Delineation of Spillway Flows for Harquahala Flood Retarding Structure

FCD 97-16

Prepared For:

FLOOD CONTROL DISTRICT OF

FLOOD CONTROL DISTRICT of MARICOPA COUNTY 1959

MARICOPA COUNTY

Prepared By:

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS
2633 East Indian School Road, Suite 401
Phoenix, Arizona 85013-6763
Since 1962

Registered Professional Engineer (Civil) CERTIFICATE NO. 21684 BRIAN J. FRY Date Signed 6-1-98 ARIZONA, U.S.A.

JUNE 1998

Table of Contents

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Introduction 1

Purpose 1

Data Collection 1

Mapping 3

Flow Discharges 3

Study Reach 3

Description of Inundation Area 3

Field Reconnaissance Modifications 3

Hydraulic Analysis 4
- Calibration 4
- Cross Section Layout 4
- Roughness Characteristics 4
- Main Channel Station Selection 5
- Ineffective Flow and Levee Options 5
- Split Flow Considerations 6

Granite Reef Aqueduct Crossing 6

Interstate 10 Overflow Conditions 7

Conclusions 8

References 9

Appendices

Appendix A: Field Reconnaissance Report
Appendix B: HEC-RAS Output for One-Third Spillway Discharge
Appendix C: HEC-RAS Output for Two-Thirds Spillway Discharge
Appendix D: HEC-RAS Output for Full Spillway Discharge
Appendix E: Exhibits
Appendix F: Meeting Minutes / Phone Conversation Reports

Registered Professional Engineer (Civil)
CERTIFICATE NO.
21684
BRIAN J.
FRY
Date Signed 6-1-98
ARIZONA, U.S.A.

Introduction

In July 1997, the Flood Control District of Maricopa County contracted with Entellus, Inc. under FCD 97-16, to provide a spillway delineation study for the Harquahala and Saddleback flood retarding structures located in western Maricopa County, near Interstate 10 and the Salome Highway (see general location map, page 2). In August 1997, Entellus, Inc. contracted with Dibble and Associates Consulting Engineers as a subconsultant, to provide the spillway delineation study for the emergency spillway of the Harquahala flood retarding structure. The study consists of the following scenarios:

1. Full spillway discharge
2. Two-thirds spillway discharge
3. One-third spillway discharge

Purpose

The primary purpose of the analysis is to determine the flood inundation limits of the three spillway discharges over the emergency spillway of the Harquahala flood retarding structure. The study results will provide information on velocities, depths of flow, and travel time for the three discharges. If the flow overtops Interstate 10 at the south end of the study area, the limits of overtopping will be specified.

Data Collection

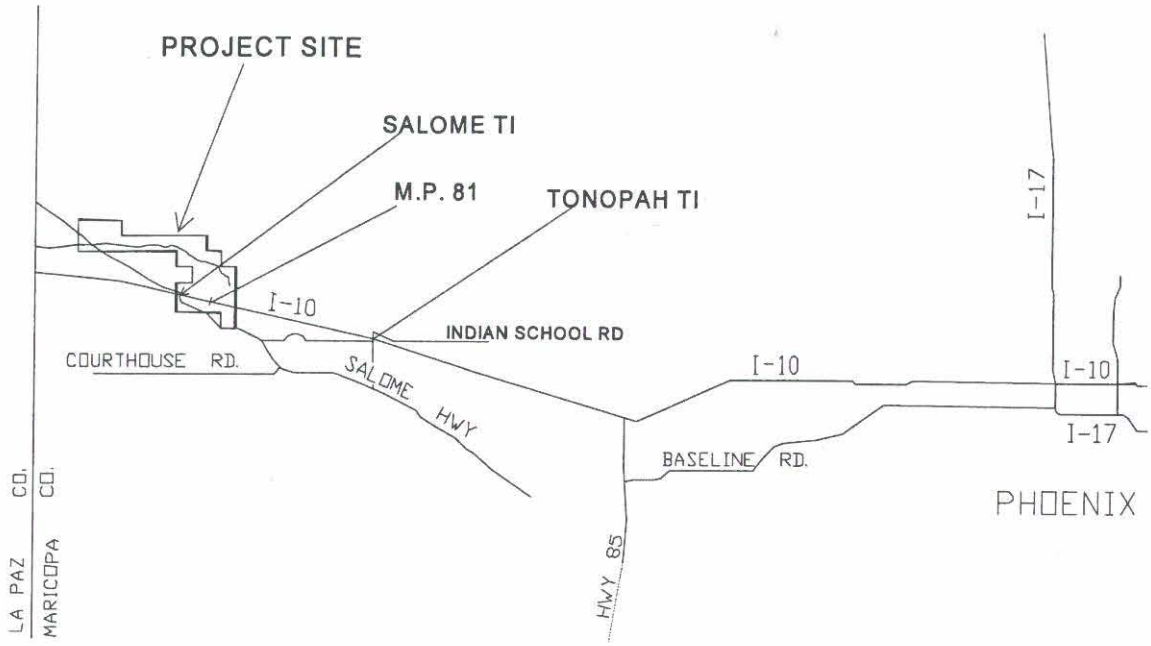
Data was collected from the FCDMC and a field reconnaissance trip as well as various other sources. The data collected from these sources provided the base information needed to perform this study, and included the following:

