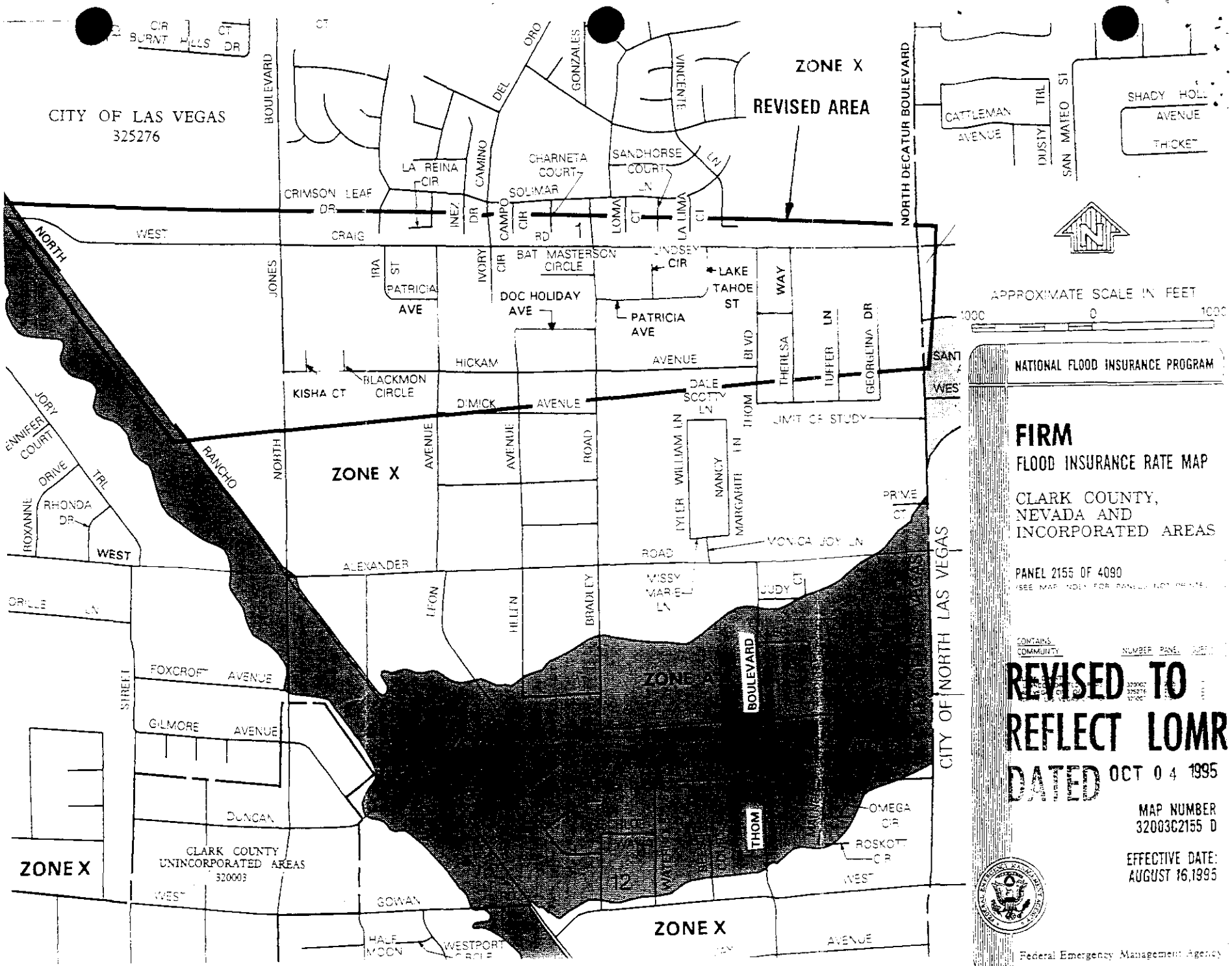
Michael K. Buckley, P.E., Chief
Hazard Identification Branch
Mitigation Directorate

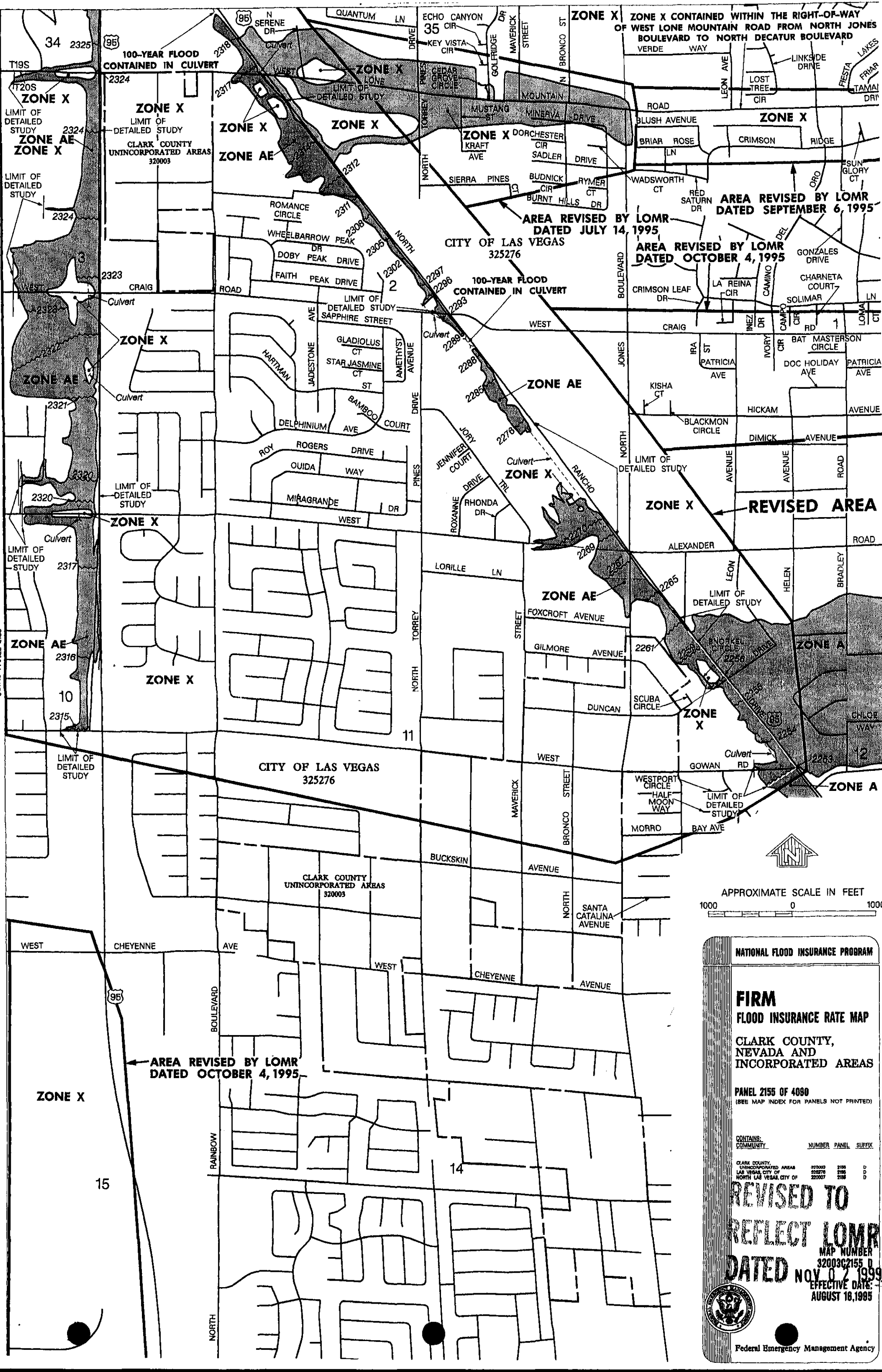
Enclosure

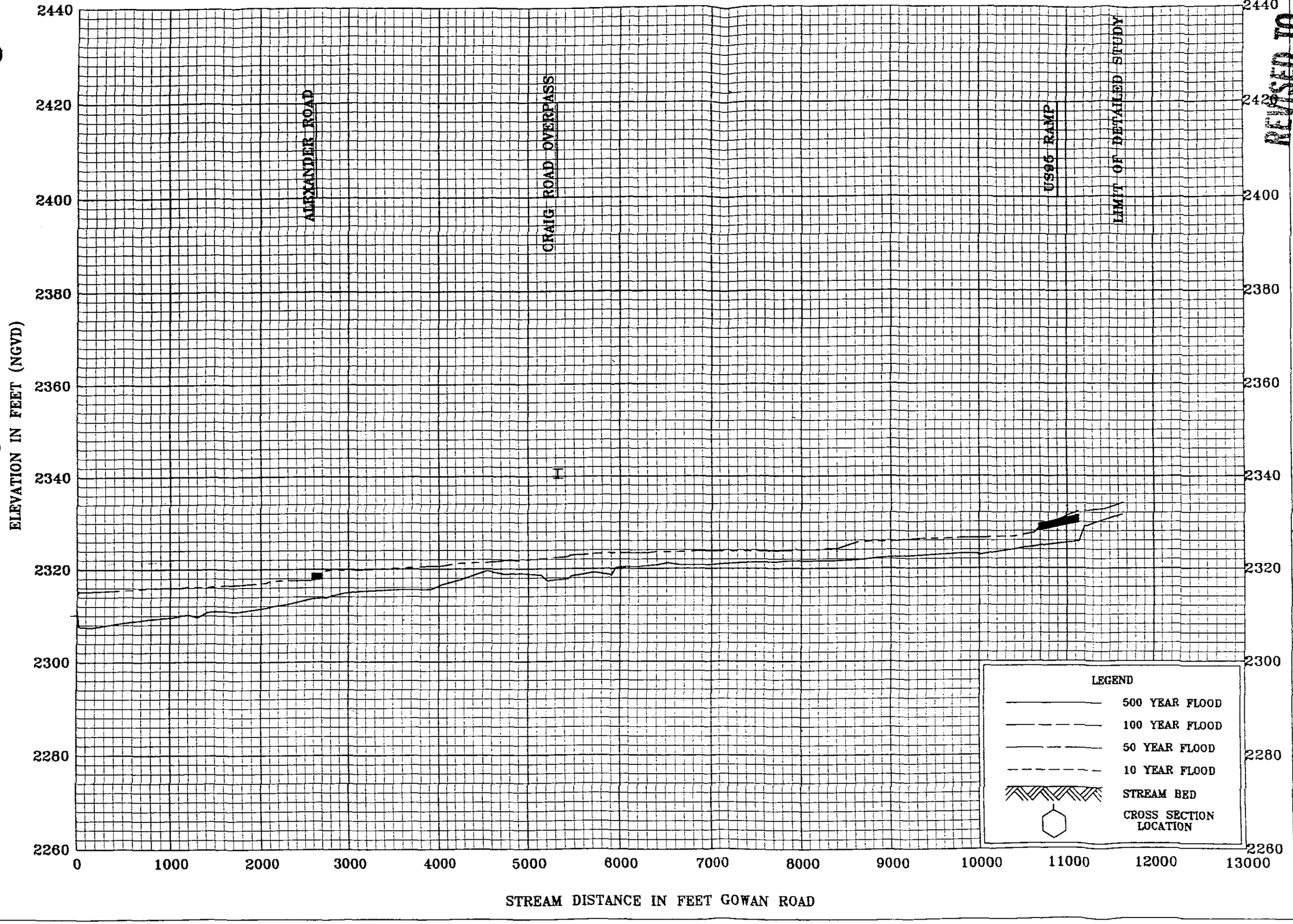
cc: Mr. Randy L. Fultz, P.E.
Flood Control Project Manager
Department of Public Works
City of Las Vegas

Mr. Gale Wm. Fraser II, P.E.
General Manager/Chief Engineer
Clark County Regional Flood
Control District

Mr. Kevin L. Eubanks, P.E.
Assistant General Manager
Clark County Regional Flood
Control District


CITY OF LAS VEGAS
325276
ZONE X
REVISED AREA
NORTH DECATUR BOULEVARD
BURNT HILLS CT
CIR
DR
BOULEVARD
CRIMSON LEAF DR
LA REINA CIR
INEZ DR
CAMINO
DEL ORO
GONZALES
VINCENTE
CHARNETA COURT
SOLIMAR
CAMPO CIR
RD
SANDHORSE COURT
LN
LOMA CT
LA LIMA CT
CATTLEMAN AVENUE
TRL
DUSTY
SAN MATEO ST
SHADY HOLL
AVENUE
THICKET
WEST
CRAIG
NORTH
JONES
IRA ST
PATRICIA AVE
IVORY CIR
BAT MASTERSON CIRCLE
DOC HOLIDAY AVE
LINDSEY CIR
LAKE TAHOE ST
WAY
PATRICIA AVE
HICKAM
AVENUE
BLVD
THERESA
LN
TUFFER
GEORGLINA DR
SANT
WES
KISHA CT
BLACKMON CIRCLE
DALE SCOTT LN
DIMICK
AVENUE
THOM
LIMIT OF STUDY
JORY
ENNIFER COURT
DRIVE
TRL
ROXANNE
RHONDA DR
WEST
RANCHO
NORTH
AVENUE
AVENUE
ROAD
ZONE X
TYLER WILLIAM LN
NANCY
MARGAHIT LN
PRIVE
CT
MONICA JOY LN
ROAD
ALEXANDER
ORILLE LN
LEON
HELEN
BRADLEY
MISSY MARIE LN
JUDY CT
STREET
FOXCROFT AVENUE
GILMORE AVENUE
ZONE A
BOULEVARD
CITY OF NORTH LAS VEGAS
OMEGA CIR
ROSKOTT CIR
THOM
DUNCAN
CLARK COUNTY
UNINCORPORATED AREAS
320003
ZONE X
WEST
GOWAN
HALF MOON
WESTPORT
ZONE X
AVENUE
APPROXIMATE SCALE IN FEET
1000
0
1000
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS
PANEL 2155 OF 4090
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS COMMUNITY
NUMBER
PANEL
SUFFIX
REVISED TO REFLECT LOMR DATED OCT 04 1995
MAP NUMBER
32003C2155 D
EFFECTIVE DATE:
AUGUST 16,1995
Federal Emergency Management Agency


ZONE X
ZONE X CONTAINED WITHIN THE RIGHT-OF-WAY OF WEST LONE MOUNTAIN ROAD FROM NORTH JONES BOULEVARD TO NORTH DECATUR BOULEVARD
100-YEAR FLOOD CONTAINED IN CULVERT
ZONE AE
ZONE A
LIMIT OF DETAILED STUDY
CLARK COUNTY UNINCORPORATED AREAS 320003
CITY OF LAS VEGAS 325276
AREA REVISED BY LOMR DATED JULY 14, 1995
AREA REVISED BY LOMR DATED SEPTEMBER 6, 1995
AREA REVISED BY LOMR DATED OCTOBER 4, 1995
REVISED AREA
Culvert
WEST LONE MOUNTAIN ROAD
CRAIG ROAD
ALEXANDER ROAD
BLUSH AVENUE
DIMICK AVENUE
HICKAM AVENUE
FOXCROFT AVENUE
GILMORE AVENUE
BUCKSKIN AVENUE
CHEYENNE AVENUE
NORTH JONES BOULEVARD
NORTH DECATUR BOULEVARD
NORTH TORREY PINES DRIVE
NORTH BRONCO STREET
NORTH MAVERICK STREET
NORTH RAINBOW BOULEVARD
NORTH SANTA CATALINA AVENUE
ROMANCE CIRCLE
WHEELBARROW PEAK DR
DOBY PEAK DRIVE
FAITH PEAK DRIVE
SAPPHIRE STREET
GLADIOLUS CT
STAR JASMINE CT
HARTMAN
JADESTONE AVE
AMETHYST AVENUE
BAMBOO COURT
DELPHINIUM AVE
ROY ROGERS DRIVE
OUIDA WAY
MIRAGRANDE DR
JENNIFER COURT
JORY DRIVE
ROXANNE TRL
RHONDA DR
RANCHO DRIVE
LORILLE LN
DUNCAN
SCUBA CIRCLE
WESTPORT CIRCLE
HALF MOON WAY
MORRO BAY AVE
CHLOE WAY
GOWAN RD
SNORKEL CIRCLE
ECHO CANYON CIR
KEY VISTA CIR
CEDAR GROVE CIRCLE
MUSTANG ST
MINERVA DRIVE
DORCHESTER CIR
SADLER DRIVE
KRAFT AVE
SIERRA PINES CT
BUDNICK CIR
RYMER CT
BURNT HILLS DR
WADSWORTH CT
RED SATURN DR
BRIAR ROSE LN
CRIMSON RIDGE
SUN GLORY CT
ORO DEL
GONZALES DRIVE
CHARNETA COURT
SOLIMAR LN
CRIMSON LEAF DR
LA REINA CIR
CAMINO CAMPO CIR
INEZ DR
LOMA CT
BAT MASTERSON CIRCLE
DOC HOLIDAY AVE
PATRICIA AVE
IRA ST
IVORY CIR
KISHA CT
BLACKMON CIRCLE
LINKSIDE DRIVE
LOST TREE CIR
VERDE WAY
FIESTA LAKES
FRIAR TAMAI DRI
LEON AVE
HELEN
BRADLEY
JONES BOULEVARD
APPROXIMATE SCALE IN FEET
1000 0 1000
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS
PANEL 2155 OF 4090
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
CLARK COUNTY, UNINCORPORATED AREAS 320003 2155 D
LAS VEGAS, CITY OF 325276 2155 D
NORTH LAS VEGAS, CITY OF 320007 2155 D
REVISED TO REFLECT LOMR DATED NOV 02 1999
MAP NUMBER 32003C2155 D
EFFECTIVE DATE: AUGUST 16,1995
Federal Emergency Management Agency
JOINS PANEL 2135



REVISED TO REFLECT LOMR DATED 95 Nov 02 1999

FLOOD PROFILES

UNNAMED WASH ALONG U.S. HIGHWAY 95

CLARK COUNTY, NV
AND INCORPORATED AREAS

FEDERAL EMERGENCY MANAGEMENT AGENCY

102P

ELEVATION IN FEET (NGVD)

STREAM DISTANCE IN FEET ABOVE GOWAN ROAD

FLOOD PROFILES

UNNAMED WASH ALONG NORTH HO DRIVE

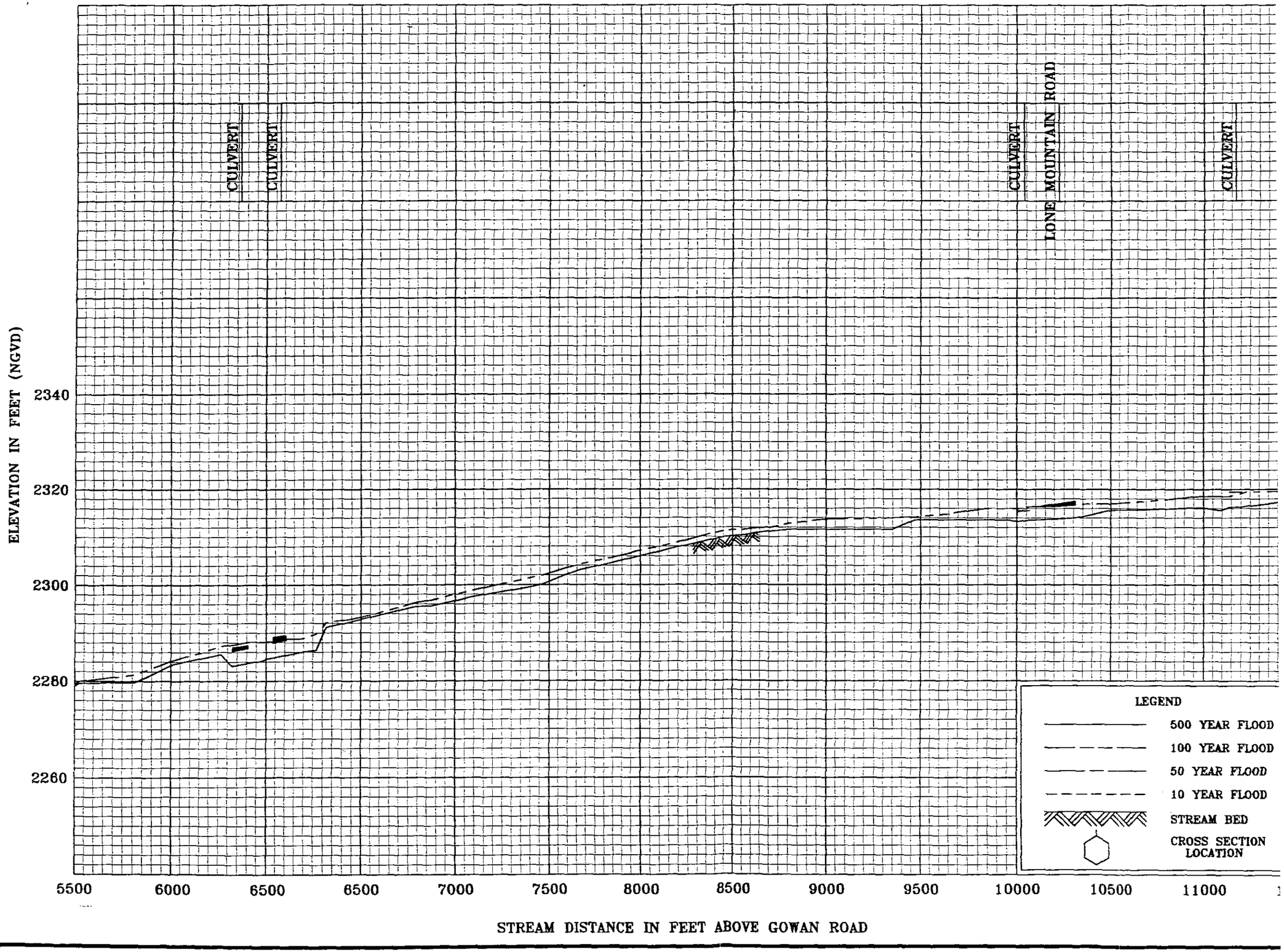
FEDERAL EMERGENCY MANAGEMENT AGENCY

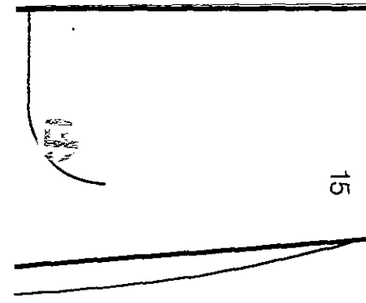
CLARK COUNTY, NV

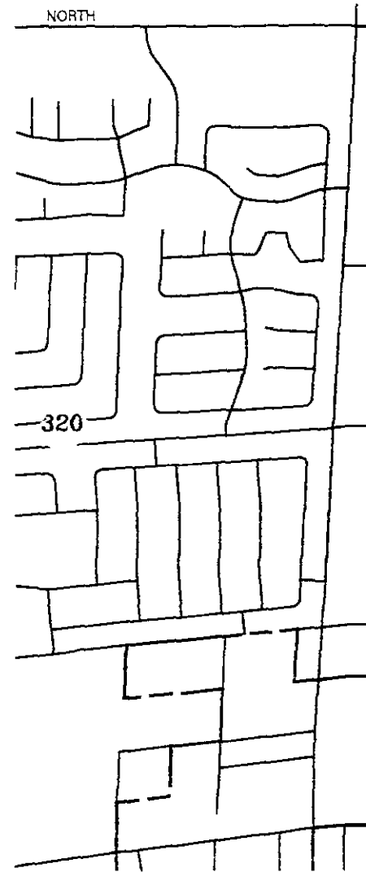
AND INCORPORATED AREAS

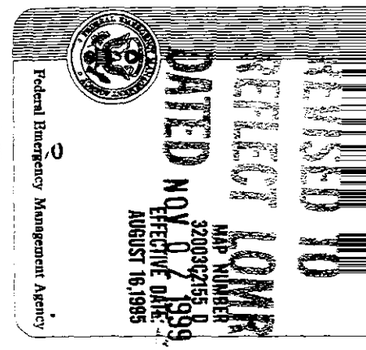
103P

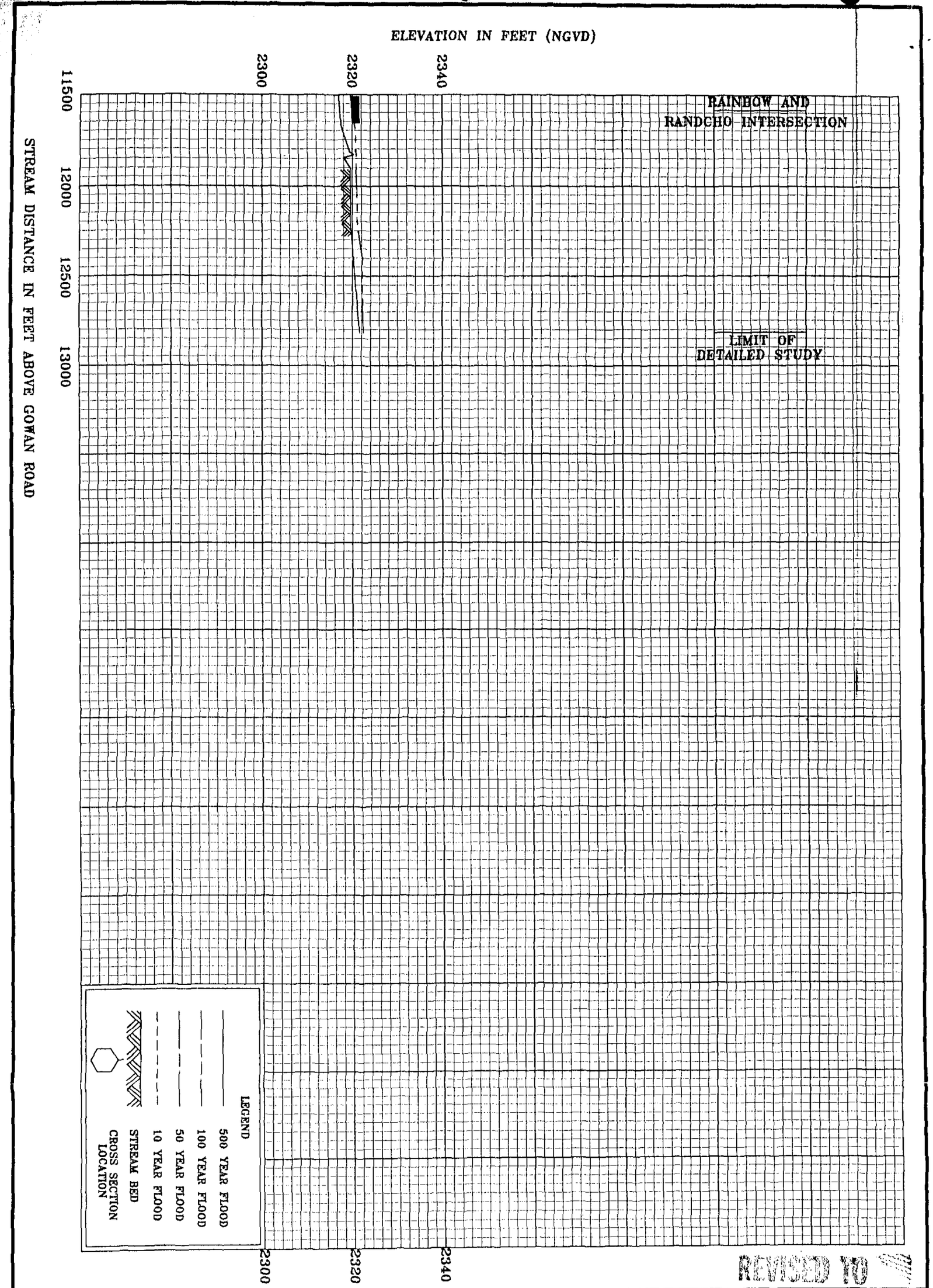
FEMA MAP REVISED
NOV 02 1999


CULVERT
CULVERT
CULVERT
LONE MOUNTAIN ROAD
CULVERT
ELEVATION IN FEET (NGVD)
2340
2320
2300
2280
2260
5500
6000
6500
6500
7000
7500
8000
8500
9000
9500
10000
10500
11000
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
STREAM DISTANCE IN FEET ABOVE GOWAN ROAD


15


NORTH
320


Federal Emergency Management Agency
MAP NUMBER
320032155 D
EFFECTIVE DATE:
AUGUST 16,1985



REVISED TO REFLECT LOMR DATED NOV 0 2 1999

105P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, NV
AND INCORPORATED AREAS

FLOOD PROFILES

UNNAMED WASH ALONG NORTH RANCHO DRIVE

LOMR

99-09-025P

Federal Emergency Management Agency

Washington, D.C. 20472

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Oscar Goodman
Mayor, City of Las Vegas
400 East Stewart Avenue
Las Vegas, NV 89101

IN REPLY REFER TO:
Case No.: 99-09-025P

Community: City of Las Vegas, Nevada
Community No.: 325276
Panels Affected: 32003C1745 D, 1765 D, and 2155 D
Effective Date of This Revision: NOV 02 1999

102-I-A-C

Dear Mayor Goodman:

This responds to a request that the Federal Emergency Management Agency (FEMA) revise the effective Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) report for Clark County, Nevada and Incorporated Areas (the effective FIRM and FIS report for your community), in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated October 1, 1998, Mr. Kevin L. Eubanks, P.E., Assistant General Manager, Clark County Regional Flood Control District, requested that FEMA revise the FIRM and FIS report to show the effects of detailed hydrologic and hydraulic analyses for the unnamed wash along U.S. Highway 95 (wash 1) from just upstream of Gowan Road to just upstream of Ann Road and for the unnamed wash along North Rancho Drive (wash 2) from just downstream of Gowan Road to just downstream of U.S. Highway 95 (US95). The detailed analyses are based on construction of US95 and Lone Mountain, Village 26, and Gowan Detention Basins; installation of 33 culverts along the above-referenced washes; and channelization of a portion of wash 1 from approximately 100 feet downstream to approximately 1,200 feet downstream of Ann Road.

All data required to complete our review of this request were submitted with letters from Mr. Randy Fultz, P.E., Project Manager, Flood Control Section, Public Works Department, City of Las Vegas; Mr. Peter Jackson, Senior Engineering Associate, Flood Control Section, Public Works Department, City of Las Vegas; Mr. Matthew Baird, P.E., Project Manager, Post, Buckley, Schuh & Jernigan, Inc.; and Mr. Eubanks.

We have completed our review of the submitted data and the flood data shown on the effective FIRM and FIS report. We have revised the FIRM and FIS report to modify the floodplain boundary delineations and zone designations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) for wash 1 from just upstream of Gowan Road to just upstream of Ann Road and for wash 2 from just downstream of Gowan Road to just downstream of US95. As a result of the modifications, base flood elevations (BFEs) were added for wash 1 from just upstream of Gowan Road to approximately 3,200 feet downstream of Ann Road; BFEs were added for wash 2 from just downstream of Gowan Road to approximately 300 feet downstream of US95; a Special Flood Hazard Area (SFHA), the area that would

to approximately 300 feet downstream of US95; a Special Flood Hazard Area (SFHA), the area that would be inundated by the base flood, was added along wash 1 from just upstream of Gowan Road to approximately 4,500 feet downstream of Ann Road; the width of the SFHA for wash 2 increased in some areas and decreased in other areas; a portion of wash 1 was channelized from approximately 100 feet downstream to approximately 1,200 feet downstream of Ann Road; and the flood zone designation was changed from Zone A, an SFHA with no BFEs determined, to Zone AE, an SFHA with BFEs determined, along washes 1 and 2. The modifications are shown on the enclosed annotated copies of FIRM Panel(s) 32003C1745 D, 32003C1765 D, and 32003C2155 D, and Profile Panels 102P through 105P for the above-mentioned flooding sources were added to the FIS report. This Letter of Map Revision (LOMR) hereby revises the above-referenced panel(s) of the effective FIRM and the affected portions of the FIS report, both dated August 16, 1995.

The modifications are effective as of the date shown above. The map panel(s) as listed above and as modified by this letter will be used for all flood insurance policies and renewals issued for your community.

The following table is a partial listing of existing and modified BFEs:

Location	Existing BFE (feet)*	Modified BFE (feet)*
Wash 1:		
Just upstream of Gowan Road	None	2,315
Approximately 3,200 feet downstream of Ann Road	*None*	2,332
Wash 2:		
Just downstream of Gowan Road	None	2,253
Approximately 300 feet downstream of US95	None	2,322

*Referenced to the National Geodetic Vertical Datum, rounded to the nearest whole foot

Public notification of the proposed modified BFEs will be given in the *Las Vegas Review Journal* on or about December 8, and December 15, 1999. A copy of this notification is enclosed. In addition, a notice of changes will be published in the *Federal Register*. Within 90 days of the second publication in the *Las Vegas Review Journal*, a citizen may request that FEMA reconsider the determination made by this LOMR. Any request for reconsideration must be based on scientific or technical data. All interested parties are on notice that, until the 90-day period elapses, the determination to modify the BFEs presented in this LOMR may itself be modified.

Because this LOMR will not be printed and distributed to primary users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout the community, so that interested persons, such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare a related article for publication in your community's local newspaper. This article should describe the assistance that officials of your community will give to interested persons by providing these data and interpreting the NFIP maps.

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This LOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development, and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

The basis of this LOMR is, in whole or in part, a channel-modification/culvert project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management regulations. Consequently, the ultimate responsibility for maintenance of the modified channel and culverts rests with your community.

This determination has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed minimum NFIP criteria. These criteria are the minimum and do not supersede any State or local requirements of a more stringent nature. This includes adoption of the effective FIRM to which the regulations apply and the modifications described in this LOMR. Our records show that your community has met this requirement.

A Consultation Coordination Officer (CCO) has been designated to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Sally Ziolkowski
Director, Mitigation Division
Federal Emergency Management Agency, Region IX
The Presidio of San Francisco, Building 105
San Francisco, California 94129-1250
(415) 923-7177

FEMA makes flood insurance available in participating communities; in addition, we encourage communities to develop their own loss reduction and prevention programs. Our Project Impact initiative, developed by FEMA Director James Lee Witt, seeks to focus the energy of businesses, citizens, and communities in the United States on the importance of reducing their susceptibility to the impact of all natural disasters, including floods, hurricanes, severe storms, earthquakes, and wildfires. Natural hazard mitigation is most effective when it is planned for and implemented at the local level, by the entities who are most knowledgeable of local conditions and whose economic stability and safety are at stake. For your information, we are enclosing a Project Impact Fact Sheet. For additional information on Project Impact, please visit our Web site at www.fema.gov.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the CCO for your community at the telephone number cited above. If you have any technical questions regarding this LOMR, please contact Mr. Max Yuan of our staff in Washington, DC, either by telephone at (202) 646-3843 or by facsimile at (202) 646-4596.

Sincerely,

Max H. Yuan, P.E., Project Engineer
Hazards Study Branch
Mitigation Directorate

For: Matthew B. Miller, P.E., Chief
Hazards Study Branch
Mitigation Directorate

Enclosure(s)

cc: The Honorable Bruce Woodbury
Chair, Clark County Board
of Commissioners

Mr. Robert B. Thompson, P.E.
Civil Engineer III
Clark County Department
of Public Works

Mr. Kevin L. Eubanks, P.E.
Assistant General Manager
Clark County Regional Flood
Control District

Mr. Randy Fultz, P.E.
Project Manager
Flood Control Section
Public Works Department
City of Las Vegas

Mr. Peter Jackson
Senior Engineering Associate
Flood Control Section
Public Works Department
City of Las Vegas

Mr. Matthew Baird, P.E.
Project Manager
Post, Buckley, Schuh & Jernigan, Inc.

CHANGES ARE MADE IN DETERMINATIONS OF BASE FLOOD ELEVATIONS FOR THE CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, UNDER THE NATIONAL FLOOD INSURANCE PROGRAM

On August 16, 1995, the Federal Emergency Management Agency identified Special Flood Hazard Areas (SFHAs) in the City of Las Vegas, Clark County, Nevada, through issuance of a Flood Insurance Rate Map (FIRM). The Mitigation Directorate has determined that modification of the elevations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) for certain locations in this community is appropriate. The modified base flood elevations (BFEs) revise the FIRM for the community.

The changes are being made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and are in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and *44 CFR Part 65.*

Detailed hydrologic and hydraulic analyses were performed to demonstrate the effects of construction of U.S. Highway 95, Lone Mountain Detention Basin, Village 26 Detention Basin, and Gowan Detention Basin for the unnamed wash along U.S. Highway 95 and the unnamed wash along North Rancho Drive. As a result, an SFHA was added along the unnamed wash along U.S. Highway 95, the width of the SFHA for the unnamed wash along North Rancho Drive increased in some areas and decreased in other areas, BFEs were added for the unnamed wash along U.S. Highway 95 and for the unnamed wash along North Rancho Drive, and a portion of the unnamed wash along U.S. Highway 95 was channelized. The aforementioned channelized portion of the unnamed wash along U.S. Highway 95 contains the base flood. The table below indicates existing and modified BFEs for selected locations along the affected lengths of the flooding source(s) cited above.

Location	Existing BFE (feet)*	Modified BFE (feet)*
Unnamed Wash Along U.S. Highway 95:		
Just upstream of Gowan Road	None	2,315
Approximately 3,200 feet downstream of Ann Road	None	2,332
Unnamed Wash Along North Rancho Drive:		
Just downstream of Gowan Road	None	2,253
Approximately 300 feet downstream of U.S. Highway 95	None	2,322

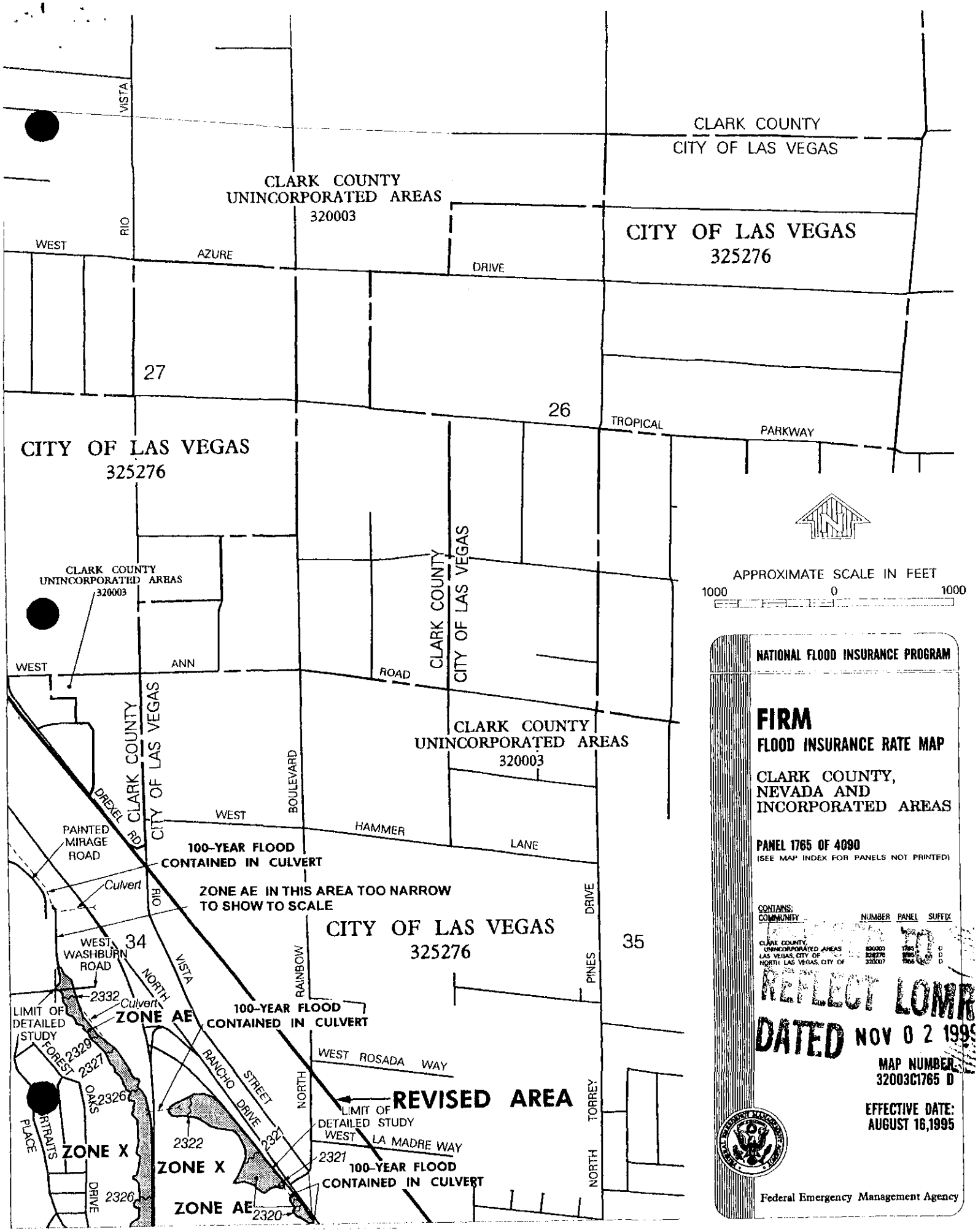
*National Geodetic Vertical Datum, rounded to nearest whole foot

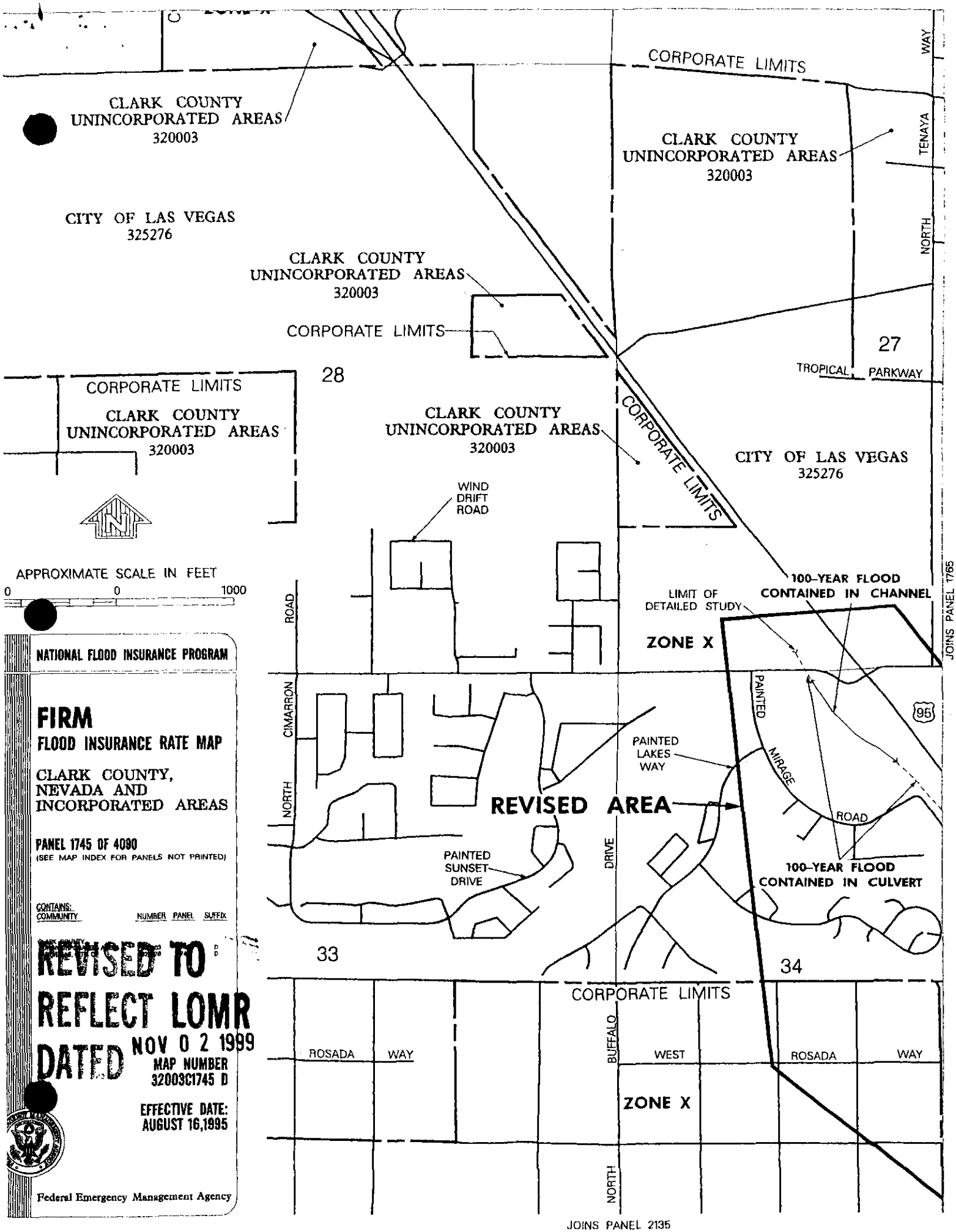
Under the above-mentioned Acts of 1968 and 1973, the Mitigation Directorate must develop criteria for floodplain management. To participate in the National Flood Insurance Program (NFIP), the community must use the modified BFEs to administer the floodplain management measures of the NFIP. These modified BFEs will also be used to calculate the appropriate flood insurance premium rates for new buildings and their contents and for the second layer of insurance on existing buildings and contents.

Upon the second publication of notice of these changes in this newspaper, any person has 90 days in which he or she can request, through the Chief Executive Officer of the community, that the Mitigation Directorate reconsider the determination. Any request for reconsideration must be based on knowledge of changed conditions or new scientific or technical data. All interested parties are on notice that until the 90-day period elapses, the Mitigation Directorate's determination to modify the BFEs may itself be changed.

Any person having knowledge or wishing to comment on these changes should immediately notify:

The Honorable Oscar Goodman
Mayor, City of Las Vegas
400 East Stewart Avenue
Las Vegas, Nevada 89101


CLARK COUNTY
CITY OF LAS VEGAS
CLARK COUNTY
UNINCORPORATED AREAS
320003
CITY OF LAS VEGAS
325276
VISTA
RIO
WEST
AZURE
DRIVE
27
26
TROPICAL
PARKWAY
CLARK COUNTY
UNINCORPORATED AREAS
320003
CLARK COUNTY
CITY OF LAS VEGAS
WEST
ANN
ROAD
CLARK COUNTY
UNINCORPORATED AREAS
320003
DREXEL RD
CLARK COUNTY
CITY OF LAS VEGAS
BOULEVARD
WEST
HAMMER
LANE
PAINTED
MIRAGE
ROAD
100-YEAR FLOOD
CONTAINED IN CULVERT
Culvert
ZONE AE IN THIS AREA TOO NARROW
TO SHOW TO SCALE
RIO
VISTA
DRIVE
CITY OF LAS VEGAS
325276
35
34
WEST
WASHBURN
ROAD
NORTH
RAINBOW
PINES
2332
Culvert
LIMIT OF
DETAILED
STUDY
ZONE AE
100-YEAR FLOOD
CONTAINED IN CULVERT
FOREST
2329
2327
OAKS
2326
RANCHO
DRIVE
STREET
WEST ROSADA WAY
NORTH
REVISED AREA
TORREY
PINES
DRIVE
LIMIT OF
DETAILED STUDY
WEST LA MADRE WAY
2322
2321
100-YEAR FLOOD
CONTAINED IN CULVERT
ZONE X
ZONE X
ZONE AE
2326
2320
NORTH
APPROXIMATE SCALE IN FEET
1000
0
1000
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS
PANEL 1765 OF 4090
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY
NUMBER
PANEL
SUFFIX
CLARK COUNTY
UNINCORPORATED AREAS
320003
1765
D
LAS VEGAS, CITY OF
325276
1765
D
NORTH LAS VEGAS, CITY OF
330007
1765
D
REFLECT LOMR
DATED NOV 0 2 1995
MAP NUMBER
32003C1765 D
EFFECTIVE DATE:
AUGUST 16,1995
Federal Emergency Management Agency



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS

PANEL 1745 OF 4090
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:
COMMUNITY | NUMBER | PANEL | SUFFIX

REVISED TO REFLECT LOMR DATED NOV 0 2 1999

MAP NUMBER
32003C1745 D

EFFECTIVE DATE:
AUGUST 16,1995

Federal Emergency Management Agency

Federal Emergency Management Agency

Washington, D.C. 20472

MAR 14 1997

MAR 24 1997

386

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 97-09-231R

The Honorable Jan Laverty Jones
Mayor, City of Las Vegas
400 East Stewart Avenue
Las Vegas, Nevada 89101-2986

Community: City of Las Vegas, Nevada
Community No.: 325276

104

FILE COPY

Dear Mayor Jones:

This responds to a request that the Federal Emergency Management Agency (FEMA) comment on the effects that a proposed project would have on the effective Flood Insurance Rate Map (FIRM) for Clark County, Nevada and Incorporated Areas, in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated November 13, 1996, Ms. Kristina L. Konrath, E.I.T., Hydrology and Traffic Services Manager, Hunsaker & Associates Nevada, Inc., requested that FEMA evaluate the effects that the construction of the Aisha Gardens development and revised hydrologic and hydraulic analyses would have on the flood hazard information shown on the effective FIRM.

All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Ms. Konrath.

We have completed our review of the submitted data and the flood data used to prepare the effective FIRM for your community. We believe that, if the proposed project is constructed as shown on the plans, entitled "Grading Plan, Aisha Gardens, Las Vegas, Nevada" and "Detail Sheet, Aisha Gardens, Las Vegas, Nevada," both prepared by Hunsaker & Associates Nevada, Inc., dated June and July 1995, respectively, and as described in the reports, entitled "Hydrology Study for Rancho San Miguel II and III, Addendum No. 2," prepared by Summit Engineering Corporation, dated December 9, 1993, and "Technical Hydrology Study for Aisha Gardens," prepared by Hunsaker & Associates Nevada, Inc., dated May 1996, the Aisha Gardens development will not be within the Special Flood Hazard Area (SFHA), the area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).

Upon completion of the project, your community may submit the data listed below and request that we make a final determination on revising the effective FIRM.

- Detailed application and certification forms, which were used in processing this request, must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1, entitled "Revision Requester and Community Official Form," and Form 2, entitled "Certification by Registered Professional Engineer and/or Land Surveyor," must be included. (Copies of these forms are enclosed.)

- The detailed application and certification forms listed below may be required if as-built conditions differ from the preliminary plans. If required, please submit new forms (copies of which are enclosed) or annotated copies of the previously submitted forms showing the revised information.

  Form 3, entitled "Hydrologic Analysis Form"

Form 4, entitled "Riverine Hydraulic Analysis Form"

Form 5, entitled "Riverine/Coastal Mapping Form"

Hydraulic analyses, for as-built conditions, of the base flood must be submitted with Form 4, and a topographic work map showing the revised floodplain must be submitted with Form 5.

- Effective October 1, 1996, FEMA revised the fee schedule for reviewing and processing requests for modifications to published flood information and maps. Under this schedule, FEMA established flat review and processing fees for most types of requests. All requests dated October 1, 1996, or later will be processed under this new schedule. The fee for your map revision request will be $2,300 and must be received before we can begin processing your request. Payment of this fee shall be made in the form of a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card. The payment must be forwarded to the following address:

  Federal Emergency Management Agency
  Fee-Collection System Administrator
  P.O. Box 3173
  Merrifield, VA 22116-3173

- As-built plans, certified by a registered professional engineer, of all proposed project elements and street sections

- Community acknowledgment of the map revision request

- Certification that all fill placed in the currently effective base floodplain and below the proposed base flood elevation is compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test method issued by the American Society for Testing and Materials (ASTM Standard D-698) or an acceptable equivalent method for all areas to be removed from the base floodplain

- The submitted hydraulic information does not address the potential for flow splits from the West Gowan Road right-of-way to the north at its intersections with the Waterhole Street, Beeson Court, Thom Boulevard, and North Decatur Boulevard rights-of-way. Flow to the north along these streets could increase the flow rate and depth of flow along the south and east sides of the Aisha Gardens development. Please submit documentation demonstrating that flow along West Gowan Road does not split to the north at these four locations, or submit calculations for the flow splits at these four locations and revised hydraulic analyses of the flows along Gilmore Avenue and North Decatur Boulevard.

- The submitted hydraulic information does not include calculations for the flow split between Curry Way and Gilmore Avenue from the Thom Boulevard right-of-way to the east to the lot located just southwest of Aisha Gardens. From the "Technical Hydrology Study for Aisha Gardens," it appears that the split flow drains into the North Decatur Boulevard right-of-way. However, no technical information was submitted to support this conclusion. Please submit documentation demonstrating that the submitted discharge value for this flow split is correct and a hydraulic analysis of this flow between Thom Boulevard and North Decatur Boulevard.

- The "Hydrology Study for Rancho San Miguel II and III, Addendum No. 2," calculated that a discharge value of 84 cubic feet per second (cfs) flows to the east along Gilmore Avenue downstream of its intersection with Thom Boulevard. It is unclear how the discharge value of 84 cfs was calculated. Please submit documentation demonstrating that the calculated discharge value is correct, or submit documentation supporting a revised flow rate, and a revised hydraulic analysis of the flow along Gilmore Avenue along the south side of Aisha Gardens based on the revised flow rate.

- The "Hydrology Study for Rancho San Miguel II and III, Addendum No. 2," calculated street flows assuming each right-of-way was bordered by vertical walls. This approach could have resulted in the calculation of street flows greater than the flow capacities of the streets and rights-of-way. Overland flows escaping from upstream streets could increase the flow rates affecting the Aisha Gardens development. We note that not all of the streets included in the Rancho San Miguel analysis had been constructed at the time of the hydrology study, and several of the streets upstream of the Aisha Gardens development were analyzed using partial street sections. Please submit documentation, including typical as-built street sections, certified by a registered professional engineer, demonstrating that the rights-of-way of streets upstream of the Aisha Gardens development have sufficient capacities to convey the offsite flows used in the hydrologic analyses, or submit documentation demonstrating that the overland flow will not increase the flood hazard to the Aisha Gardens development.

- Reports, entitled "Technical Drainage Study for Trilogy," dated April 13, 1994, and "Addendum No. 1, Technical Drainage Study for Trilogy," dated April 25, 1994, both prepared by the WLB Group and received with FEMA Case No. 97-09-195P, indicate that the placement of fill associated with the Trilogy development west of North Rancho Drive between West Gowan Road and Santa Catalina Avenue has caused an increase in the base flood discharge overtopping North Rancho Drive near its intersection with West Gowan Road, as compared with the values calculated in "Hydrology Study for Rancho San Miguel II and III, Addendum No. 2". This could result in a greater depth of flow at the Aisha Gardens site. Please confirm that the analysis in "Hydrology Study for Rancho San Miguel II and III, Addendum No. 2" for the flow overtopping North Rancho Drive is representative of existing site conditions. If this analysis does not represent existing conditions, please submit a revised hydraulic analysis quantifying the current base flood discharge overtopping North Rancho Drive, revised hydraulic analyses of the flow between North Ranch Drive and North Decatur Boulevard, and revised hydraulic analyses of the flow adjacent to the Aisha Gardens development.

- The map, entitled "Grading Plan, Aisha Gardens, Las Vegas, Nevada," shows a wall around the perimeter of the development. If this wall provides protection to the property from the base flood, we must receive documentation demonstrating the wall meets the requirements of Section 65.10 of the NFIP regulations. If the hydrologic analyses submitted with this request have been revised due to any of the above-mentioned concerns, please base this documentation on the revised base flood discharges.

After receiving appropriate documentation to show that the project has been completed and the above-mentioned issues have been addressed, FEMA will initiate a revision to the FIRM.

This CLOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development, and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the Consultation Coordination Officer (CCO) for your community. Information on the CCO for your community may be obtained by contacting the Director, Mitigation Division of FEMA in San Francisco, California, at (415) 923-7177. If you have any technical questions regarding this CLOMR, please contact Mr. Karl Mohr of our staff in Washington, DC, either by telephone at (202) 646-2770 or by facsimile at (202) 646-4596.

Sincerely,

for Frederick H. Sharrocks, Jr., Chief
Hazard Identification Branch
Mitigation Directorate

Enclosure(s)

cc: Ms. Kristina L. Konrath, E.I.T.
Hydrology and Traffic Services Manager
Hunsaker & Associates Nevada, Inc.

Mr. Kevin L. Eubanks, P.E.
Assistant General Manager
Clark County Regional Flood
Control District

Mr. Randy L. Fultz, P.E.
Flood Control Project Manager
Department of Public Works
City of Las Vegas

THE Louis Berger Group INC

500 Amigo Court, Suite 100, Las Vegas, NV 89119
Tel 702.736.6632 • Fax 702.736.0704

May 23, 2001

Greg McDermott, P.E.
Project Manager, Flood Control Section
City of Las Vegas
Department of Public Works
731 South Fourth Street
Las Vegas, NV 89101

Re: Responses to Comments on Draft Gowan/Bradley Flood Insurance Study – CB 849

Dear Mr. McDermott:

We have reviewed the comments for the Draft Gowan/Bradley Flood Insurance Study (DGBFIS) dated April 18, 2001 and offer the following responses:

1. The submittal did not include a printout of the HEC-1 model used in the analysis. During previous progress meetings (December 12, 2000 and January 2, 2001) the evaluation of the HEC-1 analysis was discussed and the engineer was to also include the HEC-1 model with the Gowan North System and the Buffalo Branch included to evaluate those system impacts upon the flood zone.

LBG Response: The effective hydrology was used from the US 95/Rancho Flood Insurance Study Restudy (US95 FISR), case number 99-09-025P. Since it was used without any alteration, it will not be included in the final submittal. For informational purposes, the HEC-1 model from the US95 FISR with the addition of the future Gowan North System and Buffalo Branch was run and a copy of the printout is attached. Unfortunately the effect of these additional facilities on the flood zone seems to be minimal due to depressed areas in the terrain.

2. The study area encompasses the existing flood zone properties north of the Rancho Business Park and includes flows that cross Rancho as shown on sheet 8 and 9 of the US-85/Rancho Drive FIS Restudy. The flow depths must also be determined north of the Rancho Business Park to the north boundary of the 100-year flood zone.

LBG Response: A preliminary evaluation of the flow depths in this area indicated that there would be little or no change in the existing flood zones in this area north of the Rancho Business Park. Since several LOMRs had already been issued based on the previously established flow rates and base flood elevations, it was decided not to submit new information for this area to avoid the risk of providing conflicting information from that used originally to issue the LOMRs.

3. The flow analysis should assume the 600 cfs flow rate within the Gowan storm drain. The benefits of the storm drain system should be identified since without this assumption the Rancho Business Park is significantly affected. Possibly other storm centerings should be considered.

LBG Response: Per the request of the CCRFCD, the assumptions from the previously approved US95 FISR pertaining to areas west of Rancho Drive were used in the DGBFIS in an effort to simplify the modeling and reduce any possible concerns by FEMA. These previous assumptions from the US95 FISR do not include any flow in the Gowan storm drain.

The DGBFIS gives a flow rate of approximately 380 cfs along Gowan Road, just south of the Rancho Business Park, which is less than the 500 cfs given in the Rancho Business Park Study. The Rancho Business Park Study did not address was the possibility of water flowing into the park from the west from Rancho Drive. Since the US95 FISR shows water flowing southeast on Rancho Drive, the DGBFIS examined the affect of this on the flood zone. A further examination of the western boundary of the Rancho Business Park along Rancho Drive indicates there is not any significant physical barrier between the east side of Rancho Drive and the western boundary of the Rancho Business Park. Additionally, the Louis Berger Group, Inc. (LBG) performed a preliminary analysis of a reduced flow at the intersection of Gowan Road and Rancho Drive by taking into account the construction of a portion of the Gowan North System and the Buffalo Branch and found that water still flowed into the Rancho Business Park from the west from Rancho Drive.

The US95 FISR considers several storm centerings and the most conservative case was used. The LBG also examined the affect of runoff from the study area and found it to be insignificant compared to the runoff generated from off site watershed basins to the west.

4. Two parcels north of Duncan Drive, east of Rancho Drive currently have LOMR's for the existing structures (Case #95-09-855A). Based upon the detailed analysis of the flood zone, a determination must be made if these structures are to remain outside of the flood zone.

LBG Response: Since only the structures have been removed from the flood zone, the lots are still designated as Zone A. The status of the structures and the lots will remain unchanged.

5. The detailed analysis presented for the Rancho Business Park must identify which structures are within the flood zone and if any areas should be removed from the flood zone. The intent is to remove as many structures as possible based upon the data.

LBG Response: Once the submittal is accepted by FEMA a survey can be done to determine if any additional structures can be removed from the flood zone.

6. The HEC-RAS *"With Walls"* models should identify the locations where the wall failures are expected and identified on the drainage exhibits.

LBG Response: Figure 3 has been updated to show the location of the expected wall failures.

7. The parcels along Gowan Road, east of Thom Boulevard that are proposed to be added into the Zone A SFHA must have their finish floors shown on the plans to determine whether or not these structures are in the flood zone.

LBG Response: Once the submittal is accepted by FEMA a survey can be done to determine if any additional structures can be removed from the flood zone.

8. A field visit on April 13, 2001 identified about a 1-foot hump on Leo Drive that could reduce or eliminate the flow split off of Thom Boulevard. The flow split calculations must be reviewed.

LBG Response: A cross section was added to the HEC-RAS model at the location of the high point on Leo Drive and the flow split calculations were reviewed. The results did not change significantly.

9. The two existing wall openings into Sweetwater (upstream of section 689, of the HEC-RAS model 2, reach "Gilmore b Thom") are only 16" x 48" in size and have limited capacity. Discuss the wall failure assumptions made to route the flows into the Sweetwater site. Compare the flow depth at Section 689 with the existing finish floor elevations for lots 28 – 30. It is recommended that an additional cross section be added immediately upstream of section 689 just west of the property boundary. This section would indicate the volume of flow directed to Gilmore Avenue.

LBG Response: The model was changed and the result was that more water was routed east on Gilmore Avenue. Cross section 750 was added upstream of section 689 just west of the property boundary on reaches "Gilmore b Thom" and "W. of Sweetwater". The depth of the water is at or below 2' and no wall failure assumptions are used at this location. The finished floor elevations on lots 28-30 appear to be lower than the water surface elevation for cross section 689.

10. The Sweetwater site has a pending LOMR application at FEMA. This site must be reviewed and the flow values compared with the FIS recommendations. The FIS shows all of the flow (158 cfs) going thru the Sweetwater site at the two drainage easements while the original Sweetwater study showed only 15 cfs entering the site with the rest of the flow in Gilmore. The study should address the difference between the two studies.

LBG Response: The updated "with walls" model gives a flow of approximately 64 cfs entering the Sweetwater site at the drainage easement and 94 cfs on Gilmore Avenue and the "without walls" model gives a flow of approximately 104 cfs entering at the drainage easement. The 15 cfs from the Sweetwater site is the flow generated from the lot to the west and does not account for any water being diverted off of Gilmore Avenue.

11. A small portion of the flood zone is still shown at the northwest corner of Alexander Road and Decatur Boulevard without any discussion even though the area is shown as a part of the study limits. Provide the flow data or a narrative description on flood zone inclusion.

LBG Response: A preliminary investigation of Alexander Road indicate a significant flow to the east. The ultimate impact on this portion of the flood zone is unknown. However, at the request of the CCRFCD this area will be removed from the flood zone.

12. The existing DFIRM exhibit incorrectly shows the entire area as Zone X – Shaded instead of the current Zone A designation.

LBG Response: So noted.

13. FEMA Elevation Certificates must be provided for all structures within the Zone A SFHA as shown on the Annotated DFIRM.

LBG Response: Once the submittal is accepted by FEMA a survey can be done to determine if any additional structures can be removed from the flood zone.

Sincerely,
The Louis Berger Group, Inc.