- -Hard Copy and digital topographic mapping of the study area from FCD 93-51.
- -Harquahala Floodwater Retarding Structure construction plans from the Soil Conservation Service, U.S. Department of Agriculture.
- -As-Built plans of a portion of Interstate 10 in the study area from the Arizona Department of Transportation.

The use of the hard copy and digital topographic mapping was used to define a baseline and cross section layouts.

The Harquahala FRS construction plans provided specific elevation data about the dam, the emergency spillway, and a water surface elevation rating curve for discharge over the spillway.

The As-Built plans of Interstate 10 provided roadway surface elevations and information about the concrete box culverts specified in the HEC-RAS model.



General Location Map

Mapping

Mapping and cross section data used in this study was provided by the FCDMC in the form of AutoCAD drawing files and a Digital Terrain Model (DTM). The original source of this mapping was from contract FCD 93-51 and developed by McLain Aerial, Inc. The data was developed at a scale of 1 in. = 200 feet with a contour interval of 2 feet.

Flow Discharges

Flow discharges (Q's) used in this analysis were provided by the FCDMC. The discharges were originally analyzed in the Harquahala Dam Break Study (FCD 88-66) by Carter Associates, Inc. The full emergency spillway discharge is 15,000 cubic feet per second (cfs); the two-thirds emergency spillway discharge is 10,000 cfs; and the one-third emergency spillway discharge is 5,000 cfs. The full discharge is the rounded value for the half probable maximum flood.

Study Reach

The study reach extends from the centerline of the Harquahala flood retarding structure emergency spillway crest to a point just downstream of Interstate 10. The study area is approximately 2.8 miles long and 1.3 miles wide.

Description of Inundation Area

The area between the Harquahala flood retarding structure and Interstate 10 is open desert with many small natural drainage channels. The area is sparsely vegetated with shrubs and bushes. A few dirt roads are present in the area. A large hill exists just southwest of the emergency spillway. There is a large excavated pit located near the southern end of the project, just north of Interstate 10, possibly used for fill material during construction of the highway. Currently, no development exists in the study area.

Field Reconnaissance Modifications

The field reconnaissance report is attached as Appendix A. The report defines two main reaches in the study area and the respective Manning's "n" values for those reaches. At the time of the field reconnaissance trip, only the main flow channel was identified and characterized. However after initial runs of the HEC-RAS model, the major flow split (and resulting minor flow split) to the west of the hill were identified. The major flow split just north of the borrow pit at the downstream end of the study area was also identified after the initial runs of the HEC-RAS model. Ground photographs were not obtained for the split reaches. Therefore aerial photographs were used to compare the vegetation in the split channel areas to the vegetation in the main channel area. The vegetation in the two split channels is similar, but not as dense as the vegetation in the main flow channel. Based

on these photos and comparisons, Manning's "n" values were assigned to the newly defined reaches. A value of 0.065 was assigned to the Split 1 channel (including Split 1A and Split 1B). A value of 0.075 was assigned to Split 2 channel. As with the main channel, a value of 0.035 was assigned to all of the overbank areas.

Hydraulic Analysis

The U.S. Army Corps of Engineers Hydrologic Engineering Center River Analysis System (HEC-RAS), Version 2.1, was used to perform the hydraulic modeling. The steep slope of the terrain immediately downstream of the emergency spillway suggested a supercritical flow condition, while the raised roadway embankment of Interstate 10 suggested ponding and subcritical flow upstream of the culvert crossings. Therefore, a mixed flow regime was assumed in each of the models.

Version 2.1 of HEC-RAS supports one-dimensional, steady flow, water surface profile calculations. This version does not support sediment transport capabilities.