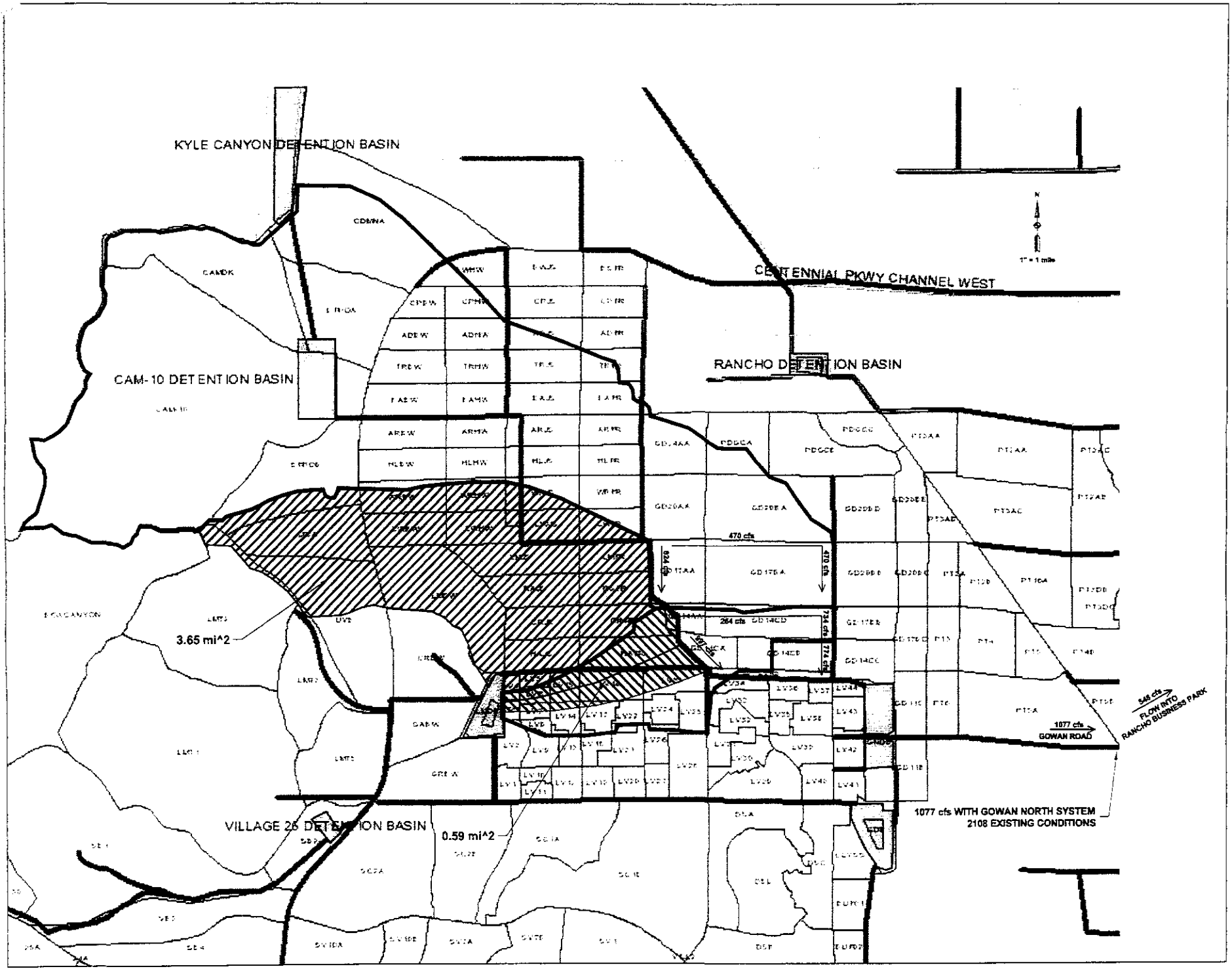
Fred Retzlaff

Fred Retzlaff, E.I.
Hydrologist

Syndi Dudley

Syndi Dudley, PhD, P.E.
Director of Water Resources

cc: Randy Fultz, P.E., City of Las Vegas
Kevin Eubanks, P.E., CCRFCD


KYLE CANYON DETENTION BASIN
CENTENNIAL PKWY CHANNEL WEST
CAM-10 DETENTION BASIN
RANCHO DETENTION BASIN
3.65 mi^2
VILLAGE 26 DETENTION BASIN
0.59 mi^2
470 cfs
924 cfs
264 cfs
724 cfs
545 cfs
FLOW INTO RANCHO BUSINESS PARK
1077 cfs
GOWAN ROAD
1077 cfs WITH GOWAN NORTH SYSTEM
2108 EXISTING CONDITIONS

Add Gowan North System

ITERATION 18 Weir Flow Coefficient = 2.7

Upstream and Downstream Cross-Section Stations	Water Surface Elevation Upstream	Water Surface Elevation Downstream	Cross-Section Elevation Upstream at U.S. 95	Cross-Section Elevation Downstream at U.S. 95	Weir Depth Upstream (feet)	Weir Depth Downstream (feet)	Average Weir Depth (feet)	Weir Length (feet)	Calculated Wier Flow (cfs)	Total Flow at Downstream Cross-section (cfs)	Flow Used in HEC-RAS (cfs)	Difference in Flow (cfs)	Weir Flow Used (cfs)	Culvert Flow Diverted (cfs)	Net Incoming Flow (cfs)	Change in Upstream Water Surface Elev. From Previous to Current Iteration
3836-3756	2272.20	2271.91	2272.10	2271.70	0.10	0.21	0.15	80	13	1340.0	1340.0	0	13	0	0	0.00
3756-3666	2271.91	2271.49	2271.70	2271.30	0.21	0.19	0.20	90	22	1318.3	1318.5	0	21.5	0	0	0.00
3666-3479	2271.49	2270.51	2271.30	2270.50	0.19	0.01	0.10	187	16	1302.3	1301.5	-1	17.0	0	0	0.00
3479-3145	2270.51	2269.11	2270.50	2268.80	0.01	0.31	0.16	334	58	1230.6	1227.4	-3	60.0	14	0	-0.01
3145-2801	2269.11	2267.53	2268.80	2266.90	0.31	0.63	0.47	344	299	883.3	876.1	-7	303.4	48	0	0.00
2801-2549	2267.53	2265.55	2266.90	2265.30	0.63	0.25	0.44	252	199	684.7	675.1	-10	201.0	0	0	-0.01
2549-2280	2265.55	2263.24	2265.30	2263.50	0.25	-0.26	-0.01	269	0	635.7	626.1	-10	0.0	117	68	0.00
2280-2206	2263.24	2262.75	2263.50	2263.00	-0.26	-0.25	-0.26	74	0	635.7	626.1	-10	0.0	0	0	-0.01
2206-1932	2262.75	2261.60	2263.00	2261.10	-0.25	0.50	0.13	274	33	603.0	591.6	-11	34.5	0	0	0.00
1932-1823	2261.60	2261.07	2261.10	2260.40	0.50	0.67	0.59	109	132	471.4	458.1	-13	133.5	0	0	-0.01
1823-1625	2261.07	2259.34	2260.40	2259.20	0.67	0.14	0.41	198	138	333.6	319.5	-14	138.5	0	0	0.00
1625-1456	2259.34	2258.63	2259.20	2258.30	0.14	0.33	0.24	169	52	281.6	267.1	-15	52.5	0	0	0.00
1456-1403	2258.63	2257.76	2258.30	2258.00	0.33	-0.24	0.05	53	1	305.2	290.5	-15	1.6	0	25	0.00
1403-1220	2257.76	2257.63	2258.00	2258.00	-0.24	-0.37	-0.30	183	0	305.2	290.5	-15	0.0	0	0	0.00
1220-983	2257.63	2257.03	2258.00	2256.89	-0.37	0.14	-0.11	237	0	281.2	266.5	-15	0.0	24	0	0.00
983-743	2257.03	2256.99	2256.89	2256.60	0.14	0.39	0.27	240	88	192.8	177.6	-15	88.9	0	0	0.00
743-226	2256.99	2255.88	2256.60	2255.54	0.39	0.34	0.37	517	308	776.0	777.7	2	290.9	0	891	0.03
226-179	2255.88	2255.87	2255.54	2255.53	0.34	0.34	0.34	47	25	750.8	753.9	3	23.9	0	0	0.00
179-95	2255.87	2255.87	2255.53	2255.51	0.34	0.36	0.35	84	47	703.9	709.1	5	44.7	0	0	0.00
95-52	2255.87	2255.83	2255.51	2254.91	0.36	0.92	0.64	43	59	644.4	651.8	7	57.3	0	0	0.00
52-0	2255.83	2255.41	2254.91	2255.40	0.92	0.01	0.46	52	45	599.9	609.5	10	42.3	0	0	0.01

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1**************************************
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*                                    *                                    *
*                                    *                                    *
*   FLOOD HYDROGRAPH PACKAGE (HEC-1) *                                    *    U.S. ARMY CORPS OF ENGINEERS
*                                    *                                    *
*            SEPTEMBER 1990          *                                    *    HYDROLOGIC ENGINEERING CENTER
*                                    *                                    *
*             VERSION 4.0            *                                    *         609 SECOND STREET
*                                    *                                    *
*                                    *                                    *       DAVIS, CALIFORNIA 95616
*                                    *                                    *
*  RUN DATE  12/18/2000  TIME  16:03:26 *                                 *          (916) 756-1104
*                                    *                                    *
*                                    *                                    *
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                                X     X  X         X     X        X
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1                                        HEC-1 INPUT                                        PAGE  1

          LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

                    *DIAGRAM
 *** FREE ***
               1    ID   U.S. 95/RANCHO FLOOD INSURANCE STUDY RESTUDY
               2    ID   FOR:  CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
               3    ID
               4    ID   SEPTEMBER 1998, REVISED MARCH 1999
               5    ID   REFERENCE NUMBER: 51635
               6    ID
               7    ID   HEC1 FILE: ~~6XA6R.DAT~~
               8    ID   GOWAN AND WEST TRIBUTARY WATERSHEDS
               9    ID   MODEL FOR AREAS DOWNSTREAM OF THE VILLAGE 26, LONE MOUNTAIN AND RANCHO
              10    ID   DETENTION BASINS IMPACTING U.S. 95 AND RANCHO ROAD BETWEEN GOWAN ROAD AND
              11    ID   ANN ROAD IN THE EXISTING CONDITION.
              12    ID
              13    ID   EXISTING CONDITIONS, EXISTING FACILITIES, EXISTING LAND USE
              14    ID
              15    ID   NOTES:
              16    ID   1.  IN SOME AREAS SURFACE FLOW IS SEPARATED FROM FACILITY FLOW TO
              17    ID      ACCOMMODATE SURFACE FLOW SPLITS.  THEREFORE, AT SOME CONCENTRATION
              18    ID      POINTS THE FACILITY FLOW THAT HAS BEEN TEMPROARILY DIVERTED OUT OF THE
              19    ID      MODEL MUST BE ADDED TO THE SURFACE FLOW TO OBTAIN THE TOTAL FLOW AT
              20    ID      THE CONCENTRATION POINT.
              21    ID
              22    ID   JR CARD RATIOS REPRESENT DEPTH-AREA REDUCTION FACTORS (DARF'S)
              23    ID
              24    ID   100-YEAR,  6-HOUR STORM,  5DN5
              25    ID   DARF RATIOS FOR AREAS OF 10, 15, 20, 25, 30, 35 AND 40 SQUARE MILES FOR
              26    ID   THE 100-YEAR EVENT.
              27    ID
              28    IT       5       0       0     300
              29    IO       5       0       0
              30    IN       5
              31    JR    PREC    0.86   0.825    0.79   0.765    0.74   0.725    0.71
                    *
              32    KK     ANN
              33    PB    2.85
              34    BA   0.259
              35    PC   0.000   0.020   0.059   0.080   0.110   0.144   0.150   0.160   0.168   0.171
              36    PC   0.180   0.182   0.187   0.190   0.197   0.202   0.210   0.220   0.230   0.241
              37    PC   0.250   0.259   0.265   0.280   0.290   0.300   0.305   0.309   0.310   0.317
              38    PC   0.321   0.327   0.333   0.346   0.361   0.381   0.408   0.430   0.477   0.514
              39    PC   0.561   0.630   0.710   0.720   0.731   0.752   0.779   0.790   0.795   0.804
              40    PC   0.810   0.820   0.826   0.840   0.859   0.889   0.910   0.938   0.966   0.970
              41    PC   0.974   0.979   0.981   0.983   0.985   0.989   0.990   0.992   0.993   0.996
              42    PC   0.997   0.999   1.000
              43    LS       0    76.8
              44    UD   0.499
                    *
1                                        HEC-1 INPUT                                        PAGE  2

          LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              45    KK    RANN
              46    KM   ROUTE TO GD29B
              47    RK    2600   0.015   0.015       0    TRAP     100        2
```

```
 53          KK  CGD29B
 54          HC       2
             *

 55          KK  RGD29B
 56          KM  ROUTE TO ANN1B
 57          RK    2700   0.015   0.015       0    TRAP     100       2
             *

 58          KK   ANN1B
 59          PB    2.77
 60          BA   0.135
 61          LS       0    82.7
 62          UD   0.305
             *

 63          KK  CANN1B
 64          HC       2
             *

 65          KK  RANN1B
 66          KM  ROUTE TO ANN1C2
 67          RK    2000   0.007   0.015       0    TRAP     100       2
             *

 68          KK  ANN1C2
 69          PB    2.77
 70          BA   0.091
 71          LS       0    80.7
 72          UD   0.275
             *

 73          KK CANN1C2
 74          HC       2
             *

 75          KK RANN1C2
 76          KM  RGUTE TO PDGCC3
 77          RK    1250  0.0074   0.013       0    TRAP      12       2
             *
1                                        HEC-1 INPUT                                        PAGE  3

       LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


 78          KK  PDGCC3
 79          PB    2.77
 80          BA   0.047
 81          LS       0    84.6
 82          UD   0.188
             *

 83          KK   CGCC3
 84          HC       2
             *

 85          KK   RGCC3
 86          KM  ROUTE TO PDGCC4
 87          RK    1550   0.005   0.013       0    TRAP       8       0
             *

 88          KK REMAIN1
 89          KM  DIVERT 139 CFS UNDER U.S. 95 BETWEEN ANN ROAD AND THE U.S. 95/RANCHO
 90          KM  INTERSECTION IN A 10' X 3' RCB (CULVERT 3).  FLOWS IN EXCESS OF 139 CFS
 91          KM  REMAIN ON THE WEST SIDE OF U.S. 95.
 92          KM  MINIMUM OF 1 CFS WILL REMAIN TO AVOID ZERO FLOW
 93          DT    D95A
 94          DI       0      51     101     118     140     318   10000
 95          DQ       0      50     100     117     139     139     139
             *

 96          KK  PDGCC2
 97          PB    2.77
 98          BA   0.042
 99          LS       0    73.2
100          UD   0.286
             *

101          KK   RGCC2
102          KM  ROUTE TO PDGCC4
103          RK    2900  0.0055   0.015       0    TRAP      60       2
             *

104          KK  PDGCC4
105          PB    2.77
106          BA   0.049
107          LS       0    84.3
108          UD   0.189
             *

109          KK   CGCC4
110          HC       3
             *
1                                        HEC-1 INPUT                                        PAGE  4

       LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


111          KK  HAMMER
112          PB    2.82
113          BA   0.128
114          LS       0    76.6
115          UD   0.333
```

```
122          LS       0    74.0
123          UD   0.284
             *


124          KK  CPDGCD
125          HC       2
             *


126          KK    RGCD
127          KM  ROUTE TO PDGCB5
128          RK    4060  0.0086   0.015       0    TRAP      40       2
             *


129          KK  PDGCB1
130          PB    2.77
131          BA   0.033
132          LS       0    84.9
133          UD   0.166
             *


134          KK   8GCB1
135          KM  ROUTE TO PDGCB3
136          RK    2100  0.0086   0.015       0    TRAP      40       2
             *


137          KK  PDGCB2
138          PB    2.77
139          BA   0.030
140          LS       0    81.3
141          UD   0.190
             *


142          KK   CGCB2
143          HC       2
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


144          KK   RCGB2
145          KM  ROUTE TO PDGCB3
146          RK     700  0.0029    0.03       0    TRAP      20       2
             *


147          KK  PDGCB3
148          PB    2.77
149          BA   0.066
150          LS       0    73.1
151          UD   0.236
             *


152          KK   CGCB3
153          HC       2
             *


154          KK   RGCB3
155          KM  ROUTE TO PDGCB5
156          RK    1400    0.01   0.025       0    TRAP      20       2
             *


157          KK  PDGCB4
158          PB    2.77
159          BA   0.020
160          LS       0    85.7
161          UD   0.204
             *


162          KK   RGCB4
163          KM  ROUTE TO PDGCB5
164          RK     800    0.01    0.03       0    TRAP      20       2
             *


165          KK   CGCB4
166          HC       3
             *


167          KK  PDGCC1
168          PB    2.77
169          BA   0.053
170          LS       0    75.4
171          UD   0.263
             *


172          KK  PDGCB5
173          PB    2.77
174          BA   0.110
175          LS       0    76.0
176          UD   0.375
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


177          KK   CGCB5
178          HC       3
             *


179          KK   RGCB5
180          KM  ROUTE TO PDGCB9
181          RK    3080  0.0065    0.03       0    TRAP      30       2
```

```
                *
          189   KK   RGCB6
          190   KM  ROUTE TO PDGCB9
          191   RK    2880  0.0065    0.03       0    TRAP      30       2
                *

          192   KK PDGCB10
          193   PB    2.77
          194   BA   0.074
          195   LS       0    83.7
          196   UD   0.260
                *

          197   KK  PDGCB9
          198   PB    2.77
          199   BA   0.031
          200   LS       0    76.5
          201   UD   0.137
                *

          202   KK   CGCB9
          203   HC       4
                *

          204   KK   RGCB9
          205   KM  ROUTE TO PDGCB11
          206   RK    1950  0.0036   0.013       0    TRAP       8       2
                *

          207   KK PDGCB11
          208   PB    2.77
          209   BA   0.033
          210   LS       0    79.3
          211   UD   0.195
                *
1                                        HEC-1 INPUT                                        PAGE  7

     LINE       ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


          212   KK  CGCB11
          213   HC       2
                *

          214   KK REMAIN2
          215   KM  DIVERT 192 CFS UNDER U.S. 95 JUST SOUTH OF THE U.S. 95/RANCHO INTERSECTION
          216   KM  IN 2, 6' X 2' RCB'S (CULVERT 5), REMAINING FLOW CONTINUES SOUTH ALONG U.S.
          217   KM  95 TO LONE MOUNTAIN ROAD.
          218   DT    D95B
          219   DI       0     502     591   10000
          220   DQ       0     180     192     192
                *

          221   KK  RMAIN2
          222   KM  ROUTE TO GD20BG
          223   RK    1750  0.0029    0.03       0    TRAP      20       2
                *

          224   KK  LONEMT
          225   PB    2.77
          226   BA   0.411
          227   LS       0    83.1
          228   UD   0.380
                *

          229   KK  GD20BH
          230   PB    2.77
          231   BA   0.047
          232   LS       0    76.6
          233   UD   0.250
                *

          234   KK   CLONE
          235   HC       2
                *

          236   KK   RLONE
          237   KM  ROUTE TO GD20BG
          238   RK    1100  0.0015   0.015       0    TRAP      44       2
                *

          239   KK  GD20BG
          240   PB    2.77
          241   BA   0.113
          242   LS       0    81.4
          243   UD   0.261
                *

          244   KK   C20BG
          245   HC       3
                *
1                                        HEC-1 INPUT                                        PAGE  8

     LINE       ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


          246   KK   R20BG
          247   KM  ROUTE TO GD20BL
          248   RK    1680  0.0016    0.03       0    TRAP     150       2
                *
```

```
258          DQ       0    1294    1294
             *

259          KK    DRED
260          KM  DIVERT 1047 CFS TO RED COACH FROM CRAIG SUBBASIN
261          KM  REMAINING FLOW CONTINUES SOUTH IN BUFFALO DRIVE
262          DT DCRA1G1
263          DI       0    3536   10000
264          DQ       0    2489    7039
             *

265          KK   RDRED
266          KM  ROUTE TO GD20B1
267          RK    2700   0.007   0.015       0    TRAP      80       2
             *

268          KK  GD20B1
269          PB    2.77
270          BA   0.115
271          LS       0    80.5
272          UD   0.286
             *

273          KK   C20B1
274          HC       2
             *

275          KK   R20B1
276          KM  ROUTE TO GD20BL
277          RK     910  0.0055   0.015       0    TRAP      40       2
             *

278          KK  GD20BL
279          PB    2.77
280          BA   0.079
281          LS       0    88.7
282          UD   0.230
             *
1                                        HEC-1 INPUT                                        PAGE  9

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


283          KK   C20BL
284          HC       3
             *

285          KK   R20BL
286          KM  ROUTE TO GD20BM
287          RK     630  0.0016    0.03       0    TRAP     150       2
             *

288          KK DCRA1G1
289          KM  RETRIEVE FLOW DIVERTED TO BUFFALO AT RED COACH
290          DR DCRA1G1
             *

291          KK  DCOBAL
292          KM  DIVERT 711 CFS TO COBAL CANYON LANE FROM CRAIG SUBBASIN
293          KM  REMAINING FLOW CONTINUES SOUTH IN BUFFALO DRIVE TO CRIAG
294          DT DCRAIG2
295          DI       0    2489   10000
296          DQ       0    1778    7143
             *

297          KK RCRAIG1
298          KM  ROUTE TO GD20BJ
299          RK    2700   0.007   0.015       0    TRAP      60       2
             *

300          KK  GD20BJ
301          PB    2.77
302          BA   0.052
303          LS       0    84.3
304          UD   0.257
             *

305          KK  C20BJ1
306          HC       2
             *

307          KK   R20BJ
308          KM  ROUTE TO GD20BM
309          RK     840   0.006   0.015       0    TRAP      40       2
             *

310          KK  C20BJ2
311          HC       2
             *

312          KK  GD20BM
313          PB    2.77
314          BA   0.048
315          LS       0    89.2
316          UD   0.189
             *
1                                        HEC-1 INPUT                                        PAGE 10

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


317          KK   C20BM
```

```
 327          DI        0      161     1000    10000
 328          DQ        0      180      180      180
              *


 329          KK DCRAIG2
 330          KM  RETRIEVE FLOW DIVERTED TO BUFFALO AT COBAL CANYON LANE
 331          DR DCRAIG2
              *


 332          KK RCRAIG2
 333          KM  ROUTE TO GD20BK
 334          RK     2700  0.0067   0.015        0    TRAP       80        2
              *


 335          KK  GD20BK
 336          PB     2.77
 337          BA    0.050
 338          LS        0     80.5
 339          UD    0.264
              *


 340          KK CGD20BK
 341          HC        2
              *


 342          KK  1R20BK
 343          KM  ROUTE TO GD17BI
 344          RK      600  0.0039   0.015        0    TRAP       80        2
              *


 345          KK  2C20BK
 346          HC        2
              *


 347          KK  2R20BK
 348          KM  ROUTE TO GD17BI
 349          RK     1400  0.0043    0.03        0    TRAP      300        2
              *
1                                        HEC-1 INPUT                                        PAGE 11

            LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


 350          KK  HICKAM
 351          PB     2.89
 352          BA    1.487
 353          LS        0     80.3
 354          UD    0.437
              * DIVERT 173 TO GOWAN NORTH SYSTEM AND 264 CFS TO BUFFALO CHANNEL


 355          KK   HICKK
 356          DT   HICKK
 357          DI        0      438      574     2400
 358          DQ        0      437      573      573
              *


 359          KK RHICKAM
 360          KM  ROUTE TO GD17BH
 361          RK     1300   0.008   0.025        0    TRAP       80        2
              *


 362          KK  GD17BH
 363          PB     2.77
 364          BA    0.025
 365          LS        0     82.8
 366          UD    0.178
              *


 367          KK CGD17BH
 368          HC        2
              *


 369          KK   R17BH
 370          KM  ROUTE TO GD17BG
 371          RK     1330   0.006   0.025        0    TRAP       80        2
              *


 372          KK  GD17BG
 373          PB     2.77
 374          BA    0.116
 375          LS        0     83.3
 376          UD    0.275
              *


 377          KK   C17BG
 378          HC        2
              *


 379          KK   R17BG
 380          KM  ROUTE TO GD17BI
 381          RK     1200   0.005   0.025        0    TRAP       80        2
              *
1                                        HEC-1 INPUT                                        PAGE 12

            LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


 382          KK  GD17BI
 383          PB     2.77
 384          BA    0.066
 385          LS        0     85.2
 386          UD    0.193
```

```
392          KM  ROUTE TO GD17BJ
393          RK    1330  0.0023    0.03       0    TRAP     200       2
             *


394          KKREMAIN6a
395          KM  DIVERT FLOW EAST ACROSS U.S. 95 JUST NORTH OF ALEXANDER ROAD.
396          KM  DIVERT 522 CFS BETWEEN CROSS-SECTIONS 3614 AND 2810 IN THE
397          KM  HEC-RAS MODEL AS WEIR FLOW.
398          DT   D95Fa
399          DI       0      523    10000    20000
400          DQ       0      522      522      522
             *


401          KK  GD14CH
402          PB    2.77
403          BA   0.040
404          LS       0     83.0
405          UD   0.181
             *


406          KK   R14CH
407          KM  ROUTE TO GD17BJ
408          RK    1900   0.005   0.015       0    TRAP      40       2
             *


409          KK  GD17BJ
410          PB    2.77
411          BA   0.063
412          LS       0     88.3
413          UD   0.222
             *


414          KK   C17BJ
415          HC       3
             *
1                                          HEC-1 INPUT                                          PAGE 13

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


416          KK REMAIN6
417          KM  DIVERT FLOW EAST ACROSS U.S. 95 JUST NORTH OF ALEXANDER ROAD.
418          KM  DIVERT 246 CFS THROUGH DUAL 6' X 2' RCB'S (CULVERT 10) AND 304 CFS BETWEEN
419          KM  CROSS-SECTIONS 2810 AND 2694 IN THE HEC-RAS MODEL AS WEIR FLOW.
420          DT    D95F
421          DI       0      551    10000    20000
422          DQ       0      550      550      550
             *


423          KK  GD14CF
424          PB    2.78
425          BA   0.130
426          LS       0     77.9
427          UD   0.268
             *


428          KK    XXXX
429          DT   DXXXX
430          DI       0       41     4040
431          DQ       0       40       40
             *


432          KK   R14CF
433          KM  ROUTE TO GD14CG
434          RK    1350   0.006   0.015       0    TRAP     100       2
             *


435          KK  GD14CG
436          PB    2.77
437          BA   0.057
438          LS       0     82.2
439          UD   0.208
             *


440          KK   C14CG
441          HC       2
             *


442          KK   R14CG
443          KM  ROUTE TO GD14CI
444          RK    1500   0.006   0.015       0    TRAP     100       2
             *


445          KK  GD14CI
446          PB    2.77
447          BA   0.054
448          LS       0     79.7
449          UD   0.196
             *
1                                          HEC-1 INPUT                                          PAGE 14

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


450          KK   C14C1
451          HC       2
             *


452          KK   R14CI
453          KM  ROUTE TO REMAIN6
454          RK     945  0.0106   0.015       0    TRAP     100       2
             *
```

```
461          KM  DIVERT FLOW EAST ACROSS U.S. 95 BETWEEN ALEXANDER ROAD AND GOWAN ROAD.
462          KM  DIVERT 124 CFS THROUGH 2, 30" RCP's (CULVERT 12) AND 361 CFS BETWEEN
463          KM  CROSS-SECTIONS 1739 AND 1027 IN THE HEC-RAS MODEL AS WEIR FLOW.
464          DT    D95G
465          DI      0     486   10000   20000
466          DQ      0     485     485     485
             *

467          KK   GD11C
468          PB    2.77
469          BA   0.132
470          LS      0    86.0
471          UD   0.296
             *

472          KK    C11C
473          HC       2
             *

474          KK   GD11B
475          PB    2.77
476          BA   0.196
477          LS      0    87.6
478          UD   0.272
             *

479          KK    C11B
480          HC       2
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

481          KK    R11C
482          KM  ROUTE TO PT6B
483          RK    1400  0.0057   0.015       0    TRAP      80       2
             *

484          KK   CY05A
485          PB    2.77
486          BA   0.025
487          LS      0    85.6
488          UD   0.179
             *

489          KK    D95G
490          KM  RETRIEVE FLOW DIVERTED THROUGH OKG 453
491          DR    D95G
             *

492          KK   RD95G
493          KM  ROUTE TO PT6B
494          RK    2300   0.004   0.015       0    TRAP      60       2
             *

495          KK    PT6B
496          PB    2.77
497          BA   0.107
498          LS      0    89.1
499          UD   0.182
             *

500          KK   CPT6B
501          HC       2
             *

502          KK  2CPT6B
503          HC       3
             *

504          KK   RPT6B
505          KM  ROUTE TO PT5A3
506          RK    2240  0.0067   0.015       0    TRAP      80       2
             *

507          KK   CY05D
508          PB    2.77
509          BA   0.059
510          LS      0    78.6
511          UD   0.254
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

512          KK   PT5A3
513          PB    2.77
514          BA   0.089
515          LS      0    87.1
516          UD   0.285
             *

517          KK    C5A3
518          HC       3
             *

519          KK    R5A3
520          KM  ROUTE TO PT5A8
521          RK    2380  0.0088   0.015       0    TRAP      80       2
             *
```

```
530           LS       0     82.0
531           UD   0.265
              *


532           KK    C5A8
533           HC       4
              *


534           KK  DPT5A8
535           KM  DIVERT FLOW TO JONES
536           KM  FROM VTN NEVADA SILVER MESA STUDY (1989) AND CVL FISR
537           KM  DIVERTED FLOW DRAINS TO SANTA CATALINA AND MICHEAL WAY.
538           KM  REMAINING FLOW CONTINUES EAST IN GOWAN ROAD
539           DT  DCY07B
540           DI       0      100      500     1000     2000     3000     4000     5500
541           DQ       0        0      116      253      592      948     1308     1859
              *


542           KK    R5A8
543           KM  ROUTE TO PT5A9
544           RK    1960  0.0097   0.015        0    TRAP       80        2
              *

1                                          HEC-1 INPUT                                                    PAGE 17

            LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


545           KK   CY07A
546           PB    2.77
547           BA   0.027
548           LS       0     86.2
549           UD   0.237
              *


550           KK  CCY07A
551           HC       2
              *
              * GOTO US95/RANCHO INTERSECTION
              *


552           KK    D95B
553           KM  RETRIEVE FLOW FROM BOX DIVERSION JUST SOUTH OF 95/RANCHO INT. (CULVERT 3)
554           KM  ***NOTE: THIS FLOW CARRIES A DRAINAGE AREA OF 1.49 SQUARE MILES***
555           DR    D95B
              *


556           KK   RD95B
557           KM  ROUTE TO PT3AB1
558           RK    1200   0.004   0.025        0    TRAP       40        2
              *


559           KK 1REMAIN
560           KM  DIVERT 36 CFS EAST THROUGH 2, 24" CMP'S (CULVERT 14) UNDER RANCHO ROAD JUST
561           KM  NORTHWEST (UPSTREAM) OF THE RANCHO ROAD AND RAINBOW BLVD. INTERSECTION.
562           KM  REMAINING FLOW CONTINUES SOUTHEAST ALONG RANCHO.
563           DT  D1RCHO
564           DI       0      191     1000    10000
565           DQ       0       36       36       36
              *


566           KK  PT3AB1
567           PB    2.77
568           BA   0.049
569           LS       0     93.7
570           UD   0.283
              *


571           KK   C3AB1
572           HC       2
              *


573           KK 2REMAIN
574           KM  DIVERT 29 CFS EAST THROUGH A 30" CMP (CULVERT 15) UNDER RANCHO ROAD AT THE
575           KM  RANCHO ROAD AND RAINBOW BLVD. INTERSECTION.
576           KM  REMAINING FLOW CONTINUES SOUTHEAST ALONG RANCHO.
577           DT  D2RCHO
578           DI       0      189     1000    10000
579           DQ       0       29       29       29
              *

1                                          HEC-1 INPUT                                                    PAGE 18

            LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


580           KK  R2MAIN
581           KM  ROUTE TO PT3AB2
582           RK    1365  0.0022   0.025        0    TRAP       30        2
              *


583           KK  PT3AB2
584           PB    2.77
585           BA   0.050
586           LS       0     94.5
587           UD   0.197
              *


588           KK   C3AB2
589           HC       2
              *


590           KK 3REMAIN
591           KM  DIVERT 23 CFS EAST THROUGH A 30" CMP (CULVERT 20) UNDER RANCHO ROAD AT THE
592           KM  RANCHO ROAD AND LONE MT. RD. INTERSECTION.
```

```
600          KK   PT2B2
601          PB    2.77
602          BA   0.078
603          LS       0    87.0
604          UD   0.254
             *

605          KK  CPT2B2
606          HC       2
             *

607          KK 4REMAIN
608          KM  DIVERT 35 CFS EAST THROUGH A 36" CMP (CULVERT 21) UNDER RANCHO ROAD HALF WAY
609          KM  BETWEEN LONE MT. RD. AND CRAIG ROAD.
610          KM  REMAINING FLOW CONTINUES SOUTHEAST ALONG RANCHO.
611          DT  D4RCHO
612          DI       0     214     1000    10000
613          DQ       0      35       35       35
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

614          KK  R4MAIN
615          KM  ROUTE TO PT2B3
616          RK    1400   0.011    0.02       0    TRAP      40       2
             *

617          KK   PT2B3
618          PB    2.77
619          BA   0.023
620          LS       0    93.2
621          UD   0.236
             *

622          KK    C2B3
623          HC       2
             *

624          KK    D2B3
625          KM  DIVERT FLOW TO CRAIG RD. STORM DRAIN AT RANCHO.  CRAIG STORM DRAIN IS
626          KM  48" RCP, CAPACITY = 210 CFS AT THE 48" LATERAL.  THE INLET TO THE 48"
627          KM  LATERAL IS AT THE DOWNSTREAM END OF THE DRAINAGE EASEMENT BEHIND THE 7-11
628          KM  CONVENIENT STORE.  IMMEDIATELY ABOVE THE 48" INLET ARE 2, 3'X7' RCB'S THAT
629          KM  CROSS UNDER CRAIG ROAD AND DISCHARGE ON THE SOUTHWEST SIDE OF THE CRAIG/
630          KM  RANCHO INTERSECTION.  DIVERT 120 CFS TO THE CRAIG ROAD STORM DRAIN SINCE
631          KM  90 CFS ALREADY EXISTS IN THE PIPE.  REMAINING FLOW TRAVELS UNDER CRAIG ROAD
632          KM  IN THE 2, 3'X7' RCB'S AND DISCHARGES AT THE SOUTHWEST CORNER OF THE
633          KM  CRAIG/RANCHO INTERSECTION AND IS JOINED BY THE STREET FLOW IN CRAIG.
634          KM  ALL STREET FLOW IN CRAIG IS CONTAINED IN THE NORTH HALF STREET BY THE
635          KM  MEDIAN CURB SO THERE IS NO DIVERSION TO TORREY PINES.
636          KM  THE 48" LATERAL TO THE CRAIG ROAD STORM DRAIN IS CULVERT 22.
637          KM  THE 2, 3'X7' RCB'S ARE CULVERT 23.
638          DT   DCSD2
639          DI       0     121     1000    10000
640          DQ       0     120      120      120
             *

641          KK   PT2A2
642          PB    2.77
643          BA   0.062
644          LS       0    84.7
645          UD   0.222
             *

646          KK  RPT2A2
647          KM  ROUTE TO PT2A1
648          RK    1200   0.004   0.015       0    TRAP     100       2
             *

649          KK   PT2A1
650          PB    2.77
651          BA   0.065
652          LS       0    86.8
653          UD   0.308
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

654          KK  CPT2A1
655          HC       2
             *

656          KK    D95E
657          KM  RETRIEVE FLOW FROM BOX DIVERSION AT US95 AND CRAIG (CULVERT 7)
658          KM  ***NOTE: THIS FLOW CARRIES A TOTAL TRIBUTARY AREA OF 18.58 SQUARE MILES.***
659          KM  THIS IS NOT IN ADDITION TO THE 1.49 SQUARE MILES BROUGHT IN BY D95B, SO
660          KM  THE TOTAL TRIBUTARY AREA TO THE CRAIG/RANCHO INTERSECTION IS 18.98 SQUARE
661          KM  MILES (18.58 + 0.40).
662          DR    D95E
             *

663          KK   RD95E
664          KM  ROUTE TO PT2A2
665          RK    1500   0.004   0.015       0    TRAP      80       2
             *

666          KK C2PT2A1
667          HC       2
             *
```

```
                *

676             KK RDPT2A1
677             KM  ROUTE TO PT2B1
678             RK    2100   0.007   0.015       0    TRAP      80       2
                *

679             KK   PT2B1
680             PB    2.77
681             BA   0.072
682             LS       0    84.5
683             UD   0.222
                *

684             KK    C2B1
685             HC       2
                *

686             KK    R2B1
687             KM  ROUTE TO PT2B3
688             RK     300   0.007   0.015       0    TRAP      80       2
                *
```



```
LINE            ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


689             KK   2C2B3
690             HC       2
                *

691             KK  R2C2B3
692             KM  ROUTE TO 5REMAIN
693             RK    1600  0.0076    0.03       0    TRAP      80       2
                *

694             KK 5REMAIN
695             KM  DIVERT FLOW EAST ACROSS RANCHO IN TWO 6' X 3' RCB's. THE FIRST RCB IS JUST
696             KM  UPSTREAM OF THE 7' X 3' RCB (CULVERT 27) THAT PARALLELS RANCHO ON THE WEST
697             KM  SIDE.  DIVERT 78 CFS OF 185 CFS TO THE FIRST 6' X 3' RCB (CULVERT 26). THE
698             KM  REMAINING 107 CFS ENTERS THE 7' X 3' RCB.  THE SECOND 6' X 3' RCB
699             KM  CULVERT 28) IS CONNECTED INTO THE SIDE OF THE 7' X 3' RCB. DIVERT 35 CFS OF
700             KM  THE 107 CFS TO THE SECOND 6' X 3' RCB.  THE REMAINING 72 CFS CONTINUES
701             KM  TO THE SOUTH SIDE OF ALEXANDER IN THE 7' X 3' RCB.
702             DT  D5RCHO
703             DI       0     185    1000   10000
704             DQ       0     113     113     113
                *

705             KK  R5REMN
706             KM  ROUTE TO PT51
707             RK    1400   0.006    0.03       0    TRAP       7       0
                *

708             KK    PT51
709             PB    2.77
710             BA   0.070
711             LS       0    90.4
712             UD   0.262
                *

713             KK   CPT51
714             HC       2
                *

715             KK   D95Fa
716             KM  RETRIEVE FLOW FROM WIER DIVERSION AT US95 AND ALEXANDER
717             DR   D95Fa
                *
                * THESE TWO DIVERSIONS CARRY A TOTAL TRIBUTARY AREA OF 18.68.
                * THIS IS NOT IN ADDITION TO THE 1.49 SQUARE MILES AND 2.35
                * SQUARE MILES BROUGHT IN BY D95B AND D95E RESPECTIVELY, SO THE TOTAL
                * TRIBUTARY AREA AT THE ALEXANDER/RANCHO INTERSECTION IS 19.69 SQUARE MILES.
                * (18.68 + 1.01)
                *
```



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LINE            ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


718             KK    D95F
719             KM  RETRIEVE FLOW FROM BOX (CULVERT 10) AND WIER DIVERSION AT US95 AND ALEXANDER
720             DR    D95F
                *

721             KK   CD95F
722             HC       2
                *

723             KK   RD95F
724             KM  ROUTE TO PT3
725             RK    1500   0.004   0.015       0    TRAP      100       2
                *

726             KK     PT3
727             PB    2.77
728             BA   0.148
729             LS       0    86.9
730             UD   0.211
                *

731             KK    CPT3
732             HC       2
```

```
739           HC       2
              *

740           KK   RPT6A
741           KM  ROUTE TO PT42
742           RK    2450   0.007   0.015       0    TRAP      100       2
              *

743           KK    PT41
744           PB    2.77
745           BA   0.137
746           LS       0    82.0
747           UD   0.220
              *

748           KK   RPT41
749           KM  ROUTE TO PT42
750           RK    1050  0.0038   0.015       0    TRAP       80       2
              *
1                                          HEC-1 INPUT                                                    PAGE 23

            LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


751           KK    PT42
752           PB    2.77
753           BA   0.079
754           LS       0    82.0
755           UD   0.303
              *

756           KK   CPT42
757           HC       2
              *

758           KK   PT5A1
759           PB    2.77
760           BA   0.051
761           LS       0    88.3
762           UD   0.237
              *

763           KK    C5A1
764           HC       3
              *

765           KK    R5A1
766           KM  ROUTE TO PT52
767           RK    1680  0.0089   0.015       0    TRAP      100       2
              *

768           KK   PT5A4
769           PB    2.77
770           BA   0.034
771           LS       0    82.0
772           UD   0.284
              *

773           KK    PT52
774           PB    2.77
775           BA   0.065
776           LS       0    82.0
777           UD   0.273
              *

778           KK   CPT52
779           HC       3
              *

780           KK   RPT52
781           KM  ROUTE TO PT51
782           RK     560  0.0036   0.015       0    TRAP      100       2
              *
1                                          HEC-1 INPUT                                                    PAGE 24

            LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


783           KK  2CPT51
784           HC       2
              *

785           KK 6REMAIN
786           KM  DIVERT 14 CFS TO AN 18" CMP (CULVERT 29) AT NORTHWEST CORNER OF THE JONES
787           KM  AND RANCHO INTERSECTION.  THE 18" CMP DISCHARGES TO THE CATCH BASIN OF A
788           KM  DROP INLET ON THE SOUTHEAST SIDE OF JONES AND THE WEST SIDE OF RANCHO.
789           KM  DIVERT 48 CFS TO THE DROP INLET (13' CURB OPENING AND 2.5' GRATE).
790           KM  THE CATCH BASIN DISCHARGES TO A 36" CMP (CULVERT 30) THAT CROSSES RANCHO AND
791           KM  DISCHARGES TO THE EAST SIDE.  DIVERT AN ADDITONAL 412 CFS ACROSS RANCHO AS
792           KM  WEIR FLOW BETWEEN CROSS-SECTIONS 3836 AND 2801.
793           KM  REMAINING FLOW CONTINUES SOUTH ON THE WEST SIDE OF RANCHO.
794           DT  D6RCHO
795           DI       0     475   10000
796           DQ       0     474     474
              *

797           KK  R6MAIN
798           KM  ROUTE TO PT5A6
799           RK    1700  0.0025    0.03       0    TRAP       80       2
              *

800           KK   PT5A2
801           PB    2.77
```

```
808           KK   PT5A6
809           PB    2.77
810           BA   0.188
811           LS      0    82.9
812           UD   0.195
              *


813           KK    C5A6
814           HC       2
              *


815           KK   C25A6
816           HC       2
              *
```



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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


817           KK 7REMAIN
818           KM  DIVERT 117 CFS EAST ACROSS RANCHO IN A 6' X 2' RCB (CULVERT 31).
819           KM  DIVERT AN ADDITIONAL 199 CFS ACROSS RANCHO AS WEIR FLOW BETWEEN
820           KM  CROSS-SECTIONS 2801 AND 2280.
821           KM  REMAINING FLOW CONTINUES SOUTH ON THE WEST SIDE OF RANCHO
822           DT  D7RCHO
823           DI       0     317     1000    10000
824           DQ       0     316      316      316
              *


825           KK  R7MAIN
826           KM  ROUTE TO PT5A7
827           RK     800   0.004    0.03       0    TRAP      80       2
              *


828           KK  DPT5A7
829           KM  DIVERT 363 CFS ACROSS RANCHO AS WEIR FLOW NEAR DUNCAN ROAD, BETWEEN
830           KM  CROSS-SECTIONS 2206 AND 1403
831           KM  REMAINING FLOW CONTINUES SOUTHEAST ALONG THE WEST SIDE OF RANCHO
832           DT DDUNCAN
833           DI       0     364     1000    10000
834           DQ       0     363      363      363
              *


835           KK   PT5A7
836           PB    2.77
837           BA   0.074
838           LS      0    84.4
839           UD   0.351
              *


840           KK    C5A7
841           HC       2
              *


842           KK 8REMAIN
843           KM  DIVERT 24 CFS EAST ACROSS RANCHO IN A 24" CMP (CULVERT 32).
844           KM  REMAINING FLOW CONTINUES SOUTH ON THE WEST SIDE OF RANCHO
845           DT  D8RCHO
846           DI       0      25     1000    10000
847           DQ       0      24       24       24
              *


848           KK  R8MAIN
849           KM  ROUTE TO PT5A9
850           RK    1330   0.003   0.025       0    TRAP      20       2
              *


851           KK   PT5A9
852           PB    2.77
853           BA   0.045
854           LS      0    85.7
855           UD   0.246
              *
```



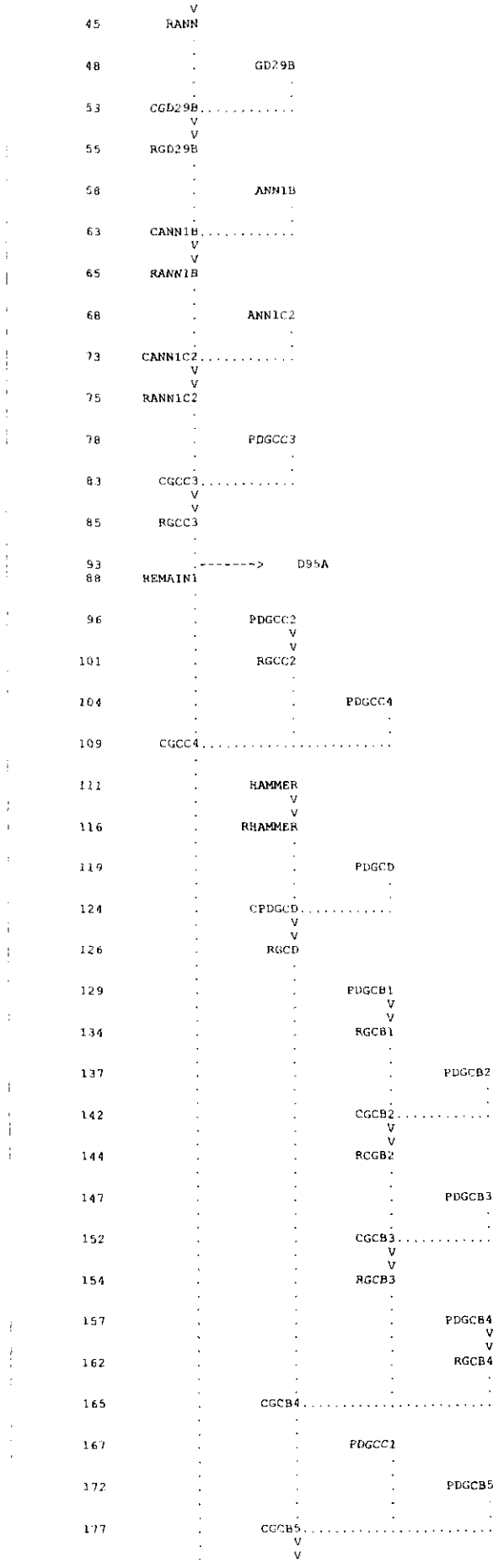
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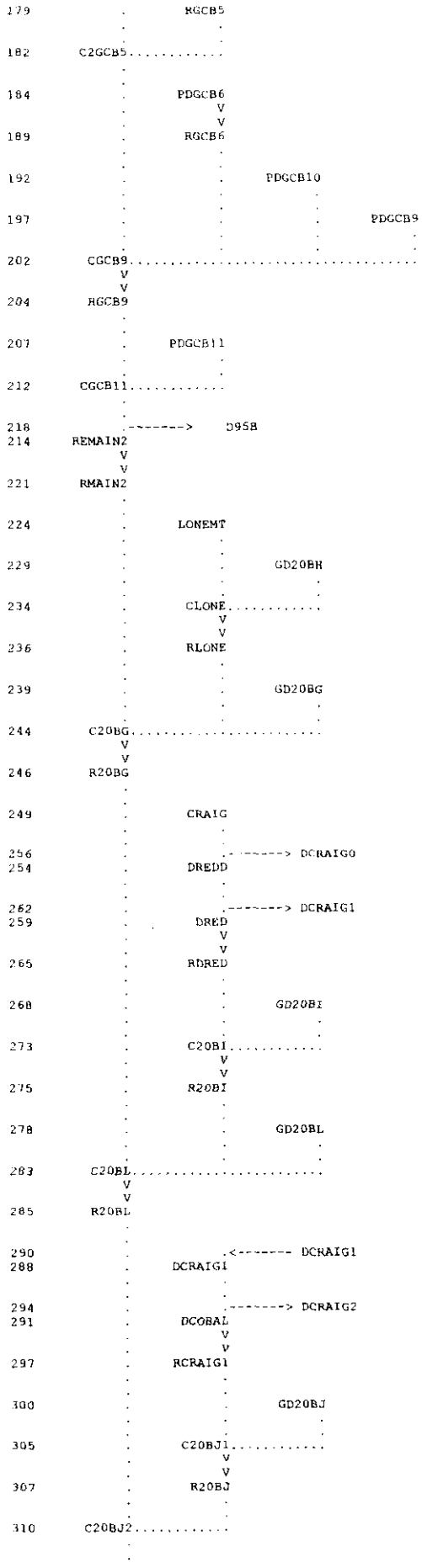

856           KK    C5A9
857           HC       2
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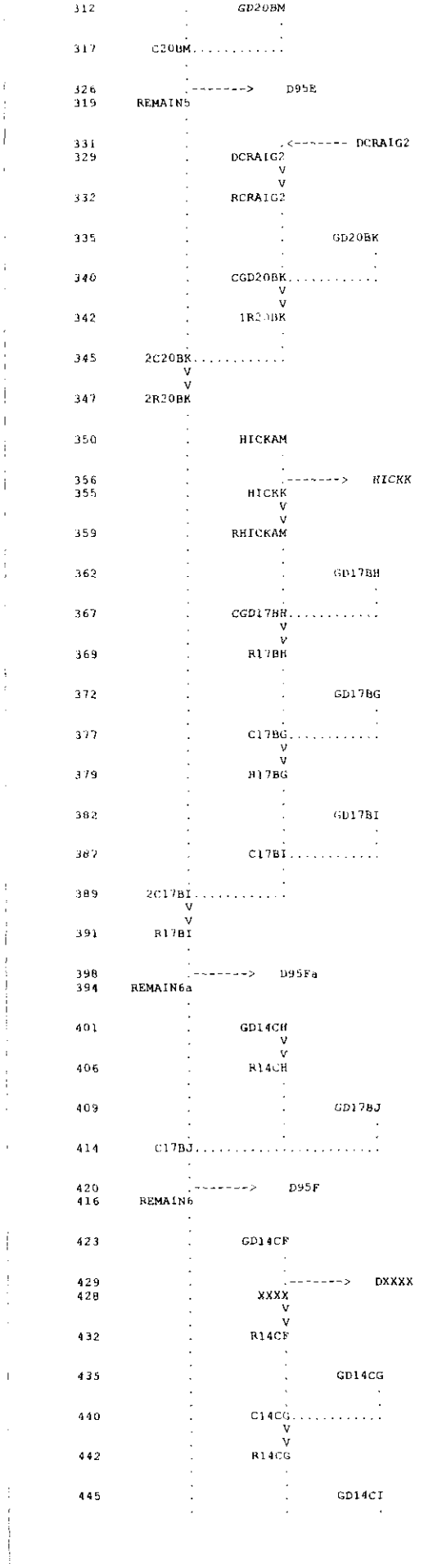

858           KK C2PT5A9
859           HC       2
              *

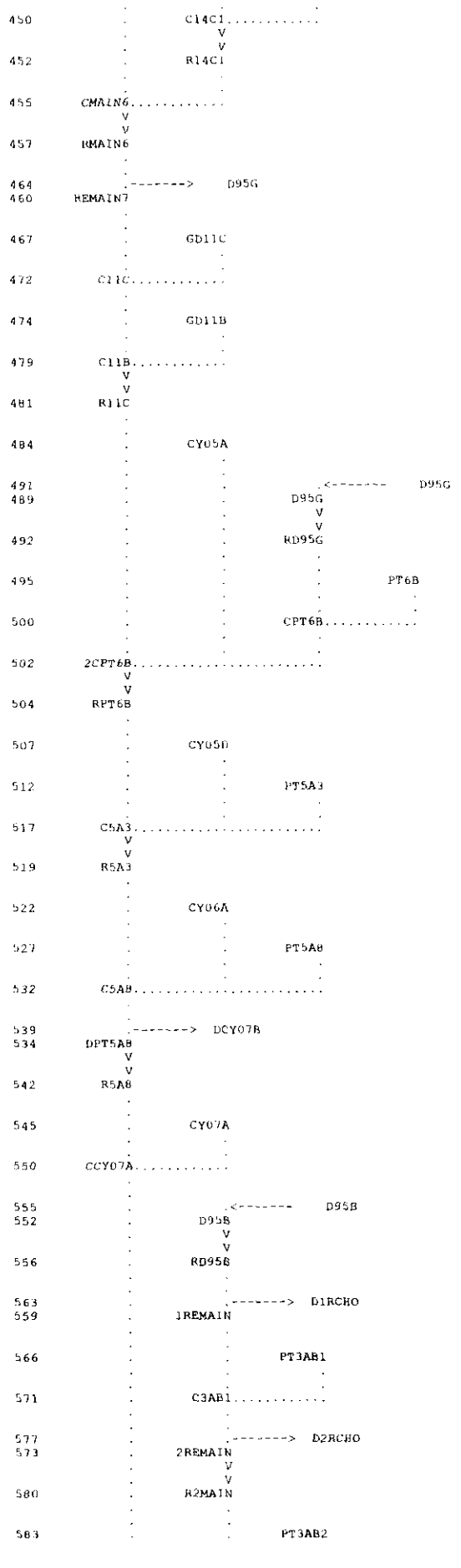

860           KK DRANCHO
861           KM  FLOW SPLIT AT GOWAN AND RANCHO INTERSECTION.  DIVERT 1142 CFS TO GOWAN
862           KM  ROAD BETWEEN CROSS-SECTIONS 983 AND 0.  THE REMAINING FLOW
863           KM  TRAVELS SOUTHEAST ALONG THE WEST SIDE OF RANCHO.
864           DT  DGOWAN
865           DI       0     101      501     1143   10000
866           DQ       0     100      500     1142    1142
              *

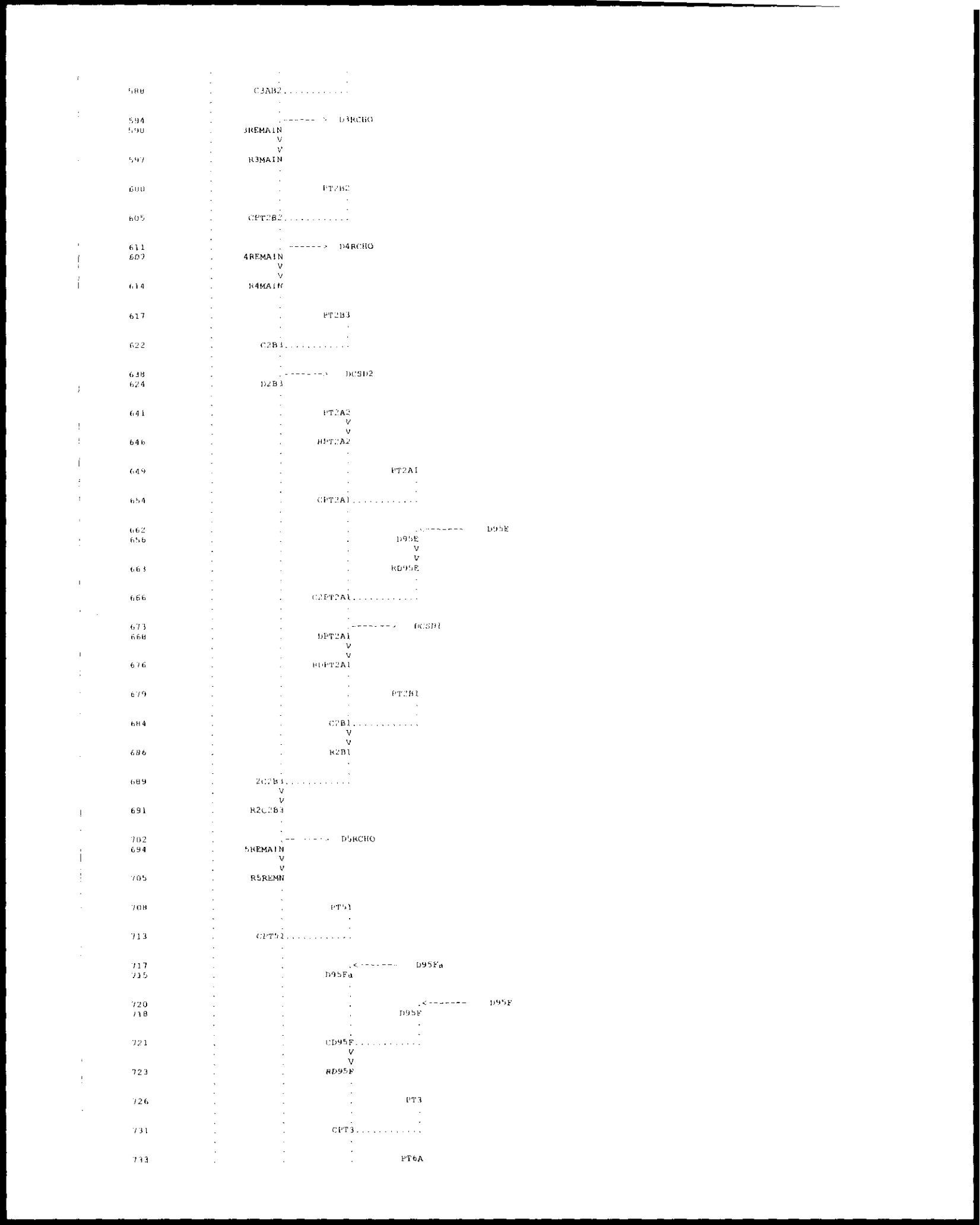

867           KK    ALEX
868           PB    2.80
869           BA   0.191
870           LS      0    83.2
871           UD   0.456
              *
              * ************END OF STUDY AREA**************
              *
872           ZZ
```

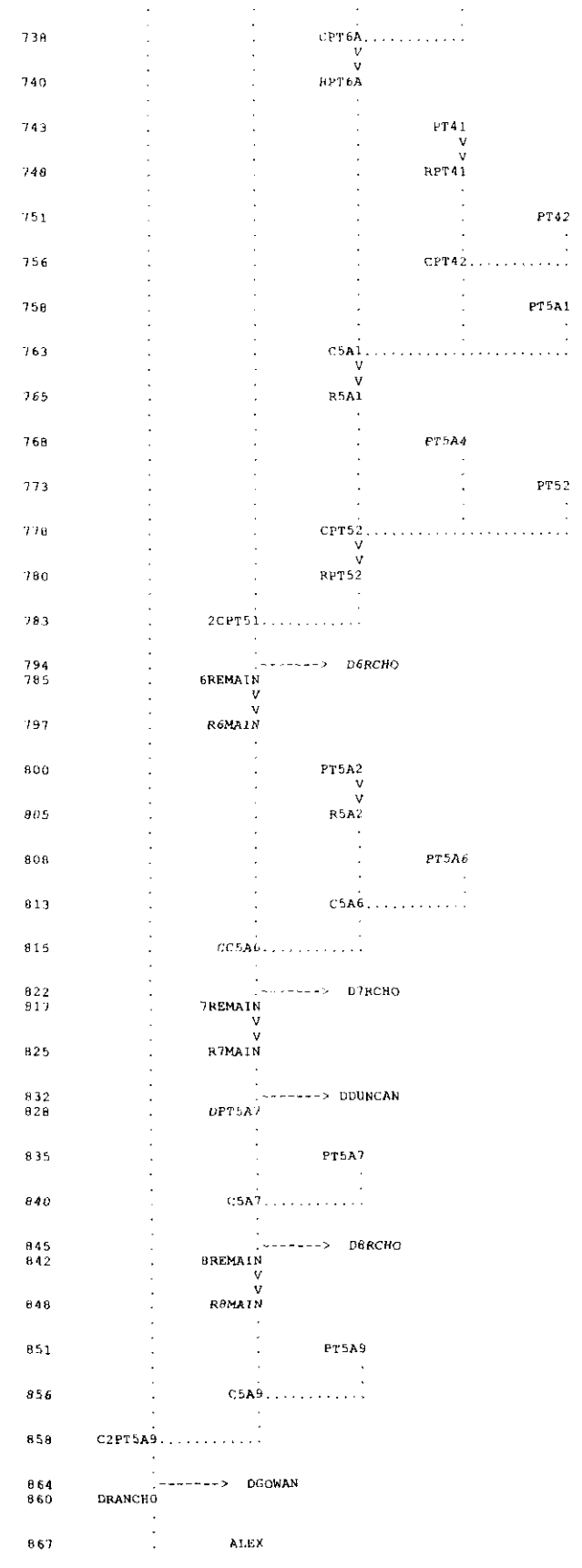

45 RANN
48 GD29B
53 CGD29B
55 RGD29B
58 ANN1B
63 CANN1B
65 RANN1B
68 ANN1C2
73 CANN1C2
75 RANN1C2
78 PDGCC3
83 CGCC3
85 RGCC3
93 D95A
88 REMAIN1
96 PDGCC2
101 RGCC2
104 PDGCC4
109 CGCC4
111 HAMMER
116 RHAMMER
119 PDGCD
124 CPDGCD
126 RGCD
129 PDGCB1
134 RGCB1
137 PDGCB2
142 CGCB2
144 RCGB2
147 PDGCB3
152 CGCB3
154 RGCB3
157 PDGCB4
162 RGCB4
165 CGCB4
167 PDGCC1
172 PDGCB5
177 CGCB5


179 RGCB5
182 C2GCB5
184 PDGCB6
189 RGCB6
192 PDGCB10
197 PDGCB9
202 CGCB9
204 RGCB9
207 PDGCB11
212 CGCB11
218 D95B
214 REMAIN2
221 RMAIN2
224 LONEMT
229 GD20BH
234 CLONE
236 RLONE
239 GD20BG
244 C20BG
246 R20BG
249 CRAIG
256 DCRAIG0
254 DREDD
262 DCRAIG1
259 DRED
265 RDRED
268 GD20BI
273 C20BI
275 R20BI
278 GD20BL
283 C20BL
285 R20BL
290 DCRAIG1
288 DCRAIG1
294 DCRAIG2
291 DCOBAL
297 RCRAIG1
300 GD20BJ
305 C20BJ1
307 R20BJ
310 C20BJ2


312 GD20BM
317 C20BM
326 D95E
319 REMAIN5
331 DCRAIG2
329 DCRAIG2
332 RCRAIG2
335 GD20BK
340 CGD20BK
342 1R20BK
345 2C20BK
347 2R20BK
350 HICKAM
356 HICKK
355 HICKK
359 RHICKAM
362 GD17BH
367 CGD17BH
369 R17BH
372 GD17BG
377 C17BG
379 H17BG
382 GD17BI
387 C17BI
389 2C17BI
391 R17BI
398 D95Fa
394 REMAIN6a
401 GD14CH
406 R14CH
409 GD17BJ
414 C17BJ
420 D95F
416 REMAIN6
423 GD14CF
429 DXXXX
428 XXXX
432 R14CF
435 GD14CG
440 C14CG
442 R14CG
445 GD14CI


450 C14C1
452 R14C1
455 CMAIN6
457 RMAIN6
464
460 REMAIN7
D95G
467 GD11C
472 C11C
474 GD11B
479 C11B
481 R11C
484 CY05A
491
489 D95G
492 RD95G
495 PT6B
500 CPT6B
502 2CPT6B
504 RPT6B
507 CY05B
512 PT5A3
517 C5A3
519 R5A3
522 CY06A
527 PT5A8
532 C5A8
539
534 DPT5A8
542 R5A8
545 CY07A
550 CCY07A
555
552 D95B
556 RD95B
563
559 1REMAIN
566 PT3AB1
571 C3AB1
577
573 2REMAIN
580 R2MAIN
583 PT3AB2
DCY07B
D1RCHO
D2RCHO


588 C3AB2
594 D3RCHO
590 3REMAIN
597 R3MAIN
600 PT3B2
605 CPT2B2
611 D4RCHO
607 4REMAIN
614 R4MAIN
617 PT2B3
622 C2B1
638 DCSD2
624 D2B3
641 PT2A2
646 RPT2A2
649 PT2A1
654 CPT2A1
662 D95E
656 D95E
663 RD95E
666 C2PT2A1
673 RCSD1
668 DPT2A1
676 RDPT2A1
679 PT2B1
684 C2B1
686 R2B1
689 2C2B1
691 R2C2B3
702 D5RCHO
694 5REMAIN
705 R5REMN
708 PT51
713 CPT52
717 D95Fa
715 D95Fa
720 D95F
718 D95F
721 CD95F
723 RD95F
726 PT3
731 CPT3
733 PT6A



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1**********

****

* *

* FLOOD HYDROGRAPH PACKAGE (HEC-1) *

* SEPTEMBER 1990 *

* *

* U.S. ARMY CORPS OF ENGINEERS

* HYDROLOGIC ENGINEERING CENTER

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*                                                                              *
*            VERSION 4.0             *                                         *          609 SECOND STREET
*                                    *                                         *       DAVIS, CALIFORNIA 95616
*  RUN DATE  12/18/2000  TIME  16:03:26 *                                      *          (916) 756-1104
*                                    *                                         *
*                                    *                                         *
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U.S. 95/RANCHO FLOOD INSURANCE STUDY RESTUDY
FOR: CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

SEPTEMBER 1998, REVISED MARCH 1999
REFERENCE NUMBER: 51635

HEC1 FILE: EXA5R.DAT
GOWAN AND WEST TRIBUTARY WATERSHEDS
MODEL FOR AREAS DOWNSTREAM OF THE VILLAGE 26, LONE MOUNTAIN AND RANCHO DETENTION BASINS IMPACTING U.S. 95 AND RANCHO ROAD BETWEEN GOWAN ROAD AND ANN ROAD IN THE EXISTING CONDITION.

EXISTING CONDITIONS, EXISTING FACILITIES, EXISTING LAND USE

NOTES:
1. IN SOME AREAS SURFACE FLOW IS SEPARATED FROM FACILITY FLOW TO ACCOMMODATE SURFACE FLOW SPLITS. THEREFORE, AT SOME CONCENTRATION POINTS THE FACILITY FLOW THAT HAS BEEN TEMPROARILY DIVERTED OUT OF THE MODEL MUST BE ADDED TO THE SURFACE FLOW TO OBTAIN THE TOTAL FLOW AT THE CONCENTRATION POINT.

JR CARD RATIOS REPRESENT DEPTH-AREA REDUCTION FACTORS (DARF'S)

100-YEAR, 6-HOUR STORM, SDN5
DARF RATIOS FOR AREAS OF 10, 15, 20, 25, 30, 35 AND 40 SQUARE MILES FOR THE 100-YEAR EVENT.

29 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	5	MINUTES IN COMPUTATION INTERVAL
IDATE 1	0	STARTING DATE
ITIME	0000	STARTING TIME
NQ	300	NUMBER OF HYDROGRAPH ORDINATES
NDDATE 2	0	ENDING DATE
NDTIME	0055	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 24.92 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION
NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION

.86	.82	.79	.76	.74	.73	.71

*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 1

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1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .86	RATIO 2 .82	RATIO 3 .79	RATIO 4 .76	RATIO 5 .74	RATIO 6 .73	RATIO 7 .71
HYDROGRAPH AT											
+	ANN	.26	1	FLOW	66.	60.	54.	50.	46.	44.	41.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	4.00
ROUTED TO											
+	RANN	.26	1	FLOW	65.	59.	54.	50.	46.	43.	41.
				TIME	4.00	4.00	4.00	4.00	4.00	4.08	4.08
HYDROGRAPH AT											
+	GD29B	.14	1	FLOW	35.	31.	28.	25.	23.	22.	20.
				TIME	3.67	3.67	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT											
+	CGD29B	.40	1	FLOW	92.	83.	74.	69.	63.	60.	57.
				TIME	3.92	3.92	3.92	3.92	4.00	4.00	4.00
ROUTED TO											
+	RGD29B	.40	1	FLOW	91.	83.	74.	68.	63.	60.	56.
				TIME	4.00	4.00	4.00	4.00	4.08	4.08	4.08
HYDROGRAPH AT											
+	ANN1B	.14	1	FLOW	59.	55.	50.	47.	44.	43.	41.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	CANN1B	.53	1	FLOW	136.	123.	111.	102.	94.	89.	85.
				TIME	3.83	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO											
+	RANN1B	.53	1	FLOW	135.	123.	111.	102.	94.	89.	85.