Calibration

Calibration of the HEC-RAS model with historical data is an important part of the model development. The procedure involves adjusting model parameters until a satisfactory system simulating the observed physical process is obtained which also produces reliable results. A common way in which the HEC-RAS model can be calibrated is to use high water marks at a control section for an observed event (Q) and adjust the manning "n" values to simulate the event. There has been no flow over the spillway since the flood retarding structure has been constructed and there are no high water marks or discharges to calibrate against.

Cross Section Layout

Cross sections were oriented perpendicular to the anticipated flow path. The cross sections are spaced approximately 500 feet apart except where topographical features warranted a deviation from this spacing. Cross sections were developed using the DTM provided by the FCDMC and Eaglepoint Surface Modeling software in conjunction with AutoCAD.

Roughness Characteristics

Manning's "n" values were determined based on field observation using the *Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona* manual developed by the U.S. Geological Survey for the FCDMC. A separate field reconnaissance report including Manning's "n" values is contained in Appendix A.

Main Channel Station Selection

There are several major and minor low flow natural drainage channels in the study area. However all of the channels were formed by natural storm runoff events and have never been subjected to the extreme flows that would occur due to a discharge from the emergency spillway. There is one naturally formed main channel which is located immediately downstream of the emergency spillway. This main channel was chosen as a baseline for river stationing and cross section analysis. The river mile stationing is calculated from the upstream limits of the study area to the downstream limits of the study area and is based on the emergency spillway as river mile 20.0000.

Channel bank stations were selected based on the vegetation features immediately adjacent to the main channel. The edges of the main channel are covered with dense shrubs and trees which moderately obstruct the flow of water during a large flow event. Therefore the shrubs and trees are considered to be in the main channel, while the sparse vegetation outside of this immediate area is considered to be the overbank area. Channel bank stations are identical for analysis of all three discharges.

Ineffective Flow and Levee Options

Horizontal ineffective flow areas were coded out using the *Ineffective Flow Area* option of HEC-RAS. This option was used to model 2:1 contraction and 4:1 expansion of flows. The levee option of HEC-RAS was used to eliminate isolated low areas in the cross section.

The process of identifying inundation limits was iterative. First, an initial run was performed with one of the flood discharges. There were no ineffective flow or levee stations set, allowing the water to spread freely. Then initial levee stations were coded at points which were reasonably close to the thalweg, and the model was re-run. The results of each run were reviewed at each cross-section. If the water surface overtopped the initial levee elevation, new levee stations were coded at locations slightly farther away from the thalweg. The results were again reviewed and the process was repeated as necessary in order to obtain a smooth flow transition from one cross section to the next. This process also eliminated the effect of isolated high spots which were in one cross-section but not in the previous. The isolated high spots limited the lateral flow from spreading to a location where it would be in actuality.

As a result of this iterative process, three separate geometry files are provided, each developed for a specific discharge. The geometry files are not valid for other discharges.

Split Flow Considerations

There are several minor channels in the study area which split away from the main channel, but are contained within the cross section area. For these sections it is assumed that the water surface elevation does not differ between the split channel and the main channel.

There are two major reaches in the study area at which a split flow will occur. The first is immediately downstream of the spillway. At this location (cross-sections 19.9458 through 19.8173), water will exhibit weir flow characteristics spilling out of the main channel to the west and curving around a large hill in the study area. The flow from this split returns to the main channel flow at two locations downstream. The first flow return occurs at cross-section 18.9676. The second flow return occurs at cross-section 18.5237. At this point all of the flow is contained within the main channel cross-sections.

The second major split occurs near cross-section 17.6702, just upstream of the large borrow pit in the study area. The flow in this split fills the borrow pit and then returns to the main channel flow at cross-section 16.8902, at which point all of the flow is again contained within the main channel cross-sections.

The flow values assigned to these splits were obtained by analyzing the HEC-RAS model several times in an iterative process. The flow values in each reach of the split were varied until the energy grade line elevations were balanced at the cross-sections immediately downstream of the split and at the cross-sections immediately upstream of the split return.

During a spillway release event, the large magnitude of flow suggests that the existing ground geometry will likely be eroded and significantly changed. Therefore it is possible that additional split flow channels will be created and flow will stray from the current delineation. It is also likely that the amount of water assigned to a split channel will change significantly. The current delineation is based on an assumed rigid boundary for each corss-section.