+	D95A	.67	1	FLOW	139.	139.	139.	132.	121.	114.	109.
				TIME	3.67	3.75	3.83	3.92	3.92	4.00	4.00
HYDROGRAPH AT											
+	REMAIN1	.67	1	FLOW	36.	21.	5.	1.	1.	1.	1.
				TIME	3.92	3.92	3.92	3.50	3.58	3.58	3.58
HYDROGRAPH AT											
+	PDGCC2	.04	1	FLOW	10.	9.	8.	7.	6.	6.	6.
				TIME	3.67	3.67	3.67	3.67	3.67	3.75	3.75
ROUTED TO											
+	RGCC2	.04	1	FLOW	10.	9.	8.	7.	6.	6.	6.
				TIME	3.92	3.92	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT											
+	PDGCC4	.05	1	FLOW	29.	27.	25.	24.	22.	21.	21.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT											
+	CGCC4	.76	1	FLOW	60.	43.	26.	25.	23.	22.	22.
				TIME	3.92	3.92	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	HAMMER	.13	1	FLOW	38.	35.	31.	29.	27.	25.	24.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO											
+	RHAMMER	.13	1	FLOW	38.	34.	31.	29.	26.	25.	23.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT											
+	PDGCD	.13	1	FLOW	33.	29.	26.	24.	21.	20.	19.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	CPDGCD	.26	1	FLOW	68.	61.	55.	50.	46.	43.	41.
				TIME	3.75	3.75	3.75	3.75	3.75	3.83	3.83
ROUTED TO											
+	RGCD	.26	1	FLOW	67.	60.	54.	50.	46.	43.	40.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92
HYDROGRAPH AT											
+	PDGCB1	.03	1	FLOW	21.	20.	18.	17.	16.	16.	15.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO											
+	RGCB1	.03	1	FLOW	21.	20.	18.	17.	16.	15.	15.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	PDGCB2	.03	1	FLOW	15.	14.	13.	12.	11.	11.	10.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	CGCB2	.06	1	FLOW	34.	32.	29.	28.	26.	25.	24.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO											
+	RCGB2	.06	1	FLOW	34.	31.	29.	27.	25.	24.	23.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	PDGCB3	.07	1	FLOW	17.	15.	13.	12.	11.	10.	10.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	CGCB3	.13	1	FLOW	51.	47.	42.	39.	36.	35.	33.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO											
+	RGCB3	.13	1	FLOW	48.	45.	41.	38.	35.	34.	32.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT											
+	PDGCB4	.02	1	FLOW	12.	11.	11.	10.	10.	9.	9.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO											
+	RGCB4	.02	1	FLOW	12.	11.	10.	10.	9.	9.	9.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
3 COMBINED AT											
+	CGCB4	.41	1	FLOW	117.	107.	96.	88.	82.	77.	72.
				TIME	3.75	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT											
+	PDGCC1	.05	1	FLOW	16.	14.	13.	12.	11.	10.	9.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	PDGCB5	.11	1	FLOW	28.	25.	23.	21.	19.	18.	17.
				TIME	3.75	3.75	3.75	3.83	3.83	3.83	3.83
3 COMBINED AT											
+	CGCB5	.57	1	FLOW	160.	144.	129.	119.	110.	103.	98.
				TIME	3.75	3.75	3.83	3.83	3.83	3.83	3.83

				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT	PDGCB10	.07	1	FLOW	37.	34.	32.	30.	28.	27.	26.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT	PDGCB9	.03	1	FLOW	14.	13.	11.	10.	9.	9.	8.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
4 COMBINED AT	CGCB9	1.45	1	FLOW	261.	224.	198.	178.	162.	150.	142.
+				TIME	3.83	3.83	3.92	3.92	3.92	3.92	3.92
ROUTED TO	RGCB9	1.45	1	FLOW	259.	224.	196.	169.	155.	147.	138.
+				TIME	3.92	3.92	3.92	3.92	3.92	3.92	4.00
HYDROGRAPH AT	PDGCB11	.03	1	FLOW	14.	13.	12.	11.	10.	10.	10.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	CGCB11	1.49	1	FLOW	266.	231.	203.	175.	161.	152.	143.
+				TIME	3.92	3.92	3.92	3.92	3.92	3.92	4.00
DIVERSION TO	D95B	1.49	1	FLOW	95.	83.	69.	63.	58.	55.	52.
+				TIME	3.92	3.92	3.92	3.92	3.92	3.92	4.00
HYDROGRAPH AT	REMAIN2	1.49	1	FLOW	171.	148.	124.	112.	103.	98.	92.
+				TIME	3.92	3.92	3.92	3.92	3.92	3.92	4.00
ROUTED TO	RMAIN2	1.49	1	FLOW	168.	146.	124.	111.	103.	97.	92.
+				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT	LONEMT	.41	1	FLOW	166.	154.	142.	134.	125.	120.	115.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT	GD20BH	.05	1	FLOW	15.	14.	13.	12.	11.	10.	10.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT	CLONE	.46	1	FLOW	180.	167.	153.	144.	135.	130.	124.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO	RLONE	.46	1	FLOW	177.	164.	151.	142.	133.	128.	123.
+				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT	GD20BG	.11	1	FLOW	49.	46.	42.	39.	37.	35.	34.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
3 COMBINED AT	G20BG	2.06	1	FLOW	368.	329.	290.	269.	248.	236.	224.
+				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO	R20BG	2.06	1	FLOW	368.	327.	299.	268.	247.	235.	232.
+				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT	CRAIG	14.48	1	FLOW	3805.	3536.	3271.	3083.	2898.	2788.	2680.
+				TIME	4.75	4.75	4.75	4.75	4.75	4.83	4.83
DIVERSION TO	DCRAIG0	14.48	1	FLOW	1294.	1294.	1294.	1294.	1294.	1294.	1294.
+				TIME	3.92	4.00	4.00	4.08	4.17	4.17	4.17
HYDROGRAPH AT	DREDD	14.48	1	FLOW	2511.	2242.	1977.	1789.	1604.	1494.	1386.
+				TIME	4.75	4.75	4.75	4.75	4.75	4.83	4.83
DIVERSION TO	DCRA1G1	14.48	1	FLOW	1768.	1578.	1391.	1259.	1129.	1052.	976.
+				TIME	4.75	4.75	4.75	4.75	4.75	4.83	4.83
HYDROGRAPH AT	DRED	14.48	1	FLOW	744.	664.	585.	530.	475.	442.	410.
+				TIME	4.75	4.75	4.75	4.75	4.75	4.83	4.83
ROUTED TO	RDRED	14.48	1	FLOW	742.	663.	585.	529.	475.	442.	410.
+				TIME	4.75	4.83	4.83	4.83	4.83	4.83	4.83
HYDROGRAPH AT	GD20BI	.12	1	FLOW	46.	42.	39.	36.	34.	32.	31.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT	G20BI	14.60	1	FLOW	768.	687.	608.	551.	496.	463.	431.
+				TIME	4.83	4.83	4.83	4.83	4.92	4.92	4.92
ROUTED TO											

HYDROGRAPH AT											
+	DCRAIG1	.00	1	FLOW	1768.	1576.	1391.	1259.	1129.	1052.	976.
				TIME	4.75	4.75	4.75	4.75	4.75	4.83	4.83
DIVERSION TO											
+	DCRAIG2	.00	1	FLOW	1263.	1126.	994.	900.	806.	751.	697.
				TIME	4.75	4.75	4.75	4.75	4.75	4.83	4.83
HYDROGRAPH AT											
+	DCOBAL	.00	1	FLOW	505.	451.	397.	360.	322.	300.	279.
				TIME	4.75	4.75	4.75	4.75	4.75	4.83	4.83
ROUTED TO											
+	RCRAIG1	.00	1	FLOW	504.	450.	397.	359.	322.	300.	278.
				TIME	4.75	4.83	4.83	4.83	4.83	4.83	4.83
HYDROGRAPH AT											
+	GD20BJ	.05	1	FLOW	27.	25.	23.	22.	21.	20.	19.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	C20BJ1	.05	1	FLOW	518.	464.	410.	372.	334.	312.	290.
				TIME	4.83	4.83	4.83	4.83	4.92	4.92	4.92
ROUTED TO											
+	R20BJ	.05	1	FLOW	518.	463.	409.	371.	334.	312.	290.
				TIME	4.83	4.83	4.83	4.92	4.92	4.92	4.92
2 COMBINED AT											
+	C20BJ2	16.79	1	FLOW	1496.	1349.	1205.	1103.	1002.	942.	882.
				TIME	5.00	5.00	5.08	5.08	5.08	5.08	5.08
HYDROGRAPH AT											
+	GD20BM	.05	1	FLOW	36.	34.	32.	30.	29.	28.	27.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	C20BM	16.84	1	FLOW	1511.	1363.	1217.	1113.	1011.	950.	890.
				TIME	5.00	5.00	5.00	5.00	5.00	5.08	5.08
DIVERSION TO											
+	D95E	16.84	1	FLOW	180.	180.	180.	180.	180.	180.	180.
				TIME	3.33	3.42	3.50	3.50	3.50	3.58	3.58
HYDROGRAPH AT											
+	REMAIN5	16.84	1	FLOW	1331.	1183.	1037.	933.	831.	770.	710.
				TIME	5.00	5.00	5.00	5.00	5.00	5.08	5.08
HYDROGRAPH AT											
+	DCRAIG2	.00	1	FLOW	1263.	1126.	994.	900.	806.	751.	697.
				TIME	4.75	4.75	4.75	4.75	4.75	4.83	4.83
ROUTED TO											
+	RCRAIG2	.00	1	FLOW	1260.	1125.	992.	899.	806.	751.	696.
				TIME	4.75	4.83	4.83	4.83	4.83	4.83	4.83
HYDROGRAPH AT											
+	GD20BK	.05	1	FLOW	21.	19.	17.	16.	15.	15.	14.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	CGD20BK	.05	1	FLOW	1271.	1136.	1003.	909.	816.	760.	705.
				TIME	4.83	4.83	4.83	4.83	4.83	4.83	4.83
ROUTED TO											
+	IR20BK	.05	1	FLOW	1271.	1136.	1002.	908.	815.	760.	705.
				TIME	4.83	4.83	4.83	4.83	4.83	4.83	4.92
2 COMBINED AT											
+	2C20BK	16.89	1	FLOW	2588.	2306.	2028.	1832.	1639.	1525.	1411.
				TIME	4.92	4.92	4.92	5.00	5.00	5.00	5.00
ROUTED TO											
+	2R20BK	16.89	1	FLOW	2584.	2304.	2027.	1832.	1638.	1522.	1408.
				TIME	4.92	5.00	5.00	5.00	5.00	5.00	5.08
HYDROGRAPH AT											
+	HICKAM	1.49	1	FLOW	517.	476.	437.	408.	381.	364.	348.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
DIVERSION TO											
+	HICKK	1.49	1	FLOW	516.	475.	436.	408.	380.	364.	347.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT											
+	HICKK	1.49	1	FLOW	1.	1.	1.	1.	1.	1.	1.
				TIME	3.67	3.75	3.83	3.83	3.83	3.83	3.83
ROUTED TO											
+	RHICKAM	1.49	1	FLOW	1.	1.	1.	1.	1.	1.	1.
				TIME	4.08	4.17	4.17	4.17	4.25	4.25	4.25
HYDROGRAPH AT											
+	GD17BH	.03	1	FLOW	14.	13.	12.	11.	11.	10.	10.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	CGD17BH	1.51	1	FLOW	14.	13.	12.	11.	11.	10.	10.

ROUTED TO											
+	R17BG	1.63	1	FLOW	67.	62.	58.	54.	51.	49.	47.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT											
+	GD17BI	.07	1	FLOW	40.	38.	35.	33.	31.	30.	29.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	C17BI	1.69	1	FLOW	99.	92.	84.	79.	74.	71.	68.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	2C17BI	18.58	1	FLOW	2643.	2359.	2079.	1880.	1684.	1567.	1451.
				TIME	4.92	5.00	5.00	5.00	5.00	5.00	5.00
ROUTED TO											
+	R17BI	18.58	1	FLOW	2642.	2358.	2076.	1877.	1680.	1564.	1449.
				TIME	5.00	5.00	5.00	5.00	5.08	5.08	5.08
DIVERSION TO											
+	D95Fa	18.58	1	FLOW	522.	522.	522.	522.	522.	522.	522.
				TIME	3.75	3.83	3.92	3.92	4.00	4.00	4.08
HYDROGRAPH AT											
+	REMAIN6a	18.58	1	FLOW	2120.	1836.	1554.	1355.	1158.	1042.	927.
				TIME	5.00	5.00	5.00	5.00	5.08	5.08	5.08
HYDROGRAPH AT											
+	GD14CH	.04	1	FLOW	22.	21.	19.	18.	17.	16.	16.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO											
+	R14CH	.04	1	FLOW	22.	21.	19.	18.	17.	16.	15.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	GD17BJ	.06	1	FLOW	42.	39.	37.	35.	33.	32.	31.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT											
+	C17BJ	18.68	1	FLOW	2152.	1866.	1583.	1382.	1184.	1065.	948.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
DIVERSION TO											
+	D95F	18.68	1	FLOW	550.	550.	550.	550.	550.	550.	550.
				TIME	4.08	4.17	4.25	4.33	4.42	4.42	4.50
HYDROGRAPH AT											
+	REMAIN6	18.68	1	FLOW	1602.	1316.	1033.	832.	634.	515.	398.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
HYDROGRAPH AT											
+	GD14CF	.13	1	FLOW	44.	40.	36.	34.	31.	30.	28.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
DIVERSION TO											
+	DXXXX	.13	1	FLOW	40.	39.	35.	33.	30.	29.	27.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	XXXX	.13	1	FLOW	4.	1.	1.	1.	1.	1.	1.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO											
+	R14CF	.13	1	FLOW	3.	1.	1.	1.	1.	1.	1.
				TIME	3.83	4.00	4.08	4.00	4.08	4.08	4.08
HYDROGRAPH AT											
+	GD14CG	.06	1	FLOW	29.	26.	24.	23.	21.	21.	20.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	C14CG	.19	1	FLOW	29.	26.	24.	23.	21.	21.	20.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO											
+	R14CG	.19	1	FLOW	28.	26.	24.	23.	21.	20.	19.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.75
HYDROGRAPH AT											
+	GD14CI	.05	1	FLOW	24.	22.	20.	19.	18.	17.	16.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	C14CI	.24	1	FLOW	50.	47.	43.	40.	37.	36.	34.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO											
+	R14CI	.24	1	FLOW	49.	45.	41.	39.	36.	34.	32.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	CMAIN6	18.92	1	FLOW	1632.	1344.	1059.	857.	657.	538.	420.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
ROUTED TO											
+	RMAIN6	18.92	1	FLOW	1628.	1340.	1056.	855.	654.	534.	417.
				TIME	5.00	5.08	5.08	5.08	5.08	5.08	5.17

+	C11C	19.06	1	FLOW	1182.	889.	602.	399.	198.	77.	51.
				TIME	5.00	5.00	5.08	5.08	5.08	5.08	3.67
HYDROGRAPH AT											
+	GD11B	.20	1	FLOW	117.	110.	103.	98.	93.	90.	87.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	C11B	19.25	1	FLOW	1244.	947.	653.	444.	241.	142.	137.
				TIME	5.00	5.00	5.00	5.08	5.08	3.67	3.67
ROUTED TO											
+	R11C	19.25	1	FLOW	1239.	941.	650.	444.	239.	137.	132.
				TIME	5.00	5.00	5.00	5.08	5.00	3.75	4.75
HYDROGRAPH AT											
+	CY05A	.03	1	FLOW	16.	15.	14.	13.	13.	12.	12.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	D95G	.00	1	FLOW	485.	485.	485.	485.	485.	485.	417.
				TIME	4.33	4.42	4.58	4.67	4.83	5.00	5.17
ROUTED TO											
+	RD95G	.00	1	FLOW	485.	485.	485.	485.	485.	485.	415.
				TIME	4.42	4.50	4.67	4.75	4.92	5.08	5.17
HYDROGRAPH AT											
+	PT6B	.11	1	FLOW	81.	76.	71.	68.	65.	63.	61.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	CPT6B	.11	1	FLOW	524.	522.	520.	519.	517.	505.	427.
				TIME	4.83	4.83	4.92	4.92	4.92	5.00	5.17
3 COMBINED AT											
+	2CPT6B	19.38	1	FLOW	1762.	1463.	1164.	952.	746.	620.	497.
				TIME	5.00	5.00	5.00	5.08	5.08	5.08	5.08
ROUTED TO											
+	RPT6B	19.38	1	FLOW	1757.	1455.	1161.	952.	742.	614.	494.
				TIME	5.00	5.00	5.08	5.08	5.08	5.17	5.17
HYDROGRAPH AT											
+	CY05D	.06	1	FLOW	22.	20.	18.	17.	16.	15.	14.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	PT5A3	.09	1	FLOW	51.	48.	44.	42.	40.	39.	37.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
3 COMBINED AT											
+	C5A3	19.53	1	FLOW	1798.	1494.	1192.	981.	771.	642.	515.
				TIME	5.00	5.00	5.08	5.08	5.08	5.08	5.17
ROUTED TO											
+	R5A3	19.53	1	FLOW	1789.	1489.	1192.	979.	765.	638.	515.
				TIME	5.00	5.08	5.08	5.08	5.08	5.17	5.17
HYDROGRAPH AT											
+	CY06A	.08	1	FLOW	40.	37.	34.	32.	30.	29.	28.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	PT5A8	.03	1	FLOW	11.	10.	10.	9.	8.	8.	8.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
3 COMBINED AT											
+	C5A8	19.63	1	FLOW	1816.	1511.	1212.	998.	783.	652.	528.
				TIME	5.00	5.08	5.08	5.08	5.08	5.17	5.17
DIVERSION TO											
+	DCY07B	19.63	1	FLOW	530.	426.	325.	253.	194.	158.	124.
				TIME	5.00	5.08	5.08	5.08	5.08	5.17	5.17
HYDROGRAPH AT											
+	DPT5A8	19.63	1	FLOW	1287.	1085.	887.	746.	590.	494.	404.
				TIME	5.00	5.08	5.08	5.08	5.08	5.17	5.17
ROUTED TO											
+	R5A8	19.63	1	FLOW	1284.	1085.	886.	742.	586.	494.	401.
				TIME	5.08	5.08	5.08	5.08	5.17	5.17	5.17
HYDROGRAPH AT											
+	CY07A	.03	1	FLOW	16.	15.	14.	13.	12.	12.	11.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	CCY07A	19.66	1	FLOW	1290.	1091.	891.	748.	590.	498.	404.
				TIME	5.08	5.08	5.08	5.08	5.17	5.17	5.17
HYDROGRAPH AT											
+	D95B	.00	1	FLOW	95.	83.	69.	63.	58.	55.	51.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	4.00
ROUTED TO											
+	RD95B	.00	1	FLOW	94.	81.	68.	62.	57.	54.	51.
				TIME	3.92	3.92	4.00	4.00	4.00	4.00	4.00

				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92
DIVERSION TO											
+	D2RCHO	.05	1	FLOW	16.	14.	12.	11.	10.	9.	9.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92
HYDROGRAPH AT											
+	2REMAIN	.05	1	FLOW	86.	75.	65.	60.	55.	52.	49.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO											
+	R2MAIN	.05	1	FLOW	85.	75.	69.	60.	55.	52.	49.
				TIME	3.92	4.00	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT											
+	PT3AB2	.05	1	FLOW	45.	43.	41.	39.	38.	37.	36.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	C3AB2	.10	1	FLOW	106.	94.	85.	80.	75.	71.	69.
				TIME	3.92	3.92	3.75	3.75	3.75	3.67	3.67
DIVERSION TO											
+	D3RCHO	.10	1	FLOW	13.	11.	10.	10.	9.	9.	8.
				TIME	3.92	3.92	3.75	3.75	3.75	3.67	3.67
HYDROGRAPH AT											
+	3REMAIN	.10	1	FLOW	93.	84.	75.	70.	66.	63.	60.
				TIME	3.92	3.92	3.75	3.75	3.75	3.67	3.67
ROUTED TO											
+	R3MAIN	.10	1	FLOW	93.	83.	74.	70.	65.	62.	60.
				TIME	4.00	4.00	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT											
+	PT2B2	.08	1	FLOW	46.	43.	40.	38.	36.	35.	34.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	CPT2B2	.18	1	FLOW	128.	119.	109.	103.	97.	94.	90.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
DIVERSION TO											
+	D4RCHO	.18	1	FLOW	21.	19.	18.	17.	16.	15.	15.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT											
+	4REMAIN	.18	1	FLOW	107.	99.	91.	86.	81.	78.	75.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO											
+	R4MAIN	.18	1	FLOW	106.	98.	90.	85.	80.	78.	75.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT											
+	PT2B3	.02	1	FLOW	18.	17.	16.	16.	15.	15.	14.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	C2B3	.20	1	FLOW	121.	113.	104.	98.	93.	90.	87.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
DIVERSION TO											
+	DCSD2	.20	1	FLOW	120.	112.	103.	98.	92.	89.	86.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT											
+	D2B3	.20	1	FLOW	1.	1.	1.	1.	1.	1.	1.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT											
+	PT2A2	.06	1	FLOW	34.	32.	30.	28.	26.	25.	24.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO											
+	RPT2A2	.06	1	FLOW	34.	32.	29.	28.	26.	25.	24.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	PT2A1	.06	1	FLOW	35.	33.	31.	29.	28.	27.	26.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	CPT2A1	.13	1	FLOW	69.	64.	60.	57.	54.	52.	50.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	D95E	.00	1	FLOW	180.	180.	180.	180.	180.	180.	180.
				TIME	3.33	3.42	3.50	3.50	3.50	3.58	3.58
ROUTED TO											
+	RD95E	.00	1	FLOW	180.	180.	180.	180.	180.	180.	180.
				TIME	3.42	3.50	3.58	3.58	3.58	3.67	3.67
2 COMBINED AT											
+	C2PT2A1	.13	1	FLOW	249.	244.	240.	237.	234.	232.	230.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
DIVERSION TO											

2 COMBINED AT	C2B1	.20	1	FLOW	193.	185.	178.	173.	169.	165.	161.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.75
ROUTED TO	R2B1	.20	1	FLOW	192.	185.	177.	172.	168.	165.	162.
+				TIME	3.67	3.67	3.67	3.75	3.75	3.75	3.75
2 COMBINED AT	2C2B3	.40	1	FLOW	193.	185.	178.	173.	169.	166.	163.
+				TIME	3.67	3.67	3.67	3.75	3.75	3.75	3.75
ROUTED TO	R2C2B3	.40	1	FLOW	192.	185.	178.	173.	168.	164.	161.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.83
DIVERSION TO	D5RCHO	.40	1	FLOW	113.	113.	109.	106.	102.	100.	98.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.83
HYDROGRAPH AT	5REMAIN	.40	1	FLOW	79.	72.	69.	67.	65.	64.	63.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.83
ROUTED TO	R5REMN	.40	1	FLOW	77.	71.	69.	67.	65.	64.	62.
+				TIME	3.75	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT	PT51	.07	1	FLOW	48.	45.	43.	41.	39.	38.	37.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT	CPT51	.47	1	FLOW	120.	112.	106.	102.	97.	94.	90.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.83
HYDROGRAPH AT	D95Fa	.00	1	FLOW	522.	522.	522.	522.	522.	522.	522.
+				TIME	3.75	3.83	3.92	3.92	4.00	4.00	4.08
HYDROGRAPH AT	D95F	.06	1	FLOW	550.	550.	550.	550.	550.	550.	550.
+				TIME	4.08	4.17	4.25	4.33	4.42	4.42	4.50
2 COMBINED AT	CD95F	.06	1	FLOW	1072.	1072.	1072.	1072.	1072.	1072.	1072.
+				TIME	4.08	4.17	4.25	4.33	4.42	4.42	4.50
ROUTED TO	RD95F	.00	1	FLOW	1072.	1072.	1072.	1072.	1072.	1072.	1072.
+				TIME	4.17	4.25	4.33	4.42	4.50	4.50	4.58
HYDROGRAPH AT	PT3	.15	1	FLOW	94.	88.	82.	78.	74.	72.	69.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	CPT3	.15	1	FLOW	1122.	1120.	1117.	1115.	1113.	1112.	1111.
+				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.92
HYDROGRAPH AT	PT6A	.02	1	FLOW	17.	16.	15.	14.	14.	13.	13.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	CPT6A	.17	1	FLOW	1131.	1128.	1125.	1122.	1120.	1119.	1118.
+				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.92
ROUTED TO	RPT6A	.17	1	FLOW	1130.	1127.	1124.	1122.	1120.	1118.	1117.
+				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.92
HYDROGRAPH AT	PT41	.14	1	FLOW	66.	61.	56.	52.	49.	47.	45.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO	RPT41	.14	1	FLOW	65.	60.	55.	52.	49.	47.	45.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT	PT42	.08	1	FLOW	33.	31.	28.	27.	25.	24.	23.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT	CPT42	.22	1	FLOW	98.	91.	84.	79.	74.	71.	68.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT	PT5A1	.05	1	FLOW	33.	31.	29.	27.	26.	25.	24.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
3 COMBINED AT	C5A1	.44	1	FLOW	1207.	1199.	1192.	1186.	1181.	1177.	1174.
+				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.92
ROUTED TO	R5A1	.44	1	FLOW	1205.	1197.	1189.	1184.	1179.	1175.	1172.
+											

ROUTED TO											
+	RPT52	.54	1	FLOW	1230.	1221.	1212.	1205.	1199.	1195.	1191.
				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.92
3 COMBINED AT											
+	2CPT51	1.01	1	FLOW	1309.	1298.	1287.	1278.	1270.	1266.	1261.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
DIVERSION TO											
+	D6RCHO	1.01	1	FLOW	474.	474.	474.	474.	474.	474.	474.
				TIME	3.58	3.67	3.67	3.75	3.83	3.83	3.92
HYDROGRAPH AT											
+	6REMAIN	1.01	1	FLOW	835.	824.	813.	804.	796.	792.	787.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
ROUTED TO											
+	R6MAIN	1.01	1	FLOW	835.	824.	812.	804.	796.	791.	786.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
HYDROGRAPH AT											
+	PT5A2	.08	1	FLOW	45.	42.	39.	37.	35.	34.	32.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO											
+	R5A2	.08	1	FLOW	43.	41.	38.	36.	34.	32.	32.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT											
+	PT5A6	.19	1	FLOW	101.	94.	87.	82.	77.	74.	71.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	C5A6	.27	1	FLOW	127.	118.	109.	102.	95.	92.	88.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	CC5A6	1.27	1	FLOW	905.	890.	874.	863.	852.	845.	838.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
DIVERSION TO											
+	D7RCHO	1.27	1	FLOW	316.	316.	316.	316.	316.	316.	316.
				TIME	3.83	3.92	4.00	4.08	4.17	4.25	4.33
HYDROGRAPH AT											
+	7REMAIN	1.27	1	FLOW	589.	574.	558.	547.	536.	529.	522.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
ROUTED TO											
+	R7MAIN	1.27	1	FLOW	587.	572.	550.	545.	534.	527.	521.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
DIVERSION TO											
+	DDUNCAN	1.27	1	FLOW	363.	363.	363.	363.	363.	363.	363.
				TIME	4.08	4.25	4.42	4.50	4.58	4.58	4.67
HYDROGRAPH AT											
+	DPT5A7	1.27	1	FLOW	224.	209.	187.	182.	171.	164.	158.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
HYDROGRAPH AT											
+	PT5A7	.07	1	FLOW	33.	31.	29.	27.	26.	25.	24.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT											
+	C5A7	1.35	1	FLOW	245.	228.	205.	199.	187.	180.	173.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
DIVERSION TO											
+	D8RCHO	1.35	1	FLOW	24.	24.	24.	24.	24.	24.	24.
				TIME	3.58	3.58	3.67	3.67	3.75	4.67	4.67
HYDROGRAPH AT											
+	8REMAIN	1.35	1	FLOW	221.	204.	181.	175.	163.	156.	149.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
ROUTED TO											
+	R8MAIN	1.35	1	FLOW	215.	198.	176.	170.	158.	151.	145.
				TIME	5.00	5.00	5.00	5.08	5.08	5.08	5.08
HYDROGRAPH AT											
+	PT5A9	.05	1	FLOW	25.	24.	22.	21.	20.	19.	18.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	C5A9	1.39	1	FLOW	228.	210.	188.	180.	168.	161.	153.
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00
2 COMBINED AT											
+	C2PT5A9	21.05	1	FLOW	1517.	1298.	1077.	926.	755.	648.	539.
				TIME	5.00	5.08	5.08	5.08	5.08	5.08	5.17
DIVERSION TO											
+	DGOWAN	21.05	1	FLOW	1142.	1142.	1076.	925.	754.	647.	538.
				TIME	4.75	4.92	5.08	5.08	5.08	5.08	5.17
HYDROGRAPH AT											
+	DRANCH0	21.05	1	FLOW	375.	156.	1.	1.	1.	1.	1.
				TIME	5.00	5.08	3.33	3.42	3.42	3.42	3.42

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          FOR PLAN = 1  RATIO=  .86
              RANN  MANE          2.36      65.50     239.95        .70       5.00      65.50     240.00          .70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9679E+01 EXCESS= .0000E+00 OUTFLOW= .9686E+01 BASIN STORAGE= .1470E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .82
              RANN  MANE          2.41      59.53     240.80        .64       5.00      59.39     240.00          .64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8843E+01 EXCESS= .0000E+00 OUTFLOW= .8852E+01 BASIN STORAGE= .1729E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .79
              RANN  MANE          2.49      53.77     241.37        .58       5.00      53.59     240.00          .58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8030E+01 EXCESS= .0000E+00 OUTFLOW= .8032E+01 BASIN STORAGE= .1508E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .76
              RANN  MANE          2.72      49.73     242.44        .54       5.00      49.60     240.00          .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7464E+01 EXCESS= .0000E+00 OUTFLOW= .7462E+01 BASIN STORAGE= .1785E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .74
              RANN  MANE          2.66      45.87     240.42        .50       5.00      45.72     240.00          .50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6912E+01 EXCESS= .0000E+00 OUTFLOW= .6918E+01 BASIN STORAGE= .1562E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .73
              RANN  MANE          2.83      43.51     243.24        .48       5.00      43.40     245.00          .48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6587E+01 EXCESS= .0000E+00 OUTFLOW= .6593E+01 BASIN STORAGE= .1787E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .71
              RANN  MANE          2.90      41.24     243.22        .45       5.00      41.17     245.00          .45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6267E+01 EXCESS= .0000E+00 OUTFLOW= .6274E+01 BASIN STORAGE= .1703E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .86
              RGD29B  MANE          2.24      91.32     238.74        .65       5.00      91.27     240.00          .65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1377E+02 EXCESS= .0000E+00 OUTFLOW= .1378E+02 BASIN STORAGE= .5277E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .82
              RGD29B  MANE          2.28      82.64     239.15        .59       5.00      82.59     240.00          .59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1255E+02 EXCESS= .0000E+00 OUTFLOW= .1256E+02 BASIN STORAGE= .4984E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .79
              RGD29B  MANE          2.30      74.24     241.60        .54       5.00      74.24     240.00          .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1136E+02 EXCESS= .0000E+00 OUTFLOW= .1136E+02 BASIN STORAGE= .5173E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .76
              RGD29B  MANE          2.37      68.54     240.63        .50       5.00      68.31     240.00          .50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1053E+02 EXCESS= .0000E+00 OUTFLOW= .1053E+02 BASIN STORAGE= .6001E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .74
              RGD29B  MANE          2.56      63.01     244.13        .46       5.00      62.81     245.00          .46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9738E+01 EXCESS= .0000E+00 OUTFLOW= .9734E+01 BASIN STORAGE= .5401E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .73
              RGD29B  MANE          2.57      59.67     243.53        .44       5.00      59.53     245.00          .44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9265E+01 EXCESS= .0000E+00 OUTFLOW= .9266E+01 BASIN STORAGE= .5060E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .71
              RGD29B  MANE          2.67      56.37     245.76        .42       5.00      56.36     245.00          .42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8802E+01 EXCESS= .0000E+00 OUTFLOW= .8801E+01 BASIN STORAGE= .4967E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
              RANN1B  MANE          1.78     135.47     234.53        .73       5.00     135.41     235.00          .73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2063E+02 EXCESS= .0000E+00 OUTFLOW= .2063E+02 BASIN STORAGE= .7425E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .82
              RANN1B  MANE          1.81     122.91     237.23        .67       5.00     122.82     235.00          .67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1890E+02 EXCESS= .0000E+00 OUTFLOW= .1891E+02 BASIN STORAGE= .7820E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .79
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            RANN1B  MANE          1.89     110.95     237.94        .61       5.00     110.51     235.00          .61

 CONTINUITY SUMMARY (AC-FT)   INFLOW= .1721E+02 EXCESS=  .0000E+00 OUTFLOW= .1721E+02 BASIN STORAGE= .8686E-04 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .76
            RANN1B  MANE          2.05     102.10     238.24        .56       5.00     101.84     240.00          .56

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1602E+02 EXCESS= .0000E+00 OUTFLOW= .1603E+02 BASIN STORAGE= .8024E-04 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .74
            RANN1B  MANE          2.05      94.19     238.60        .52       5.00      93.99     240.00          .52

 CONTINUITY SUMMARY (AC-FT)   INFLOW= .1488E+02 EXCESS=  .0000E+00 OUTFLOW= .1488E+02 BASIN STORAGE= .8589E-04 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .71
            RANN1B  MANE          2.00      89.26     238.91        .50       5.00      89.09     240.00          .50

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1421E+02 EXCESS= .0000E+00 OUTFLOW= .1421E+02 BASIN STORAGE= .7867E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .71
            RANN1B  MANE          2.16      84.67     239.35        .48       5.00      84.56     240.00          .48

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1454E+02 EXCESS= .0000E+00 OUTFLOW= .1455E+02 BASIN STORAGE= .8279E-04 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .86
            RANN1C2 MANE          .53     161.63     231.42        .74       5.00     161.54     235.00          .74

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2472E+02 EXCESS= .0000E+00 OUTFLOW= .2472E+02 BASIN STORAGE= .1293E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .82
            RANN1C2 MANE          .89     146.91     235.69        .66       5.00     146.84     235.00          .66

 CONTINUITY SUMMARY (AC-FT)   INFLOW= .2268E+02 EXCESS= .0000E+00 OUTFLOW= .2268E+02 BASIN STORAGE= .1411E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .79
            RANN1C2 MANE          .64     132.66     235.92        .62       5.00     132.42     235.00          .62

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2067E+02 EXCESS= .0000E+00 OUTFLOW= .2067E+02 BASIN STORAGE= .1289E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .76
            RANN1C2 MANE          .58     122.29     236.42        .58       5.00     121.93     235.00          .58

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1926E+02 EXCESS= .0000E+00 OUTFLOW= .1926E+02 BASIN STORAGE= .1416E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .74
            RANN1C2 MANE          .64     112.44     236.50        .54       5.00     111.79     235.00          .54

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1791E+02 EXCESS= .0000E+00 OUTFLOW= .1791E+02 BASIN STORAGE= .1288E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .73
            RANN1C2 MANE          .60     106.59     236.56        .51       5.00     106.00     240.00          .52

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1711E+02 EXCESS= .0000E+00 OUTFLOW= .1711E+02 BASIN STORAGE= .1298E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .71
            RANN1C2 MANE          .74     100.78     237.06        .49       5.00     100.66     240.00          .49

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1632E+02 EXCESS= .0000E+00 OUTFLOW= .1632E+02 BASIN STORAGE= .1300E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .86
            RGCC3  MANE           .46     175.35     235.41        .77       5.00     175.29     235.00          .77

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2739E+02 EXCESS= .0000E+00 OUTFLOW= .2740E+02 BASIN STORAGE= .3950E-04 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .82
            RGCC3  MANE           .50     159.71     235.56        .70       5.00     159.56     235.00          .70

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2516E+02 EXCESS= .0000E+00 OUTFLOW= .2516E+02 BASIN STORAGE= .4778E-04 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .79
            RGCC3  MANE           .56     144.40     235.89        .64       5.00     144.08     235.00          .64

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2297E+02 EXCESS= .0000E+00 OUTFLOW= .2297E+02 BASIN STORAGE= .3777E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .76
            RGCC3  MANE           .51     133.36     235.88        .60       5.00     142.85     235.00          .60

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2143E+02 EXCESS= .0000E+00 OUTFLOW= .2143E+02 BASIN STORAGE= .3802E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO= .74
            RGCC3  MANE           .66     122.54     236.50        .56       5.00     121.87     235.00          .56
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1995E+02 EXCESS= .0000E+00 OUTFLOW= .1995E+02 BASIN STORAGE= .3887E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .73

RGCC3	MANE	.66	116.19	236.66	.53	5.00	115.41	240.00	.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1907E+02 EXCESS= .0000E+00 OUTFLOW= .1907E+02 BASIN STORAGE= .3825E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .71

RGCC3	MANE	.60	109.93	236.14	.51	5.00	109.62	240.00	.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1821E+02 EXCESS= .0000E+00 OUTFLOW= .1821E+02 BASIN STORAGE= .3803E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

RGCC2	MANE	4.55	9.75	236.00	.52	5.00	9.65	235.00	.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1148E+01 EXCESS= .0000E+00 OUTFLOW= .1158E+01 BASIN STORAGE= .1869E-03 PERCENT ERROR= -.9

FOR PLAN = 1 RATIO= .82

RGCC2	MANE	4.77	8.72	236.52	.47	5.00	8.54	235.00	.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1036E+01 EXCESS= .0000E+00 OUTFLOW= .1050E+01 BASIN STORAGE= .1764E-03 PERCENT ERROR= -1.4

FOR PLAN = 1 RATIO= .79

RGCC2	MANE	4.85	7.65	236.49	.42	5.00	7.51	240.00	.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9280E+00 EXCESS= .0000E+00 OUTFLOW= .9365E+00 BASIN STORAGE= .1835E-03 PERCENT ERROR= -.9

FOR PLAN = 1 RATIO= .76

RGCC2	MANE	5.00	7.03	238.72	.39	5.00	6.92	240.00	.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8534E+00 EXCESS= .0000E+00 OUTFLOW= .8626E+00 BASIN STORAGE= .1858E-03 PERCENT ERROR= -1.1

FOR PLAN = 1 RATIO= .74

RGCC2	MANE	5.00	6.35	237.12	.35	5.00	6.25	240.00	.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7810E+00 EXCESS= .0000E+00 OUTFLOW= .7945E+00 BASIN STORAGE= .2282E-03 PERCENT ERROR= -1.8

FOR PLAN = 1 RATIO= .73

RGCC2	MANE	5.00	5.93	240.02	.34	5.00	5.93	240.00	.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7387E+00 EXCESS= .0000E+00 OUTFLOW= .7622E+00 BASIN STORAGE= .1947E-03 PERCENT ERROR= -3.2

FOR PLAN = 1 RATIO= .71

RGCC2	MANE	5.00	5.57	241.34	.32	5.00	5.52	240.00	.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6973E+00 EXCESS= .0000E+00 OUTFLOW= .7203E+00 BASIN STORAGE= .2226E-03 PERCENT ERROR= -3.3

FOR PLAN = 1 RATIO= .86

RHAMMER	MANE	2.57	37.77	230.44	.68	5.00	37.72	230.00	.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4615E+01 EXCESS= .0000E+00 OUTFLOW= .4626E+01 BASIN STORAGE= .8805E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .82

RHAMMER	MANE	2.67	34.26	230.95	.62	5.00	34.19	230.00	.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4212E+01 EXCESS= .0000E+00 OUTFLOW= .4218E+01 BASIN STORAGE= .9293E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .79

RHAMMER	MANE	2.66	30.93	231.20	.56	5.00	30.85	230.00	.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3820E+01 EXCESS= .0000E+00 OUTFLOW= .3825E+01 BASIN STORAGE= .7882E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .76

RHAMMER	MANE	2.79	28.55	229.38	.52	5.00	28.52	230.00	.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3548E+01 EXCESS= .0000E+00 OUTFLOW= .3553E+01 BASIN STORAGE= .7463E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .74

RHAMMER	MANE	2.88	26.42	230.30	.48	5.00	26.35	230.00	.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3282E+01 EXCESS= .0000E+00 OUTFLOW= .3287E+01 BASIN STORAGE= .6740E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .73

RHAMMER	MANE	2.88	24.89	232.21	.46	5.00	24.85	230.00	.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3126E+01 EXCESS= .0000E+00 OUTFLOW= .3131E+01 BASIN STORAGE= .6508E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .71

RHAMMER	MANE	2.92	23.65	231.92	.44	5.00	23.49	230.00	.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2972E+01 EXCESS= .0000E+00 OUTFLOW= .2977E+01 BASIN STORAGE= .6643E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .86

RGCD	MANE	3.24	67.62	232.52	.61	5.00	66.59	235.00	.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8365E+01 EXCESS= .0000E+00 OUTFLOW= .8372E+01 BASIN STORAGE= .3095E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .82

RGCD	MANE	3.21	60.80	230.91	.56	5.00	60.16	235.00	.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7599E+01 EXCESS= .0000E+00 OUTFLOW= .7614E+01 BASIN STORAGE= .3299E-03 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .79

RGCD	MANE	3.39	54.51	232.64	.50	5.00	54.12	235.00	.50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6863E+01 EXCESS= .0000E+00 OUTFLOW= .6874E+01 BASIN STORAGE= .3605E-03 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .76

RGCD	MANE	3.53	49.92	232.33	.46	5.00	49.73	235.00	.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6353E+01 EXCESS= .0000E+00 OUTFLOW= .6359E+01 BASIN STORAGE= .3836E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .74

RGCD	MANE	3.67	45.59	235.86	.43	5.00	45.57	235.00	.43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5858E+01 EXCESS= .0000E+00 OUTFLOW= .5869E+01 BASIN STORAGE= .3130E-03 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .73

RGCD	MANE	3.64	42.94	234.05	.41	5.00	42.92	235.00	.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5564E+01 EXCESS= .0000E+00 OUTFLOW= .5578E+01 BASIN STORAGE= .3327E-03 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= .71

RGCD	MANE	3.71	40.53	235.58	.39	5.00	40.37	235.00	.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5278E+01 EXCESS= .0000E+00 OUTFLOW= .5293E+01 BASIN STORAGE= .3265E-03 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= .86

RGCB1	MANE	2.47	20.65	220.62	1.08	5.00	20.54	220.00	1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1900E+01 EXCESS= .0000E+00 OUTFLOW= .1908E+01 BASIN STORAGE= .2554E-04 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= .82

RGCB1	MANE	2.56	19.62	219.93	1.01	5.00	19.58	220.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1767E+01 EXCESS= .0000E+00 OUTFLOW= .1776E+01 BASIN STORAGE= .2485E-04 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= .79

RGCB1	MANE	2.60	17.86	220.99	.93	5.00	17.72	220.00	.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1637E+01 EXCESS= .0000E+00 OUTFLOW= .1644E+01 BASIN STORAGE= .2738E-04 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .76

RGCB1	MANE	2.73	16.83	221.22	.88	5.00	16.68	220.00	.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1545E+01 EXCESS= .0000E+00 OUTFLOW= .1551E+01 BASIN STORAGE= .3016E-04 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .74

RGCB1	MANE	2.68	16.12	219.69	.83	5.00	16.01	220.00	.83

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1455E+01 EXCESS= .0000E+00 OUTFLOW= .1462E+01 BASIN STORAGE= .3236E-04 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= .73

RGCB1	MANE	2.83	15.20	221.62	.80	5.00	15.10	220.00	.80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1401E+01 EXCESS= .0000E+00 OUTFLOW= .1406E+01 BASIN STORAGE= .2642E-04 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .71

RGCB1	MANE	2.73	15.18	220.66	.77	5.00	14.91	220.00	.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1348E+01 EXCESS= .0000E+00 OUTFLOW= .1356E+01 BASIN STORAGE= .2643E-04 PERCENT ERROR= -.6

FOR PLAN = 1 RATIO= .86

RGCB2	MANE	1.36	33.83	222.00	.99	5.00	33.55	220.00	.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3310E+01 EXCESS= .0000E+00 OUTFLOW= .3314E+01 BASIN STORAGE= .2272E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .82

RGCB2	MANE	1.30	31.97	222.12	.92	5.00	31.35	220.00	.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3071E+01 EXCESS= .0000E+00 OUTFLOW= .3075E+01 BASIN STORAGE= .2470E-04 PERCENT ERROR= .1

FOR PLAN = 1 RATIO= .79

RCGB2	MANE	1.44	29.02	222.50	.84	5.00	28.64	220.00	.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2829E+01 EXCESS= .0000E+00 OUTFLOW= .2833E+01 BASIN STORAGE= .2233E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .76

RCGB2	MANE	1.52	27.25	221.67	.79	5.00	26.96	220.00	.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2663E+01 EXCESS= .0000E+00 OUTFLOW= .2666E+01 BASIN STORAGE= .2310E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .74

RCGB2	MANE	1.40	25.96	223.02	.75	5.00	25.62	220.00	.75

CONTINUITY SUMMARY (AC-FT) INFLOW= .2503E+01 EXCESS= .0000E+00 OUTFLOW= .2507E+01 BASIN STORAGE= .2351E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .73

RCGB2	MANE	1.56	24.59	222.57	.72	5.00	24.21	220.00	.72

CONTINUITY SUMMARY (AC-FT) INFLOW= .2402E+01 EXCESS= .0000E+00 OUTFLOW= .2405E+01 BASIN STORAGE= .2384E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .71

RCGB2	MANE	1.47	24.11	222.69	.69	5.00	23.37	220.00	.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2311E+01 EXCESS= .0000E+00 OUTFLOW= .2315E+01 BASIN STORAGE= .2375E-04 PERCENT ERROR= .1

FOR PLAN = 1 RATIO= .86

RGCB3	MANE	1.42	49.94	222.34	.74	5.00	48.37	225.00	.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5103E+01 EXCESS= .0000E+00 OUTFLOW= .5109E+01 BASIN STORAGE= .4392E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .82

RGCB3	MANE	1.48	45.86	223.57	.68	5.00	44.75	225.00	.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4687E+01 EXCESS= .0000E+00 OUTFLOW= .4693E+01 BASIN STORAGE= .4433E-04 PERCENT ERROR= .1

FOR PLAN = 1 RATIO= .79

RGCB3	MANE	1.51	41.81	224.24	.62	5.00	40.68	225.00	.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4277E+01 EXCESS= .0000E+00 OUTFLOW= .4282E+01 BASIN STORAGE= .3942E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .76

RGCB3	MANE	1.50	38.96	224.30	.58	5.00	37.99	225.00	.58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3994E+01 EXCESS= .0000E+00 OUTFLOW= .3999E+01 BASIN STORAGE= .4277E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .74

RGCB3	MANE	1.45	36.14	223.50	.54	5.00	35.45	225.00	.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3721E+01 EXCESS= .0000E+00 OUTFLOW= .3726E+01 BASIN STORAGE= .4109E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .73

RGCB3	MANE	1.48	34.24	222.57	.52	5.00	33.74	225.00	.52

CONTINUITY SUMMARY (AC-FT) INFLOW= .3554E+01 EXCESS= .0000E+00 OUTFLOW= .3559E+01 BASIN STORAGE= .4294E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .71

RGCB3	MANE	1.52	32.91	222.85	.49	5.00	32.38	225.00	.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3398E+01 EXCESS= .0000E+00 OUTFLOW= .3403E+01 BASIN STORAGE= .4095E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .86

RGCB4	MANE	1.45	12.20	217.78	1.13	5.00	11.84	220.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1204E+01 EXCESS= .0000E+00 OUTFLOW= .1207E+01 BASIN STORAGE= .1265E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .82

RGCB4	MANE	1.44	11.41	218.45	1.05	5.00	11.08	220.00	1.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1122E+01 EXCESS= .0000E+00 OUTFLOW= .1124E+01 BASIN STORAGE= .1190E-05 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .79

RGCB4	MANE	1.51	10.54	218.41	.98	5.00	10.32	220.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1041E+01 EXCESS= .0000E+00 OUTFLOW= .1043E+01 BASIN STORAGE= .9130E-06 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .76

RGCB4	MANE	1.54	9.99	218.48	.92	5.00	9.79	220.00	.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9844E+00 EXCESS= .0000E+00 OUTFLOW= .9863E+00 BASIN STORAGE= .8825E-06 PERCENT ERROR= -.2

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          FOR PLAN = 1  RATIO=  .74
             RGCB4  MANE          1.51       9.44     218.52        .87       5.00       9.26     220.00          .87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9281E+00 EXCESS= .0000E+00 OUTFLOW= .9300E+00 BASIN STORAGE= .8414E-06 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .73
             RGCB4  MANE          1.64       9.03     217.82        .84       5.00       8.94     220.00          .84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8947E+00 EXCESS= .0000E+00 OUTFLOW= .8962E+00 BASIN STORAGE= .9500E-06 PERCENT ERROR=    .2

          FOR PLAN = 1  RATIO=  .71
             RGCB4  MANE          1.50       8.83     218.10        .81       5.00       8.62     220.00          .83

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8615E+00 EXCESS= .0000E+00 OUTFLOW= .8633E+00 BASIN STORAGE= .1179E-05 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .86
             RGCB5  MANE          2.84     159.74     230.97        .66       5.00     157.06     230.00          .66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2003E+02 EXCESS= .0000E+00 OUTFLOW= .2006E+02 BASIN STORAGE= .8586E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .82
             RGCB5  MANE          2.84     143.85     233.07        .60       5.00     143.29     235.00          .60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1830E+02 EXCESS= .0000E+00 OUTFLOW= .1831E+02 BASIN STORAGE= .9845E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .79
             RGCB5  MANE          2.96     128.75     234.37        .55       5.00     128.32     235.00          .55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1660E+02 EXCESS= .0000E+00 OUTFLOW= .1662E+02 BASIN STORAGE= .8725E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .76
             RGCB5  MANE          3.12     118.33     234.60        .51       5.00     118.15     235.00          .51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1542E+02 EXCESS= .0000E+00 OUTFLOW= .1544E+02 BASIN STORAGE= .9120E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .74
             RGCB5  MANE          3.20     108.45     235.00        .47       5.00     108.45     235.00          .47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1428E+02 EXCESS= .0000E+00 OUTFLOW= .1430E+02 BASIN STORAGE= .7936E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .73
             RGCB5  MANE          3.21     103.11     236.61        .45       5.00     101.95     235.00          .45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1360E+02 EXCESS= .0000E+00 OUTFLOW= .1361E+02 BASIN STORAGE= .9746E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .71
             RGCB5  MANE          3.26      96.75     235.70        .43       5.00      95.87     235.00          .43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1295E+02 EXCESS= .0000E+00 OUTFLOW= .1295E+02 BASIN STORAGE= .8854E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .86
             RGCB6  MANE          4.68      12.58     227.27       1.31       5.00      12.25     230.00         1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1243E+01 EXCESS= .0000E+00 OUTFLOW= .1257E+01 BASIN STORAGE= .1455E-03 PERCENT ERROR=   1.1

          FOR PLAN = 1  RATIO=  .82
             RGCB6  MANE          4.85      11.88     231.19       1.23       5.00      11.75     230.00         1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1165E+01 EXCESS= .0000E+00 OUTFLOW= .1178E+01 BASIN STORAGE= .1498E-03 PERCENT ERROR=  1.1

          FOR PLAN = 1  RATIO=  .79
             RGCB6  MANE          4.83      11.59     229.14       1.15       5.00      11.33     230.00         1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1087E+01 EXCESS= .0000E+00 OUTFLOW= .1102E+01 BASIN STORAGE= .1684E-03 PERCENT ERROR=  1.4

          FOR PLAN = 1  RATIO=  .76
             RGCB6  MANE          5.00      10.53     232.19       1.09       5.00      10.37     230.00         1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1032E+01 EXCESS= .0000E+00 OUTFLOW= .1048E+01 BASIN STORAGE= .1660E-03 PERCENT ERROR=  1.6

          FOR PLAN = 1  RATIO=  .74
             RGCB6  MANE          5.00      10.50     229.69       1.03       5.00      10.42     230.00         1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9773E+00 EXCESS= .0000E+00 OUTFLOW= .9912E+00 BASIN STORAGE= .1595E-03 PERCENT ERROR=  1.4

          FOR PLAN = 1  RATIO=  .73
             RGCB6  MANE          5.00       9.81     231.79       1.00       5.00       9.35     230.00         1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9448E+00 EXCESS= .0000E+00 OUTFLOW= .9603E+00 BASIN STORAGE= .1471E-03 PERCENT ERROR=  1.7
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          FOR PLAN = 1  RATIO=  .71
             RGCB6  MANE          5.00      9.21    228.31        .97       5.00      9.14    230.00         .97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9126E+00 EXCESS= .0000E+00 OUTFLOW= .9271E+00 BASIN STORAGE= .1370E-03 PERCENT ERROR= -1.6

          FOR PLAN = 1  RATIO=  .86
             RGCB9  MANE           .98    260.65    231.91        .41       5.00    258.59    235.00         .41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3162E+02 EXCESS= .0000E+00 OUTFLOW= .3163E+02 BASIN STORAGE= .2438E-03 PERCENT ERROR=  .0

          FOR PLAN = 1  RATIO=  .82
             RGCB9  MANE          1.08    223.88    232.65        .37       5.00    223.75    235.00         .37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2848E+02 EXCESS= .0000E+00 OUTFLOW= .2849E+02 BASIN STORAGE= .2475E-03 PERCENT ERROR=  .0

          FOR PLAN = 1  RATIO=  .79
             RGCB9  MANE          1.11    187.28    236.29        .33       5.00    186.23    235.00         .33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2560E+02 EXCESS= .0000E+00 OUTFLOW= .2560E+02 BASIN STORAGE= .2418E-03 PERCENT ERROR=  .0

          FOR PLAN = 1  RATIO=  .76
             RGCB9  MANE          1.15    169.66    237.11        .31       5.00    168.82    235.00         .31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2385E+02 EXCESS= .0000E+00 OUTFLOW= .2385E+02 BASIN STORAGE= .2434E-03 PERCENT ERROR=  .0

          FOR PLAN = 1  RATIO=  .74
             RGCB9  MANE          1.18    156.58    236.66        .29       5.00    155.20    235.00         .29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2219E+02 EXCESS= .0000E+00 OUTFLOW= .2219E+02 BASIN STORAGE= .2459E-03 PERCENT ERROR=  .0

          FOR PLAN = 1  RATIO=  .73
             RGCB9  MANE          1.13    149.43    236.98        .27       5.00    146.56    235.00         .27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2120E+02 EXCESS= .0000E+00 OUTFLOW= .2120E+02 BASIN STORAGE= .2399E-03 PERCENT ERROR=  .0

          FOR PLAN = 1  RATIO=  .71
             RGCB9  MANE          1.20    140.91    237.72        .26       5.00    138.23    240.00         .26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2024E+02 EXCESS= .0000E+00 OUTFLOW= .2024E+02 BASIN STORAGE= .2426E-03 PERCENT ERROR=  .0

          FOR PLAN = 1  RATIO=  .86
            RMAIN2  MANE          1.85    169.95    239.09        .27       5.00    168.02    240.00         .27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2116E+02 EXCESS= .0000E+00 OUTFLOW= .2118E+02 BASIN STORAGE= .7025E-03 PERCENT ERROR= -.1

          FOR PLAN = 1  RATIO=  .82
            RMAIN2  MANE          2.01    147.08    238.26        .24       5.00    145.92    240.00         .24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1908E+02 EXCESS= .0000E+00 OUTFLOW= .1909E+02 BASIN STORAGE= .7176E-03 PERCENT ERROR= -.1

          FOR PLAN = 1  RATIO=  .79
            RMAIN2  MANE          2.12    123.29    239.02        .22       5.00    122.55    240.00         .22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1716E+02 EXCESS= .0000E+00 OUTFLOW= .1717E+02 BASIN STORAGE= .6820E-03 PERCENT ERROR= -.1

          FOR PLAN = 1  RATIO=  .76
            RMAIN2  MANE          2.25    111.25    238.63        .20       5.00    111.22    240.00         .20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1599E+02 EXCESS= .0000E+00 OUTFLOW= .1600E+02 BASIN STORAGE= .6662E-03 PERCENT ERROR= -.1

          FOR PLAN = 1  RATIO=  .74
            RMAIN2  MANE          2.24    103.02    239.93        .19       5.00    102.99    240.00         .19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1487E+02 EXCESS= .0000E+00 OUTFLOW= .1488E+02 BASIN STORAGE= .6867E-03 PERCENT ERROR= -.1

          FOR PLAN = 1  RATIO=  .73
            RMAIN2  MANE          2.38     97.38    240.31        .18       5.00     97.05    240.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1421E+02 EXCESS= .0000E+00 OUTFLOW= .1421E+02 BASIN STORAGE= .6739E-03 PERCENT ERROR=  .0

          FOR PLAN = 1  RATIO=  .71
            RMAIN2  MANE          2.29     91.64    244.26        .17       5.00     91.52    240.00         .17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1356E+02 EXCESS= .0000E+00 OUTFLOW= .1357E+02 BASIN STORAGE= .6667E-03 PERCENT ERROR= -.1

          FOR PLAN = 1  RATIO=  .86
             RLONE  MANE          1.22    179.08    227.85        .94       5.00    176.55    230.00         .94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2297E+02 EXCESS= .0000E+00 OUTFLOW= .2298E+02 BASIN STORAGE= .2850E-04 PERCENT ERROR= -.1
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          FOR PLAN = 1  RATIO=  .82
             RLONE  MANE          1.17    165.93    226.92        .87       5.00    164.70    240.00         .87

CONTINUITY SUMMARY (AC-FT)   INFLOW= .2126E+02 EXCESS= .0000E+00 OUTFLOW= .2127E+02 BASIN STORAGE= .3344E-04 PERCENT ERROR=    -.1

          FOR PLAN = 1  RATIO=  .79
             RLONE  MANE          1.19    152.76    228.03        .80       5.00    151.00    230.00         .80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1958E+02 EXCESS= .0000E+00 OUTFLOW= .1960E+02 BASIN STORAGE= .2660E-04 PERCENT ERROR=    -.1

          FOR PLAN = 1  RATIO=  .76
             RLONE  MANE          1.27    143.91    227.45        .75       5.00    142.04    230.00         .75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1841E+02 EXCESS= .0000E+00 OUTFLOW= .1842E+02 BASIN STORAGE= .2821E-04 PERCENT ERROR=    -.1

          FOR PLAN = 1  RATIO=  .74
             RLONE  MANE          1.33    134.35    228.36        .71       5.00    133.18    230.00         .71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1725E+02 EXCESS= .0000E+00 OUTFLOW= .1726E+02 BASIN STORAGE= .3332E-04 PERCENT ERROR=    -.1

          FOR PLAN = 1  RATIO=  .73
             RLONE  MANE          1.30    129.47    227.58        .68       5.00    127.92    230.00         .68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1657E+02 EXCESS= .0000E+00 OUTFLOW= .1658E+02 BASIN STORAGE= .2817E-04 PERCENT ERROR=    -.1

          FOR PLAN = 1  RATIO=  .71
             RLONE  MANE          1.30    123.83    227.34        .65       5.00    122.69    230.00         .65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1589E+02 EXCESS= .0000E+00 OUTFLOW= .1590E+02 BASIN STORAGE= .2461E-04 PERCENT ERROR=    -.1

          FOR PLAN = 1  RATIO=  .86
             R20BG  MANE          2.71    367.56    240.05        .45       5.00    367.54    240.00         .45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4946E+02 EXCESS= .0000E+00 OUTFLOW= .4953E+02 BASIN STORAGE= .5587E-02 PERCENT ERROR=    -.2

          FOR PLAN = 1  RATIO=  .82
             R20BG  MANE          2.92    327.63    239.40        .41       5.00    327.00    240.00         .41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4525E+02 EXCESS= .0000E+00 OUTFLOW= .4533E+02 BASIN STORAGE= .5262E-02 PERCENT ERROR=    -.2

          FOR PLAN = 1  RATIO=  .79
             R20BG  MANE          3.03    289.65    238.10        .38       5.00    289.65    240.00         .38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4126E+02 EXCESS= .0000E+00 OUTFLOW= .4132E+02 BASIN STORAGE= .5303E-02 PERCENT ERROR=    -.2

          FOR PLAN = 1  RATIO=  .76
             R20BG  MANE          3.16    268.07    238.55        .35       5.00    267.83    240.00         .35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3863E+02 EXCESS= .0000E+00 OUTFLOW= .3872E+02 BASIN STORAGE= .5552E-02 PERCENT ERROR=    -.2

          FOR PLAN = 1  RATIO=  .74
             R20BG  MANE          3.25    247.04    239.13        .33       5.00    247.03    240.00         .33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3609E+02 EXCESS= .0000E+00 OUTFLOW= .3616E+02 BASIN STORAGE= .4524E-02 PERCENT ERROR=    -.2

          FOR PLAN = 1  RATIO=  .73
             R20BG  MANE          3.22    235.33    240.98        .32       5.00    234.77    240.00         .32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3457E+02 EXCESS= .0000E+00 OUTFLOW= .3463E+02 BASIN STORAGE= .5237E-02 PERCENT ERROR=    -.2

          FOR PLAN = 1  RATIO=  .71
             R20BG  MANE          3.35    223.02    242.14        .30       5.00    222.37    240.00         .30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3309E+02 EXCESS= .0000E+00 OUTFLOW= .3313E+02 BASIN STORAGE= .4972E-02 PERCENT ERROR=    -.1

          FOR PLAN = 1  RATIO=  .86
             RDRED  MANE          1.15    743.28    286.91        .18       5.00    741.84    285.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1417E+03 EXCESS= .0000E+00 OUTFLOW= .1418E+03 BASIN STORAGE= .3899E-03 PERCENT ERROR=    -.0

          FOR PLAN = 1  RATIO=  .82
             RDRED  MANE          1.24    663.70    287.82        .16       5.00    662.57    290.00         .16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1264E+03 EXCESS= .0000E+00 OUTFLOW= .1264E+03 BASIN STORAGE= .4181E-03 PERCENT ERROR=    -.0

          FOR PLAN = 1  RATIO=  .79
             RDRED  MANE          1.28    585.20    287.78        .14       5.00    584.50    290.00         .14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1115E+03 EXCESS= .0000E+00 OUTFLOW= .1115E+03 BASIN STORAGE= .4183E-03 PERCENT ERROR=    -.0

          FOR PLAN = 1  RATIO=  .76
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          RDRED  MANE          1.43    529.68    288.10        .14       5.00    529.35    290.00          .13

CONTINUITY SUMMARY (AC-FT)   INFLOW= .1012E+03 EXCESS= .0000E+00 OUTFLOW= .1012E+03 BASIN STORAGE= .3930E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .74
          RDRED  MANE          1.45    474.83    287.96        .12       5.00    474.76    290.00          .12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9118E+02 EXCESS= .0000E+00 OUTFLOW= .9121E+02 BASIN STORAGE= .2908E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .73
          RDRED  MANE          1.40    442.36    291.64        .11       5.00    442.30    290.00          .11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8541E+02 EXCESS= .0000E+00 OUTFLOW= .8544E+02 BASIN STORAGE= .3550E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .71
          RDRED  MANE          1.55    410.29    292.90        .10       5.00    410.05    290.00          .10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7971E+02 EXCESS= .0000E+00 OUTFLOW= .7973E+02 BASIN STORAGE= .4040E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
          R20B1  MANE           .46    767.84    290.60        .19       5.00    767.53    290.00          .19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1469E+03 EXCESS= .0000E+00 OUTFLOW= .1469E+03 BASIN STORAGE= .1485E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .82
          R20B1  MANE           .36    687.29    290.80        .17       5.00    686.71    290.00          .17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1311E+03 EXCESS= .0000E+00 OUTFLOW= .1311E+03 BASIN STORAGE= .1373E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .79
          R20B1  MANE           .37    607.51    291.01        .15       5.00    606.93    295.00          .15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1158E+03 EXCESS= .0000E+00 OUTFLOW= .1158E+03 BASIN STORAGE= .1445E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .76
          R20B1  MANE           .41    551.20    290.96        .14       5.00    551.20    295.00          .14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1052E+03 EXCESS= .0000E+00 OUTFLOW= .1052E+03 BASIN STORAGE= .1385E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .74
          R20B1  MANE           .39    496.09    295.60        .12       5.00    496.01    295.00          .12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9497E+02 EXCESS= .0000E+00 OUTFLOW= .9497E+02 BASIN STORAGE= .1447E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .73
          R20B1  MANE           .42    463.29    295.58        .11       5.00    463.18    295.00          .11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8903E+02 EXCESS= .0000E+00 OUTFLOW= .8903E+02 BASIN STORAGE= .1395E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .71
          R20B1  MANE           .45    430.75    295.92        .11       5.00    430.55    295.00          .11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8317E+02 EXCESS= .0000E+00 OUTFLOW= .8317E+02 BASIN STORAGE= .1416E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
          R20BL  MANE           .74    992.39    305.91        .23       5.00    991.94    305.00          .23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2021E+03 EXCESS= .0000E+00 OUTFLOW= .2021E+03 BASIN STORAGE= .2828E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .82
          R20BL  MANE           .75    898.99    305.95        .20       5.00    898.26    305.00          .20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1817E+03 EXCESS= .0000E+00 OUTFLOW= .1818E+03 BASIN STORAGE= .2882E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .79
          R20BL  MANE           .79    806.65    306.48        .18       5.00    805.46    305.00          .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1621E+03 EXCESS= .0000E+00 OUTFLOW= .1621E+03 BASIN STORAGE= .2874E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .76
          R20BL  MANE           .89    740.75    306.19        .17       5.00    739.76    305.00          .17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1486E+03 EXCESS= .0000E+00 OUTFLOW= .1487E+03 BASIN STORAGE= .2820E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .74
          R20BL  MANE           .92    675.52    306.24        .15       5.00    674.47    305.00          .15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1356E+03 EXCESS= .0000E+00 OUTFLOW= .1356E+03 BASIN STORAGE= .2715E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .73
          R20BL  MANE           .90    637.31    307.04        .14       5.00    635.91    305.00          .14
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1279E+03 EXCESS= .0000E+00 OUTFLOW= .1280E+03 BASIN STORAGE= .2923E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .71

R20BL	MANE	1.00	598.87	307.35	.13	5.00	597.55	305.00	.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1205E+03 EXCESS= .0000E+00 OUTFLOW= .1205E+03 BASIN STORAGE= .2804E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

RCRAIG1	MANE	1.32	504.76	287.79	-1.00	5.00	503.70	285.00	-1.00

FOR PLAN = 1 RATIO= .82

RCRAIG1	MANE	1.36	450.73	287.90	-1.00	5.00	449.99	290.00	-1.00

FOR PLAN = 1 RATIO= .79

RCRAIG1	MANE	1.43	397.25	288.61	-1.00	5.00	396.96	290.00	-1.00

FOR PLAN = 1 RATIO= .76

RCRAIG1	MANE	1.47	359.64	288.68	-1.00	5.00	359.49	290.00	-1.00

FOR PLAN = 1 RATIO= .74

RCRAIG1	MANE	1.50	322.43	289.20	-1.00	5.00	322.41	290.00	-1.00

FOR PLAN = 1 RATIO= .73

RCRAIG1	MANE	1.59	300.38	291.14	-1.00	5.00	300.35	290.00	-1.00

FOR PLAN = 1 RATIO= .71

RCRAIG1	MANE	1.62	278.60	292.20	-1.00	5.00	278.45	290.00	-1.00

FOR PLAN = 1 RATIO= .86

R20BJ	MANE	.42	518.06	290.77	35.76	5.00	517.87	290.00	35.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9917E+02 EXCESS= .0000E+00 OUTFLOW= .9917E+02 BASIN STORAGE= .9556E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .82

R20BJ	MANE	.42	463.55	290.96	31.92	5.00	463.28	290.00	31.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8852E+02 EXCESS= .0000E+00 OUTFLOW= .8852E+02 BASIN STORAGE= .9365E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .79

R20BJ	MANE	.50	409.70	291.05	28.20	5.00	409.31	290.00	28.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7820E+02 EXCESS= .0000E+00 OUTFLOW= .7820E+02 BASIN STORAGE= .9415E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .76

R20BJ	MANE	.47	371.67	291.05	25.63	5.00	371.29	295.00	25.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7107E+02 EXCESS= .0000E+00 OUTFLOW= .7107E+02 BASIN STORAGE= .9506E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .74

R20BJ	MANE	.55	334.04	294.56	23.12	5.00	334.04	295.00	23.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6413E+02 EXCESS= .0000E+00 OUTFLOW= .6413E+02 BASIN STORAGE= .9302E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .73

R20BJ	MANE	.50	311.89	295.20	21.69	5.00	311.87	295.00	21.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6014E+02 EXCESS= .0000E+00 OUTFLOW= .6014E+02 BASIN STORAGE= .9372E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .71

R20BJ	MANE	.53	289.90	295.76	20.26	5.00	289.85	295.00	20.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5618E+02 EXCESS= .0000E+00 OUTFLOW= .5618E+02 BASIN STORAGE= .9269E-04 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

RCRAIG2	MANE	.99	1262.31	287.23	-1.00	5.00	1260.28	285.00	-1.00

FOR PLAN = 1 RATIO= .82

RCRAIG2	MANE	1.10	1126.83	287.73	-1.00	5.00	1124.82	290.00	-1.00

FOR PLAN = 1 RATIO= .79

RCRAIG2	MANE	1.03	993.79	287.33	-1.00	5.00	992.37	290.00	-1.00

FOR PLAN = 1 RATIO= .76

RCRAIG2	MANE	1.12	899.55	287.47	-1.00	5.00	898.82	290.00	-1.00

FOR PLAN = 1 RATIO= .74

RCRAIG2	MANE	1.13	806.35	287.54	-1.00	5.00	806.21	290.00	-1.00

FOR PLAN = 1 RATIO= .73

RCRAIG2	MANE	1.26	751.18	291.69	-1.00	5.00	751.13	290.00	-1.00

FOR PLAN = 1 RATIO= .71

RCRAIG2	MANE	1.22	696.82	292.17	-1.00	5.00	696.45	290.00	-1.00

FOR PLAN = 1 RATIO= .86

1R20BK	MANE	.40	1270.83	289.73	91.12	5.00	1270.82	290.00	91.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2430E+03 EXCESS= .0000E+00 OUTFLOW= .2430E+03 BASIN STORAGE= .1754E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .82

1R20BK	MANE	.33	1135.96	290.41	81.26	5.00	1135.88	290.00	81.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2167E+03 EXCESS= .0000E+00 OUTFLOW= .2167E+03 BASIN STORAGE= .1711E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .79

1R20BK	MANE	.40	1002.65	290.64	71.70	5.00	1002.48	290.00	71.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1912E+03 EXCESS= .0000E+00 OUTFLOW= .1912E+03 BASIN STORAGE= .1694E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .76

1R20BK	MANE	.30	908.67	290.51	65.11	5.00	908.27	290.00	65.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1736E+03 EXCESS= .0000E+00 OUTFLOW= .1736E+03 BASIN STORAGE= .1706E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .74

1R20BK	MANE	.35	815.53	290.63	58.69	5.00	814.98	290.00	58.70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1565E+03 EXCESS= .0000E+00 OUTFLOW= .1565E+03 BASIN STORAGE= .1799E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .73

1R20BK	MANE	.35	760.18	290.74	54.99	5.00	759.50	290.00	55.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1466E+03 EXCESS= .0000E+00 OUTFLOW= .1466E+03 BASIN STORAGE= .1811E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .71

1R20BK	MANE	.37	705.19	290.82	51.33	5.00	704.95	295.00	51.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1369E+03 EXCESS= .0000E+00 OUTFLOW= .1369E+03 BASIN STORAGE= .1753E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

2R20BK	MANE	1.06	2587.25	297.33	.52	5.00	2584.45	295.00	.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4699E+03 EXCESS= .0000E+00 OUTFLOW= .4700E+03 BASIN STORAGE= .3200E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .82

2R20BK	MANE	1.14	2305.98	297.12	.46	5.00	2303.94	300.00	.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4145E+03 EXCESS= .0000E+00 OUTFLOW= .4146E+03 BASIN STORAGE= .2736E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .79

2R20BK	MANE	1.11	2027.70	297.73	.40	5.00	2027.27	300.00	.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3607E+03 EXCESS= .0000E+00 OUTFLOW= .3608E+03 BASIN STORAGE= .3342E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .76

2R20BK	MANE	1.27	1831.69	300.76	.36	5.00	1831.51	300.00	.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3240E+03 EXCESS= .0000E+00 OUTFLOW= .3240E+03 BASIN STORAGE= .3074E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .74

2R20BK	MANE	1.20	1639.11	302.55	.32	5.00	1637.76	300.00	.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2881E+03 EXCESS= .0000E+00 OUTFLOW= .2882E+03 BASIN STORAGE= .3140E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .73

2R20BK	MANE	1.36	1524.21	302.62	.30	5.00	1522.24	300.00	.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2675E+03 EXCESS= .0000E+00 OUTFLOW= .2675E+03 BASIN STORAGE= .2866E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .71

2R20BK	MANE	1.29	1410.23	302.31	.27	5.00	1408.04	305.00	.27

CONTINUITY SUMMARY (AC-FT) INFLOW= .2471E+03 EXCESS= .0000E+00 OUTFLOW= .2472E+03 BASIN STORAGE= .4117E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

RHICKAM	MANE	5.00	1.00	242.35	.00	5.00	1.00	245.00	.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1579E+00 EXCESS= .0000E+00 OUTFLOW= .1585E+00 BASIN STORAGE= .5877E-04 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .82

RHICKAM	MANE	5.00	1.00	248.92	.00	5.00	1.00	250.00	.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1479E+00 EXCESS= .0000E+00 OUTFLOW= .1487E+00 BASIN STORAGE= .6068E-04 PERCENT ERROR= -.6

FOR PLAN = 1 RATIO= .79

RHICKAM	MANE	5.00	.99	251.02	.00	5.00	.98	250.00	.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1370E+00 EXCESS= .0000E+00 OUTFLOW= .1377E+00 BASIN STORAGE= .6927E-04 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= .76

RHICKAM	MANE	5.00	.93	251.93	.00	5.00	.92	255.00	.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1284E+00 EXCESS= .0000E+00 OUTFLOW= .1294E+00 BASIN STORAGE= .5944E-04 PERCENT ERROR= -.9

FOR PLAN = 1 RATIO= .74

RHICKAM	MANE	5.00	.86	255.30	.00	5.00	.86	255.00	.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1199E+00 EXCESS= .0000E+00 OUTFLOW= .1205E+00 BASIN STORAGE= .5983E-04 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= .73

RHICKAM	MANE	4.68	.83	253.66	.00	5.00	.83	255.00	.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1149E+00 EXCESS= .0000E+00 OUTFLOW= .1156E+00 BASIN STORAGE= .5881E-04 PERCENT ERROR= -.6

FOR PLAN = 1 RATIO= .71

RHICKAM	MANE	4.69	.79	255.81	.00	5.00	.78	255.00	.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1099E+00 EXCESS= .0000E+00 OUTFLOW= .1101E+00 BASIN STORAGE= .6972E-04 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .86

R17BH	MANE	3.66	13.57	223.55	.02	5.00	14.03	220.00	.02

CONTINUITY SUMMARY (AC-FT) INFLOW= .1434E+01 EXCESS= .0000E+00 OUTFLOW= .1438E+01 BASIN STORAGE= .2189E-03 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= .82

R17BH	MANE	3.77	12.55	223.87	.02	5.00	12.15	225.00	.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1330E+01 EXCESS= .0000E+00 OUTFLOW= .1336E+01 BASIN STORAGE= .2288E-03 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= .79

R17BH	MANE	3.83	11.49	221.28	.02	5.00	11.23	225.00	.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1226E+01 EXCESS= .0000E+00 OUTFLOW= .1233E+01 BASIN STORAGE= .2298E-03 PERCENT ERROR= -.6

FOR PLAN = 1 RATIO= .76

R17BH	MANE	3.99	10.80	224.38	.01	5.00	10.68	225.00	.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1153E+01 EXCESS= .0000E+00 OUTFLOW= .1161E+01 BASIN STORAGE= .2069E-03 PERCENT ERROR= -.7

FOR PLAN = 1 RATIO= .74

R17BH	MANE	4.07	10.15	224.86	.01	5.00	10.11	225.00	.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1080E+01 EXCESS= .0000E+00 OUTFLOW= .1087E+01 BASIN STORAGE= .2166E-03 PERCENT ERROR= -.6

FOR PLAN = 1 RATIO= .73

R17BH	MANE	4.06	9.89	222.16	.01	5.00	9.52	225.00	.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1037E+01 EXCESS= .0000E+00 OUTFLOW= .1043E+01 BASIN STORAGE= .1886E-03 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= .71

R17BH	MANE	4.23	9.44	224.79	.01	5.00	9.38	225.00	.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9944E+00 EXCESS= .0000E+00 OUTFLOW= .1003E+01 BASIN STORAGE= .2013E-03 PERCENT ERROR= -.9

FOR PLAN = 1 RATIO= .86

R17BG	MANE	1.94	67.84	223.58	.09	5.00	67.19	225.00	.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7531E+01 EXCESS= .0000E+00 OUTFLOW= .7541E+01 BASIN STORAGE= .3612E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .82

R17BG	MANE	2.05	63.04	224.00	.08	5.00	62.45	225.00	.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6985E+01 EXCESS= .0000E+00 OUTFLOW= .6994E+01 BASIN STORAGE= .3711E-03 PERCENT ERROR= -.1

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          FOR PLAN = 1  RATIO=  .79
             R17BG  MANE          2.06     57.97    224.50        .07       5.00     57.68    225.00         .07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6445E+01 EXCESS= .0000E+00 OUTFLOW= .6457E+01 BASIN STORAGE= .3501E-03 PERCENT ERROR=    .2

          FOR PLAN = 1  RATIO=  .76
             R17BG  MANE          2.07     54.17    225.46        .07       5.00     54.11    225.00         .07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6067E+01 EXCESS= .0000E+00 OUTFLOW= .6080E+01 BASIN STORAGE= .3451E-03 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .74
             R17BG  MANE          2.17     51.21    224.53        .07       5.00     51.01    225.00         .07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5693E+01 EXCESS= .0000E+00 OUTFLOW= .5703E+01 BASIN STORAGE= .3966E-03 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .73
             R17BG  MANE          2.21     49.12    224.39        .06       5.00     48.89    225.00         .06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5465E+01 EXCESS= .0000E+00 OUTFLOW= .5476E+01 BASIN STORAGE= .3660E-03 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .71
             R17BG  MANE          2.15     47.13    224.14        .06       5.00     46.94    225.00         .06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5253E+01 EXCESS= .0000E+00 OUTFLOW= .5263E+01 BASIN STORAGE= .4050E-03 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .86
             R17BI  MANE          1.09   2642.68    297.46        .49       5.00   2642.06    300.00         .49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4813E+03 EXCESS= .0000E+00 OUTFLOW= .4814E+03 BASIN STORAGE= .5781E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .82
             R17BI  MANE          1.03   2358.49    301.66        .43       5.00   2357.88    300.00         .43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4251E+03 EXCESS= .0000E+00 OUTFLOW= .4252E+03 BASIN STORAGE= .5996E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .79
             R17BI  MANE          1.25   2077.74    302.43        .37       5.00   2076.36    300.00         .37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3706E+03 EXCESS= .0000E+00 OUTFLOW= .3707E+03 BASIN STORAGE= .5654E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .76
             R17BI  MANE          1.28   1879.65    302.35        .34       5.00   1877.13    300.00         .34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3332E+03 EXCESS= .0000E+00 OUTFLOW= .3333E+03 BASIN STORAGE= .5803E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .74
             R17BI  MANE          1.27   1683.72    302.45        .30       5.00   1680.34    305.00         .30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2968E+03 EXCESS= .0000E+00 OUTFLOW= .2969E+03 BASIN STORAGE= .5866E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .73
             R17BI  MANE          1.35   1566.69    302.64        .28       5.00   1564.35    305.00         .28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2758E+03 EXCESS= .0000E+00 OUTFLOW= .2759E+03 BASIN STORAGE= .5638E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .71
             R17BI  MANE          1.25   1450.72    302.87        .26       5.00   1449.29    305.00         .26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2552E+03 EXCESS= .0000E+00 OUTFLOW= .2552E+03 BASIN STORAGE= .5878E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
             R14CH  MANE          2.58     21.86    219.30        .97       5.00     21.75    220.00         .97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2064E+01 EXCESS= .0000E+00 OUTFLOW= .2071E+01 BASIN STORAGE= .2873E-04 PERCENT ERROR=   -.3

          FOR PLAN = 1  RATIO=  .82
             R14CH  MANE          2.66     20.79    220.22        .90       5.00     20.64    220.00         .90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1913E+01 EXCESS= .0000E+00 OUTFLOW= .1922E+01 BASIN STORAGE= .2875E-04 PERCENT ERROR=   -.5

          FOR PLAN = 1  RATIO=  .79
             R14CH  MANE          2.74     18.59    219.36        .83       5.00     18.56    220.00         .83

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1764E+01 EXCESS= .0000E+00 OUTFLOW= .1771E+01 BASIN STORAGE= .3523E-04 PERCENT ERROR=    .4

          FOR PLAN = 1  RATIO=  .76
             R14CH  MANE          2.78     17.89    220.07        .78       5.00     17.84    220.00         .78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1659E+01 EXCESS= .0000E+00 OUTFLOW= .1668E+01 BASIN STORAGE= .3655E-04 PERCENT ERROR=   -.6
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          FOR PLAN = 1  RATIO=  .74
             R14CH  MANE          2.83     16.90     220.37        .73       5.00      16.66     220.00          .73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1556E+01 EXCESS= .0000E+00 OUTFLOW= .1565E+01 BASIN STORAGE= .3849E-04 PERCENT ERROR=   -.6

          FOR PLAN = 1  RATIO=  .73
             R14CH  MANE          3.02     15.80     219.94        .70       5.00      15.79     220.00          .71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1495E+01 EXCESS= .0000E+00 OUTFLOW= .1504E+01 BASIN STORAGE= .3381E-04 PERCENT ERROR=   -.6

          FOR PLAN = 1  RATIO=  .71
             R14CH  MANE          2.93     15.44     221.67        .68       5.00      14.91     220.00          .68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1435E+01 EXCESS= .0000E+00 OUTFLOW= .1443E+01 BASIN STORAGE= .3508E-04 PERCENT ERROR=   -.6

          FOR PLAN = 1  RATIO=  .86
             R14CF  MANE          4.69      3.40     230.94        .02       5.00       2.89     230.00          .02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1482E+00 EXCESS= .0000E+00 OUTFLOW= .1590E+00 BASIN STORAGE= .5050E-04 PERCENT ERROR=  -7.3

          FOR PLAN = 1  RATIO=  .82
             R14CF  MANE          4.89       .96     241.22        .02       5.00        .95     240.00          .02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1104E+00 EXCESS= .0000E+00 OUTFLOW= .1120E+00 BASIN STORAGE= .5453E-04 PERCENT ERROR=  -1.5

          FOR PLAN = 1  RATIO=  .79
             R14CF  MANE          4.93       .88     240.51        .01       5.00        .85     245.00          .01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1005E+00 EXCESS= .0000E+00 OUTFLOW= .1014E+00 BASIN STORAGE= .5935E-04 PERCENT ERROR=  -1.0

          FOR PLAN = 1  RATIO=  .76
             R14CF  MANE          5.00       .81     239.85        .01       5.00        .81     240.00          .01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9353E-01 EXCESS= .0000E+00 OUTFLOW= .9520E-01 BASIN STORAGE= .5493E-04 PERCENT ERROR=  -1.8

          FOR PLAN = 1  RATIO=  .74
             R14CF  MANE          5.00       .75     243.94        .01       5.00        .74     245.00          .01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8675E-01 EXCESS= .0000E+00 OUTFLOW= .8926E-01 BASIN STORAGE= .5209E-04 PERCENT ERROR=  -3.0

          FOR PLAN = 1  RATIO=  .73
             R14CF  MANE          5.00       .71     240.77        .01       5.00        .70     245.00          .01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8276E-01 EXCESS= .0000E+00 OUTFLOW= .8503E-01 BASIN STORAGE= .5278E-04 PERCENT ERROR=  -2.8

          FOR PLAN = 1  RATIO=  .71
             R14CF  MANE          5.00       .68     242.79        .01       5.00        .67     245.00          .01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7883E-01 EXCESS= .0000E+00 OUTFLOW= .8050E-01 BASIN STORAGE= .5963E-04 PERCENT ERROR=  -2.2

          FOR PLAN = 1  RATIO=  .86
             R14CG  MANE          2.55     28.25     221.58        .30       5.00      27.87     220.00          .30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2966E+01 EXCESS= .0000E+00 OUTFLOW= .2975E+01 BASIN STORAGE= .1754E-03 PERCENT ERROR=   -.3

          FOR PLAN = 1  RATIO=  .82
             R14CG  MANE          2.58     26.35     220.43        .27       5.00      26.01     220.00          .27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2708E+01 EXCESS= .0000E+00 OUTFLOW= .2717E+01 BASIN STORAGE= .1700E-03 PERCENT ERROR=   -.3

          FOR PLAN = 1  RATIO=  .79
             R14CG  MANE          2.60     24.23     220.77        .25       5.00      23.67     220.00          .25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2490E+01 EXCESS= .0000E+00 OUTFLOW= .2496E+01 BASIN STORAGE= .1801E-03 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .76
             R14CG  MANE          2.64     22.79     220.17        .24       5.00      22.63     220.00          .24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2339E+01 EXCESS= .0000E+00 OUTFLOW= .2349E+01 BASIN STORAGE= .1560E-03 PERCENT ERROR=   -.4

          FOR PLAN = 1  RATIO=  .74
             R14CG  MANE          2.71     21.27     220.74        .22       5.00      20.70     220.00          .22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2190E+01 EXCESS= .0000E+00 OUTFLOW= .2201E+01 BASIN STORAGE= .1550E-03 PERCENT ERROR=   -.5

          FOR PLAN = 1  RATIO=  .73
             R14CG  MANE          2.91     20.17     222.93        .21       5.00      19.95     220.00          .21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2101E+01 EXCESS= .0000E+00 OUTFLOW= .2110E+01 BASIN STORAGE= .1782E-03 PERCENT ERROR=   -.4
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          FOR PLAN = 1  RATIO=  .71
             R14CG  MANE          2.81     19.47    222.13        .20       5.00      19.02     225.00          .20

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2013E+01 EXCESS= .0000E+00 OUTFLOW= .2023E+01 BASIN STORAGE= .1736E-03 PERCENT ERROR=   -.5

          FOR PLAN = 1  RATIO=  .86
             R14CI  MANE          1.18     49.84    222.34        .41       5.00      48.94     220.00          .41

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5260E+01 EXCESS= .0000E+00 OUTFLOW= .5264E+01 BASIN STORAGE= .1471E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .82
             R14CI  MANE          1.13     46.40    222.21        .38       5.00      45.13     220.00          .38

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4819E+01 EXCESS= .0000E+00 OUTFLOW= .4824E+01 BASIN STORAGE= .1857E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .79
             R14CI  MANE          1.17     42.07    221.65        .34       5.00      41.12     220.00          .44

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4417E+01 EXCESS= .0000E+00 OUTFLOW= .4421E+01 BASIN STORAGE= .1391E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .76
             R14CI  MANE          1.20     39.88    221.94        .32       5.00      38.63     220.00          .32

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4149E+01 EXCESS= .0000E+00 OUTFLOW= .4153E+01 BASIN STORAGE= .1372E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .74
             R14CI  MANE          1.24     36.66    221.72        .30       5.00      35.67     220.00          .30

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3873E+01 EXCESS= .0000E+00 OUTFLOW= .3877E+01 BASIN STORAGE= .1534E-04 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .73
             R14CI  MANE          1.30     35.48    222.51        .29       5.00      34.07     220.00          .29

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3710E+01 EXCESS= .0000E+00 OUTFLOW= .3713E+01 BASIN STORAGE= .1406E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .71
             R14CI  MANE          1.30     33.47    222.08        .28       5.00      32.36     220.00          .28

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3552E+01 EXCESS= .0000E+00 OUTFLOW= .3555E+01 BASIN STORAGE= .1471E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .86
            RMAIN6  MANE          1.79   1631.52    303.13        .20       5.00    1627.96     300.00          .20

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2018E+03 EXCESS= .0000E+00 OUTFLOW= .2023E+03 BASIN STORAGE= .1907E-02 PERCENT ERROR=   -.3

          FOR PLAN = 1  RATIO=  .82
            RMAIN6  MANE          1.96   1341.93    304.49        .15       5.00    1340.09     305.00          .15

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1557E+03 EXCESS= .0000E+00 OUTFLOW= .1562E+03 BASIN STORAGE= .1957E-02 PERCENT ERROR=   -.3

          FOR PLAN = 1  RATIO=  .79
            RMAIN6  MANE          2.13   1056.61    303.27        .11       5.00    1056.10     305.00          .11

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1129E+03 EXCESS= .0000E+00 OUTFLOW= .1133E+03 BASIN STORAGE= .2119E-02 PERCENT ERROR=   -.3

          FOR PLAN = 1  RATIO=  .76
            RMAIN6  MANE          2.40    855.16    305.63        .08       5.00     854.59     305.00          .08

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .8481E+02 EXCESS= .0000E+00 OUTFLOW= .8521E+02 BASIN STORAGE= .2145E-02 PERCENT ERROR=   -.5

          FOR PLAN = 1  RATIO=  .74
            RMAIN6  MANE          2.58    656.12    305.93        .06       5.00     654.45     305.00          .06

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5904E+02 EXCESS= .0000E+00 OUTFLOW= .5950E+02 BASIN STORAGE= .2289E-02 PERCENT ERROR=   -.8

          FOR PLAN = 1  RATIO=  .73
            RMAIN6  MANE          2.71    537.03    306.40        .04       5.00     534.24     305.00          .04

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4476E+02 EXCESS= .0000E+00 OUTFLOW= .4514E+02 BASIN STORAGE= .2376E-02 PERCENT ERROR   -.8

          FOR PLAN = 1  RATIO=  .71
            RMAIN6  MANE          3.10    418.95    307.46        .03       5.00     417.42     310.00          .03

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3192E+02 EXCESS= .0000E+00 OUTFLOW= .3222E+02 BASIN STORAGE= .2162E-02 PERCENT ERROR=   -.9

          FOR PLAN = 1  RATIO=  .86
              R11C  MANE           .55   1242.86    300.93        .13       5.00    1238.90     300.00          .13

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1357E+03 EXCESS= .0000E+00 OUTFLOW= .1358E+03 BASIN STORAGE= .6268E-04 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .82
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            R11C  MANE          .72    945.95    301.76       .09      5.00    941.04    300.00          .09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9584E+02 EXCESS= .0000E+00 OUTFLOW= .9591E+02 BASIN STORAGE= .6509E-04 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .79
            R11C  MANE          .80    652.16    302.04       .06      5.00    649.99    305.00          .06

CONTINUITY SUMMARY (AC-FT)  INFLOW= .6041E+02 EXCESS= .0000E+00 OUTFLOW= .6047E+02 BASIN STORAGE= .6758E-04 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .76
            R11C  MANE          .93    443.91    305.14       .04      5.00    443.08    305.00          .04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4945E+02 EXCESS= .0000E+00 OUTFLOW= .4951E+02 BASIN STORAGE= .6932E-04 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .74
            R11C  MANE         1.12    239.74    306.20       .02      5.00    238.67    305.00          .02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2330E+02 EXCESS= .0000E+00 OUTFLOW= .2334E+02 BASIN STORAGE= .5966E-04 PERCENT ERROR= -.2

        FOR PLAN = 1  RATIO= .73
            R11C  MANE         1.25    140.94    222.95       .02      5.00    137.12    225.00          .02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1706E+02 EXCESS= .0000E+00 OUTFLOW= .1708E+02 BASIN STORAGE= .7128E-04 PERCENT ERROR= -.2

        FOR PLAN = 1  RATIO= .71
            R11C  MANE         1.27    136.00    221.98       .02      5.00    132.49    225.00          .02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1543E+02 EXCESS= .0000E+00 OUTFLOW= .1545E+02 BASIN STORAGE= .7299E-04 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .86
            RD95G  MANE         1.28    485.00    263.69     -1.00      5.00    485.00    265.00        -1.00


        FOR PLAN = 1  RATIO= .82
            RD95G  MANE         1.25    485.00    268.03     -1.00      5.00    485.00    270.00        -1.00


        FOR PLAN = 1  RATIO= .79
            RD95G  MANE         1.32    485.00    277.75     -1.00      5.00    485.00    280.00        -1.00


        FOR PLAN = 1  RATIO= .76
            RD95G  MANE         1.38    485.00    283.07     -1.00      5.00    485.00    285.00        -1.00


        FOR PLAN = 1  RATIO= .74
            RD95G  MANE         1.31    485.00    293.28     -1.00      5.00    485.00    295.00         1.00


        FOR PLAN = 1  RATIO= .73
            RD95G  MANE         1.32    485.00    303.69     -1.00      5.00    485.00    305.00        -1.00


        FOR PLAN = 1  RATIO= .71
            RD95G  MANE         1.45    416.16    312.56     -1.00      5.00    414.95    310.00         5.00


        FOR PLAN = 1  RATIO= .86
            RPT6B  MANE          .68   1761.76    301.21       .23      5.00   1756.58    300.00          .24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2329E+03 EXCESS= .0000E+00 OUTFLOW= .2330E+03 BASIN STORAGE= .2058E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .82
            RPT6B  MANE          .84   1461.43    301.51       .18      5.00   1455.08    300.00          .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1848E+03 EXCESS= .0000E+00 OUTFLOW= .1849E+03 BASIN STORAGE= .2052E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .79
            RPT6B  MANE          .96   1163.28    302.59       .14      5.00   1160.64    305.00          .14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1398E+03 EXCESS= .0000E+00 OUTFLOW= .1399E+03 BASIN STORAGE= .2113E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .76
            RPT6B  MANE          .96    951.59    305.18       .11      5.00    951.56    305.00          .11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1104E+03 EXCESS= .0000E+00 OUTFLOW= .1104E+03 BASIN STORAGE= .1996E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .74
            RPT6B  MANE         1.10    744.41    306.81       .08      5.00    742.47    305.00          .08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8337E+02 EXCESS= .0000E+00 OUTFLOW= .8343E+02 BASIN STORAGE= .1996E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .73
            RPT6B  MANE         1.07    619.53    307.40       .07      5.00    614.48    310.00          .07
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .6811E+02 EXCESS= .0000E+00 OUTFLOW= .6816E+02 BASIN STORAGE= .2005E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .71
           RPT6B  MANE          1.21    496.26    307.37       .05      5.00    494.24    310.00          .05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5443E+02 EXCESS= .0000E+00 OUTFLOW= .5448E+02 BASIN STORAGE= .2093E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .86
            R5A3  MANE           .75   1796.01    301.93       .23      5.00   1789.37    300.00          .23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2412E+03 EXCESS= .0000E+00 OUTFLOW= .2413E+03 BASIN STORAGE= .2605E-02 PERCENT ERROR=  .0

        FOR PLAN = 1  RATIO= .82
            R5A3  MANE           .77   1493.18    301.92       .18      5.00   1489.02    305.00          .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1924E+03 EXCESS= .0000E+00 OUTFLOW= .1925E+03 BASIN STORAGE= .2582E-02 PERCENT ERROR=  .0

        FOR PLAN = 1  RATIO= .79
            R5A3  MANE           .89   1191.73    305.47       .14      5.00   1191.67    305.00          .14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1469E+03 EXCESS= .0000E+00 OUTFLOW= .1470E+03 BASIN STORAGE= .2484E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .76
            R5A3  MANE           .99    980.13    306.55       .11      5.00    978.80    305.00          .11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1169E+03 EXCESS= .0000E+00 OUTFLOW= .1170E+03 BASIN STORAGE= .2600E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .74
            R5A3  MANE           .97    770.26    306.83       .09      5.00    764.77    305.00          .09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8958E+02 EXCESS= .0000E+00 OUTFLOW= .8964E+02 BASIN STORAGE= .2495E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .73
            R5A3  MANE          1.13    640.75    307.81       .07      5.00    638.43    310.00          .07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7408E+02 EXCESS= .0000E+00 OUTFLOW= .7415E+02 BASIN STORAGE= .2426E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .71
            R5A3  MANE          1.12    515.04    311.23       .06      5.00    514.63    310.00          .06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6017E+02 EXCESS= .0000E+00 OUTFLOW= .6021E+02 BASIN STORAGE= .2432E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .86
            R5A8  MANE           .67   1287.03    301.57       .18      5.00   1283.86    305.00          .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1840E+03 EXCESS= .0000E+00 OUTFLOW= .1840E+03 BASIN STORAGE= .2296E-02 PERCENT ERROR=  .0

        FOR PLAN = 1  RATIO= .82
            R5A8  MANE           .68   1084.60    305.13       .14      5.00   1084.58    305.00          .14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1499E+03 EXCESS= .0000E+00 OUTFLOW= .1499E+03 BASIN STORAGE= .2354E-02 PERCENT ERROR=  .0

        FOR PLAN = 1  RATIO= .79
            R5A8  MANE           .71    886.83    306.51       .11      5.00    885.62    305.00          .11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1176E+03 EXCESS= .0000E+00 OUTFLOW= .1177E+03 BASIN STORAGE= .2288E-02 PERCENT ERROR=  .0

        FOR PLAN = 1  RATIO= .76
            R5A8  MANE           .90    744.51    306.17       .09      5.00    742.17    305.00          .09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9600E+02 EXCESS= .0000E+00 OUTFLOW= .9603E+02 BASIN STORAGE= .2378E-02 PERCENT ERROR=  .0

        FOR PLAN = 1  RATIO= .74
            R5A8  MANE           .96    589.42    306.91       .07      5.00    586.38    310.00          .07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7575E+02 EXCESS= .0000E+00 OUTFLOW= .7579E+02 BASIN STORAGE= .2371E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .73
            R5A8  MANE           .97    494.19    310.97       .06      5.00    493.97    310.00          .06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6427E+02 EXCESS= .0000E+00 OUTFLOW= .6430E+02 BASIN STORAGE= .2371E-02 PERCENT ERROR=  .0

        FOR PLAN = 1  RATIO= .71
            R5A8  MANE           .97    403.57    312.18       .05      5.00    400.70    310.00          .05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5389E+02 EXCESS= .0000E+00 OUTFLOW= .5391E+02 BASIN STORAGE= .2313E-02 PERCENT ERROR= -.1

        FOR PLAN = 1  RATIO= .86
           RD95B  MANE          1.39     95.17    237.14     -1.00      5.00     94.40    235.00        -1.00
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 FOR PLAN = 1  RATIO=  .82
   RD95B  MANE          1.43     82.51    237.51     -1.00      5.00     80.87    235.00     -1.00


 FOR PLAN = 1  RATIO=  .79
   RD95B  MANE          1.51     69.03    237.92     -1.00      5.00     68.03    240.00     -1.00


 FOR PLAN = 1  RATIO=  .76
   RD95B  MANE          1.60     62.60    238.48     -1.00      5.00     62.06    240.00     -1.00


 FOR PLAN = 1  RATIO=  .74
   RD95B  MANE          1.74     57.47    239.29     -1.00      5.00     57.30    240.00     -1.00


 FOR PLAN = 1  RATIO=  .73
   RD95B  MANE          1.64     54.42    239.30     -1.00      5.00     54.34    240.00     -1.00


 FOR PLAN = 1  RATIO=  .71
   RD95B  MANE          1.81     51.19    240.31     -1.00      5.00     51.17    240.00     -1.00


 FOR PLAN = 1  RATIO=  .86
   R2MAIN  MANE         1.97     85.51    237.89      4.58      5.00     84.91    235.00      4.58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1195E+02 EXCESS= .0000E+00 OUTFLOW= .1197E+02 BASIN STORAGE= .5075E-03 PERCENT ERROR=   -.1

 FOR PLAN = 1  RATIO=  .82
   R2MAIN  MANE         2.08     75.12    239.61      4.20      5.00     74.89    240.00      4.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1095E+02 EXCESS= .0000E+00 OUTFLOW= .1097E+02 BASIN STORAGE= .4640E-03 PERCENT ERROR=   -.1

 FOR PLAN = 1  RATIO=  .79
   R2MAIN  MANE         2.11     64.95    239.30      3.84      5.00     64.66    240.00      3.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1001E+02 EXCESS= .0000E+00 OUTFLOW= .1002E+02 BASIN STORAGE= .5242E-03 PERCENT ERROR=   -.1

 FOR PLAN = 1  RATIO=  .76
   R2MAIN  MANE         2.16     59.75    237.94      3.61      5.00     59.67    240.00      3.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9420E+01 EXCESS= .0000E+00 OUTFLOW= .9432E+01 BASIN STORAGE= .4696E-03 PERCENT ERROR=   -.1

 FOR PLAN = 1  RATIO=  .74
   R2MAIN  MANE         2.23     55.10    240.58      3.39      5.00     55.10    240.00      3.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8846E+01 EXCESS= .0000E+00 OUTFLOW= .8856E+01 BASIN STORAGE= .5188E-03 PERCENT ERROR=   -.1

 FOR PLAN = 1  RATIO=  .73
   R2MAIN  MANE         2.30     52.34    239.96      3.26      5.00     52.34    240.00      3.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8508E+01 EXCESS= .0000E+00 OUTFLOW= .8515E+01 BASIN STORAGE= .4766E-03 PERCENT ERROR=   -.1

 FOR PLAN = 1  RATIO=  .71
   R2MAIN  MANE         2.39     49.46    239.67      3.13      5.00     49.46    240.00      3.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8174E+01 EXCESS= .0000E+00 OUTFLOW= .8181E+01 BASIN STORAGE= .5107E-03 PERCENT ERROR=   -.1

 FOR PLAN = 1  RATIO=  .86
   R3MAIN  MANE         2.23     93.19    239.47      2.80      5.00     92.91    240.00      2.80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1476E+02 EXCESS= .0000E+00 OUTFLOW= .1478E+02 BASIN STORAGE= .8404E-03 PERCENT ERROR=   -.1

 FOR PLAN = 1  RATIO=  .82
   R3MAIN  MANE         2.27     82.77    239.04      2.59      5.00     82.55    240.00      2.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1367E+02 EXCESS= .0000E+00 OUTFLOW= .1370E+02 BASIN STORAGE= .8347E-03 PERCENT ERROR=   -.2

 FOR PLAN = 1  RATIO=  .79
   R3MAIN  MANE         2.45     74.49    228.52      2.40      5.00     74.48    230.00      2.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1262E+02 EXCESS= .0000E+00 OUTFLOW= .1265E+02 BASIN STORAGE= .7993E-03 PERCENT ERROR=   -.2

 FOR PLAN = 1  RATIO=  .76
   R3MAIN  MANE         2.51     69.83    228.40      2.27      5.00     69.75    230.00      2.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1195E+02 EXCESS= .0000E+00 OUTFLOW= .1197E+02 BASIN STORAGE= .7861E-03 PERCENT ERROR=   -.2

 FOR PLAN = 1  RATIO=  .74
   R3MAIN  MANE         2.57     65.43    228.67      2.14      5.00     65.25    230.00      2.14
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CONTINUITY SUMMARY (AC-FT)   INFLOW= .1328E+02 EXCESS= .0000E+00 OUTFLOW= .1331E+02 BASIN STORAGE= .8698E-03 PERCENT ERROR= -.2

          FOR PLAN = 1  RATIO= .73
            R3MAIN  MANE          2.50     62.63    227.19      2.07      5.00     62.49    240.00         .07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1089E+02 EXCESS= .0000E+00 OUTFLOW= .1092E+02 BASIN STORAGE= .8342E-03 PERCENT ERROR= -.2

          FOR PLAN = 1  RATIO= .71
            R3MAIN  MANE          2.61     60.35    226.94      1.99      5.00     60.12    240.00        1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1051E+02 EXCESS= .0000E+00 OUTFLOW= .1053E+02 BASIN STORAGE= .7879E-03 PERCENT ERROR= -.2

          FOR PLAN = 1  RATIO= .86
            R4MAIN  MANE          1.09    106.76    226.78      1.76      5.00    105.96    225.00        1.76

CONTINUITY SUMMARY (AC-FT)   INFLOW= .1658E+02 EXCESS= .0000E+00 OUTFLOW= .1659E+02 BASIN STORAGE= .4657E-03 PERCENT ERROR= -.0

          FOR PLAN = 1  RATIO= .82
            R4MAIN  MANE          1.13     98.88    226.48      1.63      5.00     98.32    225.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1540E+02 EXCESS= .0000E+00 OUTFLOW= .1542E+02 BASIN STORAGE= .4659E-03 PERCENT ERROR= -.1

          FOR PLAN = 1  RATIO= .79
            R4MAIN  MANE          1.08     91.06    226.71      1.51      5.00     90.47    225.00        1.51

CONTINUITY SUMMARY (AC-FT)   INFLOW= .1425E+02 EXCESS= .0000E+00 OUTFLOW= .1426E+02 BASIN STORAGE= .4729E-03 PERCENT ERROR= -.1

          FOR PLAN = 1  RATIO= .76
            R4MAIN  MANE          1.27     85.82    226.95      1.43      5.00     85.46    225.00        1.43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1349E+02 EXCESS= .0000E+00 OUTFLOW= .1350E+02 BASIN STORAGE= .4622E-03 PERCENT ERROR= -.1

          FOR PLAN = 1  RATIO= .74
            R4MAIN  MANE          1.21     80.77    226.67      1.35      5.00     80.40    225.00        1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1274E+02 EXCESS= .0000E+00 OUTFLOW= .1275E+02 BASIN STORAGE= .4700E-03 PERCENT ERROR= -.1

          FOR PLAN = 1  RATIO= .73
            R4MAIN  MANE          1.20     78.17    226.77      1.30      5.00     77.80    225.00        1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1231E+02 EXCESS= .0000E+00 OUTFLOW= .1232E+02 BASIN STORAGE= .4750E-03 PERCENT ERROR= -.1

          FOR PLAN = 1  RATIO= .71
            R4MAIN  MANE          1.21     75.21    227.20      1.26      5.00     74.84    225.00        1.26

CONTINUITY SUMMARY (AC-FT)   INFLOW= .1187E+02 EXCESS= .0000E+00 OUTFLOW= .1187E+02 BASIN STORAGE= .4770E-03 PERCENT ERROR= -.0

          FOR PLAN = 1  RATIO= .86
            RPT2A2  MANE          2.19     34.21    219.49      1.07      5.00     34.13    220.00        1.07

CONTINUITY SUMMARY (AC-FT)   INFLOW= .3529E+01 EXCESS= .0000E+00 OUTFLOW= .3549E+01 BASIN STORAGE= .7360E-04 PERCENT ERROR= -.4

          FOR PLAN = 1  RATIO= .82
            RPT2A2  MANE          2.19     31.71    220.97       .99      5.00     31.51    220.00         .99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3281E+01 EXCESS= .0000E+00 OUTFLOW= .3290E+01 BASIN STORAGE= .5148E-04 PERCENT ERROR= -.3

          FOR PLAN = 1  RATIO= .79
            RPT2A2  MANE          2.20     29.49    220.46       .92      5.00     29.26    220.00         .92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3038E+01 EXCESS= .0000E+00 OUTFLOW= .3048E+01 BASIN STORAGE= .5584E-04 PERCENT ERROR= -.3

          FOR PLAN = 1  RATIO= .76
            RPT2A2  MANE          2.25     27.86    220.64       .87      5.00     27.57    220.00         .87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2867E+01 EXCESS= .0000E+00 OUTFLOW= .2875E+01 BASIN STORAGE= .9284E-04 PERCENT ERROR= -.3

          FOR PLAN = 1  RATIO= .74
            RPT2A2  MANE          2.32     26.28    220.28       .82      5.00     26.10    220.00         .82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2698E+01 EXCESS= .0000E+00 OUTFLOW= .2707E+01 BASIN STORAGE= .6124E-04 PERCENT ERROR= -.3

          FOR PLAN = 1  RATIO= .73
            RPT2A2  MANE          2.48     25.36    219.79       .79      5.00     25.35    220.00         .79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2597E+01 EXCESS= .0000E+00 OUTFLOW= .2607E+01 BASIN STORAGE= .7495E-04 PERCENT ERROR= -.4

          FOR PLAN = 1  RATIO= .71
            RPT2A2  MANE          2.42     24.40    219.87       .76      5.00     24.39    220.00         .76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2498E+01 EXCESS= .0000E+00 OUTFLOW= .2507E+01 BASIN STORAGE= .6411E-04 PERCENT ERROR= -.4
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FOR PLAN = 1 RATIO= .86

RD95E	MANE	1.38	180.00	203.44	-1.00	5.00	180.00	205.00	-1.00

FOR PLAN = 1 RATIO= .82

RD95E	MANE	1.43	180.00	209.24	-1.00	5.00	180.00	210.00	-1.00

FOR PLAN = 1 RATIO= .79

RD95E	MANE	1.27	180.00	212.60	-1.00	5.00	180.00	215.00	-1.00

FOR PLAN = 1 RATIO= .76

RD95E	MANE	1.41	180.00	214.01	-1.00	5.00	180.00	215.00	-1.00

FOR PLAN = 1 RATIO= .74

RD95E	MANE	1.40	180.00	213.93	-1.00	5.00	180.00	215.00	-1.00

FOR PLAN = 1 RATIO= .73

RD95E	MANE	1.35	180.00	217.77	-1.00	5.00	180.00	220.00	-1.00

FOR PLAN = 1 RATIO= .71

RD95E	MANE	1.32	180.00	217.67	-1.00	5.00	180.00	220.00	-1.00

FOR PLAN = 1 RATIO= .86

RDPT2A1	MANE	1.63	159.07	223.59	5.77	5.00	158.29	225.00	5.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3908E+02 EXCESS= .0000E+00 OUTFLOW= .3910E+02 BASIN STORAGE= .6939E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .82

RDPT2A1	MANE	1.71	153.86	224.62	5.57	5.00	153.71	225.00	5.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3770E+02 EXCESS= .0000E+00 OUTFLOW= .3772E+02 BASIN STORAGE= .6976E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .79

RDPT2A1	MANE	1.64	149.73	223.14	5.38	5.00	149.41	225.00	5.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3640E+02 EXCESS= .0000E+00 OUTFLOW= .3642E+02 BASIN STORAGE= .6683E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .76

RDPT2A1	MANE	1.61	146.37	224.45	5.23	5.00	146.23	225.00	5.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3539E+02 EXCESS= .0000E+00 OUTFLOW= .3541E+02 BASIN STORAGE= .6687E-03 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .74

RDPT2A1	MANE	1.74	143.44	224.20	5.09	5.00	143.25	225.00	5.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3446E+02 EXCESS= .0000E+00 OUTFLOW= .3447E+02 BASIN STORAGE= .6740E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .73

RDPT2A1	MANE	1.64	141.69	224.27	5.01	5.00	141.49	225.00	5.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3391E+02 EXCESS= .0000E+00 OUTFLOW= .3392E+02 BASIN STORAGE= .7179E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .71

RDPT2A1	MANE	1.75	139.81	224.43	4.91	5.00	139.67	225.00	4.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3327E+02 EXCESS= .0000E+00 OUTFLOW= .3328E+02 BASIN STORAGE= .6840E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .86

R2B1	MANE	.34	192.48	220.65	4.07	5.00	191.72	220.00	4.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4315E+02 EXCESS= .0000E+00 OUTFLOW= .4315E+02 BASIN STORAGE= .1247E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .82

R2B1	MANE	.25	185.31	220.48	3.91	5.00	184.50	220.00	3.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4148E+02 EXCESS= .0000E+00 OUTFLOW= .4148E+02 BASIN STORAGE= .1238E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .79

R2B1	MANE	.39	178.27	220.89	3.76	5.00	177.45	220.00	3.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3990E+02 EXCESS= .0000E+00 OUTFLOW= .3990E+02 BASIN STORAGE= .1231E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .76

R2B1	MANE	.37	173.28	221.00	3.65	5.00	172.46	225.00	3.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3870E+02 EXCESS= .0000E+00 OUTFLOW= .3870E+02 BASIN STORAGE= .1227E-03 PERCENT ERROR= .0

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          FOR PLAN = 1  RATIO=  .74
              R2B1  MANE          .32     160.53     220.78       3.54       5.00     167.99     225.00         3.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3756E+02 EXCESS= .0000E+00 OUTFLOW= .3756E+02 BASIN STORAGE= .1247E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .73
              R2B1  MANE          .26     165.34     220.70       3.48       5.00     165.31     225.00         3.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3689E+02 EXCESS= .0000E+00 OUTFLOW= .3689E+02 BASIN STORAGE= .1255E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .71
              R2B1  MANE          .33     162.38     225.27       3.40       5.00     162.15     225.00         3.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3613E+02 EXCESS= .0000E+00 OUTFLOW= .3613E+02 BASIN STORAGE= .1241E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
            R2C2B3  MANE         1.72     192.53     223.39       2.04       5.00     192.22     225.00         2.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4332E+02 EXCESS= .0000E+00 OUTFLOW= .4334E+02 BASIN STORAGE= .1338E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .82
            R2C2B3  MANE         1.76     185.36     223.54       1.96       5.00     185.11     225.00         1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4164E+02 EXCESS= .0000E+00 OUTFLOW= .4165E+02 BASIN STORAGE= .1274E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .79
            R2C2B3  MANE         1.81     178.23     224.19       1.88       5.00     178.19     225.00         1.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4005E+02 EXCESS= .0000E+00 OUTFLOW= .4007E+02 BASIN STORAGE= .1284E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .76
            R2C2B3  MANE         1.85     173.07     226.90       1.83       5.00     172.83     225.00         1.83

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3884E+02 EXCESS= .0000E+00 OUTFLOW= .3885E+02 BASIN STORAGE= .1337E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .74
            R2C2B3  MANE         1.90     168.28     227.80       1.77       5.00     167.67     225.00         1.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3770E+02 EXCESS= .0000E+00 OUTFLOW= .3770E+02 BASIN STORAGE= .1372E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .73
            R2C2B3  MANE         1.79     165.54     227.63       1.74       5.00     164.30     225.00         1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3703E+02 EXCESS= .0000E+00 OUTFLOW= .3704E+02 BASIN STORAGE= .1262E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .71
            R2C2B3  MANE         1.90     161.69     228.05       1.70       5.00     161.08     230.00         1.70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3626E+02 EXCESS= .0000E+00 OUTFLOW= .3627E+02 BASIN STORAGE= .1390E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
            R5REMN  MANE          .84      78.89     226.48        .79       5.00      76.90     225.00          .79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1691E+02 EXCESS= .0000E+00 OUTFLOW= .1691E+02 BASIN STORAGE= .4295E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .82
            R5REMN  MANE          .89      71.96     227.17        .76       5.00      71.13     230.00          .76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1621E+02 EXCESS= .0000E+00 OUTFLOW= .1621E+02 BASIN STORAGE= .4273E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .79
            R5REMN  MANE          .97      69.21     227.28        .73       5.00      68.61     230.00          .73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1559E+02 EXCESS= .0000E+00 OUTFLOW= .1559E+02 BASIN STORAGE= .4238E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .76
            R5REMN  MANE          .86      67.23     226.68        .71       5.00      66.76     230.00          .71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1512E+02 EXCESS= .0000E+00 OUTFLOW= .1512E+02 BASIN STORAGE= .4338E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .74
            R5REMN  MANE          .96      65.23     226.98        .69       5.00      64.97     230.00          .69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1467E+02 EXCESS= .0000E+00 OUTFLOW= .1467E+02 BASIN STORAGE= .4241E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .73
            R5REMN  MANE          .95      63.94     226.97        .68       5.00      63.86     230.00          .68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1441E+02 EXCESS= .0000E+00 OUTFLOW= .1442E+02 BASIN STORAGE= .4462E-03 PERCENT ERROR=    .0
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          FOR PLAN = 1  RATIO=  .71
            R5REMN  MANE          .87     62.59    231.93       .66      5.00     62.19    230.00        .66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1411E+02 EXCESS= .0000E+00 OUTFLOW= .1411E+02 BASIN STORAGE= .4250E-04 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
            RD95F  MANE           .76   1072.00    247.12     -1.00      5.00   1072.00    250.00      -1.00

          FOR PLAN = 1  RATIO=  .82
            RD95F  MANE           .77   1072.00    251.60     -1.00      5.00   1072.00    255.00      -1.00

          FOR PLAN = 1  RATIO=  .79
            RD95F  MANE           .80   1072.00    257.32     -1.00      5.00   1072.00    260.00      -1.00

          FOR PLAN = 1  RATIO=  .76
            RD95F  MANE           .81   1072.00    261.87      1.00      5.00   1072.00    265.00      -1.00

          FOR PLAN = 1  RATIO=  .74
            RD95F  MANE           .74   1072.00    266.54     -1.00      5.00   1072.00    270.00      -1.00

          FOR PLAN = 1  RATIO=  .73
            RD95F  MANE           .74   1072.00    266.70     -1.00      5.00   1072.00    270.00      -1.00

          FOR PLAN = 1  RATIO=  .71
            RD95F  MANE           .78   1072.00    272.06     -1.00      5.00   1072.00    275.00      -1.00

          FOR PLAN = 1  RATIO=  .86
            RPT6A  MANE          1.00   1130.74    296.73     33.01      5.00   1130.27    295.00       33.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3028E+03 EXCESS= .0000E+00 OUTFLOW= .3028E+03 BASIN STORAGE= .5957E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .82
            RPT6A  MANE           .98   1127.57    297.05     31.72      5.00   1127.17    295.00       31.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2910E+03 EXCESS= .0000E+00 OUTFLOW= .2910E+03 BASIN STORAGE= .5615E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .79
            RPT6A  MANE           .98   1124.51    296.54     30.28      5.00   1124.07    295.00       30.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2777E+03 EXCESS= .0000E+00 OUTFLOW= .2777E+03 BASIN STORAGE= .5526E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .76
            RPT6A  MANE           .98   1122.26    296.43     29.16      5.00   1121.86    295.00       29.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2674E+03 EXCESS= .0000E+00 OUTFLOW= .2674E+03 BASIN STORAGE= .6015E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .74
            RPT6A  MANE          1.01   1119.99    296.26     27.87      5.00   1119.65    295.00       27.87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2556E+03 EXCESS= .0000E+00 OUTFLOW= .2556E+03 BASIN STORAGE= .5498E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .73
            RPT6A  MANE          1.09   1118.61    296.00     27.06      5.00   1118.33    295.00       27.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2482E+03 EXCESS= .0000E+00 OUTFLOW= .2483E+03 BASIN STORAGE= .5778E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .71
            RPT6A  MANE          1.01   1117.37    296.68     26.14      5.00   1117.01    295.00       26.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2398E+03 EXCESS= .0000E+00 OUTFLOW= .2398E+03 BASIN STORAGE= .5807E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
            RPT41  MANE          1.41     65.31    218.62       .91      5.00     65.01    220.00        .91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6667E+01 EXCESS= .0000E+00 OUTFLOW= .6678E+01 BASIN STORAGE= .3416E-04 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .82
            RPT41  MANE          1.43     60.44    218.67       .85      5.00     60.20    220.00        .84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6163E+01 EXCESS= .0000E+00 OUTFLOW= .6174E+01 BASIN STORAGE= .2884E-04 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .79
            RPT41  MANE          1.40     55.69    218.02       .78      5.00     55.45    220.00        .78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5668E+01 EXCESS= .0000E+00 OUTFLOW= .5680E+01 BASIN STORAGE= .3144E-04 PERCENT ERROR=    .2

          FOR PLAN = 1  RATIO=  .76
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          RPT41  MANE          1.58     52.25    218.69        .73       5.00      52.10     220.00          .73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5322E+01 EXCESS= .0000E+00 OUTFLOW= .5332E+01 BASIN STORAGE= .2740E-04 PERCENT ERROR=   -.2

       FOR PLAN = 1  RATIO=  .74
          RPT41  MANE          1.54     48.87    218.03        .68       5.00      48.79     220.00          .68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4981E+01 EXCESS= .0000E+00 OUTFLOW= .4991E+01 BASIN STORAGE= .3262E-04 PERCENT ERROR=   -.2

       FOR PLAN = 1  RATIO=  .73
          RPT41  MANE          1.60     46.93    218.65        .66       5.00      46.82     220.00          .65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4780E+01 EXCESS= .0000E+00 OUTFLOW= .4789E+01 BASIN STORAGE= .2704E-04 PERCENT ERROR=   -.2

       FOR PLAN = 1  RATIO=  .71
          RPT41  MANE          1.66     44.92    219.25        .63       5.00      44.87     220.00          .63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4580E+01 EXCESS= .0000E+00 OUTFLOW= .4588E+01 BASIN STORAGE= .3026E-04 PERCENT ERROR=   -.2

       FOR PLAN = 1  RATIO=  .86
          R5A1   MANE           .65   1206.65    296.24      13.53       5.00    1204.53     295.00        13.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3169E+03 EXCESS= .0000E+00 OUTFLOW= .3169E+03 BASIN STORAGE= .4401E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .82
          R5A1   MANE           .59   1198.83    296.54      12.99       5.00    1196.97     295.00        12.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3040E+03 EXCESS= .0000E+00 OUTFLOW= .3040E+03 BASIN STORAGE= .4343E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .79
          R5A1   MANE           .64   1191.09    296.02      12.38       5.00    1189.41     295.00        12.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2898E+03 EXCESS= .0000E+00 OUTFLOW= .2898E+03 BASIN STORAGE= .4310E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .76
          R5A1   MANE           .65   1185.75    296.08      11.91       5.00    1184.06     295.00        11.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2788E+03 EXCESS= .0000E+00 OUTFLOW= .2788E+03 BASIN STORAGE= .4311E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .74
          R5A1   MANE           .59   1180.59    296.12      11.37       5.00    1178.70     295.00        11.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2663E+03 EXCESS= .0000E+00 OUTFLOW= .2663E+03 BASIN STORAGE= .4171E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .73
          R5A1   MANE           .70   1177.15    296.30      11.04       5.00    1175.50     295.00        11.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2585E+03 EXCESS= .0000E+00 OUTFLOW= .2585E+03 BASIN STORAGE= .4395E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .71
          R5A1   MANE           .60   1174.05    296.14      10.66       5.00    1172.30     295.00        10.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2496E+03 EXCESS= .0000E+00 OUTFLOW= .2496E+03 BASIN STORAGE= .4306E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .86
          RPT52  MANE           .35   1231.05    295.83      11.21       5.00    1229.75     295.00        11.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3217E+03 EXCESS= .0000E+00 OUTFLOW= .3217E+03 BASIN STORAGE= .2070E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .82
          RPT52  MANE           .35   1221.92    295.70      10.75       5.00    1220.65     295.00        10.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3085E+03 EXCESS= .0000E+00 OUTFLOW= .3085E+03 BASIN STORAGE= .2034E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .79
          RPT52  MANE           .38   1212.69    295.84      10.24       5.00    1211.50     295.00        10.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2939E+03 EXCESS= .0000E+00 OUTFLOW= .2939E+03 BASIN STORAGE= .2039E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .76
          RPT52  MANE           .28   1206.23    295.74       9.85       5.00    1205.06     295.00         9.85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2827E+03 EXCESS= .0000E+00 OUTFLOW= .2826E+03 BASIN STORAGE= .2041E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .74
          RPT52  MANE           .39   1199.72    295.78       9.41       5.00    1198.60     295.00         9.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2699E+03 EXCESS= .0000E+00 OUTFLOW= .2699E+03 BASIN STORAGE= .2043E-02 PERCENT ERROR=    .0

       FOR PLAN = 1  RATIO=  .73
          RPT52  MANE           .31   1195.81    295.83       9.13       5.00    1194.74     295.00         9.13
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CONTINUITY SUMMARY (AC-FT)   INFLOW= .7620E+03 EXCESS= .0000E+00 OUTFLOW= .7620E+03 BASIN STORAGE= .2053E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .71
             RT52  MANE          .44    1191.90    295.95      8.82      5.00    1190.88    295.00      8.82

CONTINUITY SUMMARY (AC-FT)   INFLOW= .2529E+03 EXCESS= .0000E+00 OUTFLOW= .2529E+03 BASIN STORAGE= .2017E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .86
            R6MAIN  MANE          3.54    835.11     301.63      3.12      5.00    835.07     300.00      4.12

CONTINUITY SUMMARY (AC-FT)   INFLOW= .1675E+03 EXCESS= .0000E+00 OUTFLOW= .1677E+03 BASIN STORAGE= .9601E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .82
            R6MAIN  MANE          1.59    823.68     301.47      2.93      5.00    823.59     300.00      2.93

CONTINUITY SUMMARY (AC-FT)   INFLOW= .1574E+03 EXCESS= .0000E+00 OUTFLOW= .1576E+03 BASIN STORAGE= .9051E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .79
            R6MAIN  MANE          1.49    812.28     301.09      2.73      5.00    812.13     300.00      2.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1461E+03 EXCESS= .0000E+00 OUTFLOW= .1464E+03 BASIN STORAGE= .7953E-03 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .76
            R6MAIN  MANE          1.55    804.17     301.61      2.56      5.00    804.00     300.00      2.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1373E+03 EXCESS= .0000E+00 OUTFLOW= .1375E+03 BASIN STORAGE= .7424E-03 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .74
            R6MAIN  MANE          1.50    796.09     302.28      2.37      5.00    795.89     300.00      2.37

CONTINUITY SUMMARY (AC-FT)   INFLOW= .1273E+03 EXCESS= .0000E+00 OUTFLOW= .1275E+03 BASIN STORAGE= .8888E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .73
            R6MAIN  MANE          1.55    791.14     300.62      2.26      5.00    791.03     300.00      2.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1211E+03 EXCESS= .0000E+00 OUTFLOW= .1212E+03 BASIN STORAGE= .8416E-03 PERCENT ERROR=    .1

          FOR PLAN = 1  RATIO=  .71
            R6MAIN  MANE          1.60    786.34     301.01      2.14      5.00    786.18     300.00      2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1140E+03 EXCESS= .0000E+00 OUTFLOW= .1142E+03 BASIN STORAGE= .9027E-03 PERCENT ERROR=    .2

          FOR PLAN = 1  RATIO=  .86
             R5A2  MANE          4.44     44.30     228.25      1.14      5.00     42.98     230.00      1.14

CONTINUITY SUMMARY (AC-FT)   INFLOW= .4844E+01 EXCESS= .0000E+00 OUTFLOW= .4885E+01 BASIN STORAGE= .3843E-03 PERCENT ERROR=   -.9

          FOR PLAN = 1  RATIO=  .82
             R5A2  MANE          4.54     41.51     229.29      1.07      5.00     40.89     230.00      1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4515E+01 EXCESS= .0000E+00 OUTFLOW= .4551E+01 BASIN STORAGE= .4412E-04 PERCENT ERROR=   -.8

          FOR PLAN = 1  RATIO=  .79
             R5A2  MANE          4.73     37.59     230.97       .99      5.00     37.59     230.00       .99

CONTINUITY SUMMARY (AC-FT)   INFLOW= .4190E+01 EXCESS= .0000E+00 OUTFLOW= .4217E+01 BASIN STORAGE= .4857E-03 PERCENT ERROR=   -.6

          FOR PLAN = 1  RATIO=  .76
             R5A2  MANE          4.74     35.71     231.06       .94      5.00     35.68     230.00       .94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3962E+01 EXCESS= .0000E+00 OUTFLOW= .3996E+01 BASIN STORAGE= .4198E-03 PERCENT ERROR=   -.9

          FOR PLAN = 1  RATIO=  .74
             R5A2  MANE          4.76     34.53     229.75       .88      5.00     34.37     230.00       .88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3736E+01 EXCESS= .0000E+00 OUTFLOW= .3774E+01 BASIN STORAGE= .3923E-03 PERCENT ERROR=  -1.0

          FOR PLAN = 1  RATIO=  .73
             R5A2  MANE          4.90     32.53     226.99       .85      5.00     32.26     230.00       .85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3602E+01 EXCESS= .0000E+00 OUTFLOW= .3634E+01 BASIN STORAGE= .4369E-03 PERCENT ERROR=   -.9

          FOR PLAN = 1  RATIO=  .71
             R5A2  MANE          5.00     32.08     229.58       .82      5.00     31.84     230.00       .82

CONTINUITY SUMMARY (AC-FT)   INFLOW= .1469E+01 EXCESS= .0000E+00 OUTFLOW= .1510E+01 BASIN STORAGE= .4528E-03 PERCENT ERROR=  -1.2

          FOR PLAN = 1  RATIO=  .86
            R7MAIN  MANE           .76    588.39     300.93      1.40      5.00    587.46     300.00      1.40
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .9487E+02 EXCESS= .0000E+00 OUTFLOW= .9495E+02 BASIN STORAGE= .6983E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .82

R7MAIN	MANE	.69	573.10	300.94	1.28	5.00	571.97	300.00	1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8686E+02 EXCESS= .0000E+00 OUTFLOW= .8693E+02 BASIN STORAGE= .5503E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .79

R7MAIN	MANE	1.48	551.15	298.04	1.15	5.00	550.40	300.00	1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7847E+02 EXCESS= .0000E+00 OUTFLOW= .7786E+02 BASIN STORAGE= .5469E-04 PERCENT ERROR= .8

FOR PLAN = 1 RATIO= .76

R7MAIN	MANE	.70	546.52	301.38	1.06	5.00	544.99	300.00	1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7224E+02 EXCESS= .0000E+00 OUTFLOW= .7232E+02 BASIN STORAGE= .7288E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .74

R7MAIN	MANE	.82	534.73	301.46	.96	5.00	533.83	300.00	.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6530E+02 EXCESS= .0000E+00 OUTFLOW= .6538E+02 BASIN STORAGE= .5666E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .73

R7MAIN	MANE	.85	527.99	301.19	.90	5.00	527.16	300.00	.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6122E+02 EXCESS= .0000E+00 OUTFLOW= .6127E+02 BASIN STORAGE= .6006E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .71

R7MAIN	MANE	.75	521.76	301.62	.83	5.00	520.74	300.00	.83

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5640E+02 EXCESS= .0000E+00 OUTFLOW= .5647E+02 BASIN STORAGE= .6032E-04 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .86

R8MAIN	MANE	1.27	219.83	302.51	.21	5.00	214.61	300.00	.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1475E+02 EXCESS= .0000E+00 OUTFLOW= .1480E+02 BASIN STORAGE= .9082E-05 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .82

R8MAIN	MANE	1.29	203.06	302.41	.17	5.00	197.94	300.00	.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1185E+02 EXCESS= .0000E+00 OUTFLOW= .1189E+02 BASIN STORAGE= .1296E-04 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .79

R8MAIN	MANE	1.32	180.50	302.43	.13	5.00	175.97	300.00	.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9520E+01 EXCESS= .0000E+00 OUTFLOW= .9568E+01 BASIN STORAGE= .9817E-05 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= .76

R8MAIN	MANE	1.25	173.93	302.04	.12	5.00	169.55	305.00	.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8485E+01 EXCESS= .0000E+00 OUTFLOW= .8531E+01 BASIN STORAGE= .1260E-04 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= .74

R8MAIN	MANE	1.38	162.12	302.98	.10	5.00	158.10	305.00	.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7422E+01 EXCESS= .0000E+00 OUTFLOW= .7458E+01 BASIN STORAGE= .1005E-04 PERCENT ERROR= -.5

FOR PLAN = 1 RATIO= .73

R8MAIN	MANE	1.44	155.17	302.92	.10	5.00	151.24	305.00	.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6849E+01 EXCESS= .0000E+00 OUTFLOW= .6893E+01 BASIN STORAGE= .1066E-04 PERCENT ERROR= -.6

FOR PLAN = 1 RATIO= .71

R8MAIN	MANE	1.28	147.73	302.01	.09	5.00	144.56	305.00	.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6179E+01 EXCESS= .0000E+00 OUTFLOW= .6214E+01 BASIN STORAGE= .1014E-04 PERCENT ERROR= -.6

*** NORMAL END OF HEC-1 ***

THE Louis Berger Group INC

500 Amigo Court, Suite 100, Las Vegas, NV 89119
Tel 702.736.6632 • Fax 702.736.0704

May 23, 2001

Mr. Kevin Eubanks, Assistant General Manager
Clark County Regional Flood Control District
500 South Grand Central Parkway
Las Vegas, NV 89155

RE: Gowan/Bradley Flood Insurance Study - Project Number CB-849

Dear Mr. Eubanks:

The Louis Berger Group, Inc. is pleased to submit one copy of the Final Technical Support Data Notebook for the Gowan/Bradley Flood Insurance Study (FIS). The notebook provides a complete background for the FIS including meeting minutes, hydraulic models, and the FIS text.

If you have any questions or comments concerning the study, please feel free to call.

Sincerely,

THE LOUIS BERGER GROUP, INC.

Fred Retzlaff

Fred Retzlaff, E.I.
Hydrologist

Syndi Dudley

Syndi Dudley, PhD, P.E.
Director of Water Resources

Cc: Randy Fultz, City of Las Vegas