Granite Reef Aqueduct Crossing

The Granite Reef Aqueduct crosses the study area immediately downstream of the emergency spillway. For this analysis, it is assumed that the canal has zero flow capacity and that the direction of the flood discharge flows is not affected by the water conveyed in the canal. Therefore the canal is effectively ignored and a discharge from the emergency spillway is assumed to cross over the canal unaffected.

In reality, during a spillway release, some flow will likely be carried to the east and west in the canal. Once the canal has reached capacity, the flow will break out at undetermined locations. It is also possible that the canal will fail structurally due to erosion of the

supporting earth material as the water flows over the embankment. Canal failure will alter the flow conditions assumed at the upstream limit of this study.

Interstate 10 Overflow Conditions

There are three existing 3 barrel, 10 ft by 7 ft concrete box culverts in the study area, including one at the main channel crossing of Interstate 10. The culverts are assumed to adequately convey the natural storm runoff under the roadway. However the three discharges in this study are greater than the flows for which the culverts were designed. In the case of the 5000 cfs spillway discharge, the culverts convey the full flow under the roadway and Interstate 10 is not overtopped at any location. For the 10,000 cfs and 15,000 cfs spillway discharges, the culverts can not adequately convey all of the water under the roadway, and Interstate 10 is overtopped at the locations shown on the exhibits in Appendix E.

In the three analyses of this study it was assumed that the concrete box culverts were clear and free of debris. If the culverts were to become blocked by debris, the inundation limits near the freeway could change, including a greater amount of flow overtopping the roadway.

Conclusions

A discharge from the emergency spillway of the Harquahala flood retarding structure will expose the study area to flows greater than have been previously experienced. The inundation area is fairly well defined by the topography of the study area. The inundation area does not greatly vary between the three discharges which were studied. The inundation areas for all of the flow scenarios have been plotted on Exhibits 1 through 3 (see Appendix E). It is noted that the HEC-RAS geometry files for this analysis are specific to each flow and can only be used with the flow which has been specified for it.

For the flows of 10,000 cfs and 15,000 cfs, Interstate 10 will be overtopped at the limits specified on the exhibits. The flow of 5,000 cfs will be conveyed under Interstate 10 through the existing concrete box culverts. In the three analyses of this study it was assumed that the concrete box culverts were clear and free of debris. If the culverts were to become blocked by debris, the inundation limits near the freeway could change, including a greater amount of flow overtopping the roadway.

It is realized due to the nature of the high flows in the event of a spillway release, that the split flows are subject to change because of erosion. It is also recognized that there will be flow to the east of the inundation limits because of water conveyed in the canal and the possibility of the canal failing. Therefore the inundation limits are likely to change during a spillway release event. It is recommended that very generous evacuation limits be implemented downstream of the spillway.

References

McLain Aerial, Inc., topographic mapping (scale 1 in. = 200 ft, 2 ft contour interval) for *Harquahala FRS and Diversion Channel,* March 9, 1996.

U.S. Army Corps of Engineers, Hydrologic Engineering Center, *HEC-RAS River Analysis System, Hydraulic Reference Manual*, Version 2.0, Davis, CA, April 1997.

U.S. Army Corps of Engineers, Hydrologic Engineering Center, *HEC-RAS River Analysis System, User's Manual*, Version 2.0, Davis, CA, April 1997.

U.S. Geological Survey, Water Resources Division, for the Flood Control District of Maricopa County, *Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona,* Tucson, Arizona, April 1991.

Appendix A: Field Reconnaissance Report

Delineation of Spillway Flows for Harquahala Flood Retarding Structure

FIELD RECONNAISSANCE REPORT

PREPARED FOR

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

CONTRACT FCD 97-16

PREPARED BY

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS
2633 East Indian School Road, Suite 401
Phoenix, Arizona 85016-6763
Since 1962

MARCH 1998

Table of Contents

Introduction A-1

Study Limits A-1

Field Reconnaissance Objectives A-1

Study Area Description A-3

Reach Definition A-3

Hydraulic Structures A-4

HEC-RAS Modeling A-4
- Manning's N Value Selection A-4
- Channel Bank Stations A-5
- Overbank Areas A-5
- Split-Flow Areas A-5
- Photographic Documentation A-5

SUMMARY A-5

Figures

1. General Location Map A-2
2. Typical Main Channel Cross Section A-6

Tables

1. Harquahala FRS Typical "N" Values A-5

Appendices

A. Manning's Roughness Coefficient Worksheets

B. Photographic Documentation

C. Study Area Topography Plots

Introduction

This report summarizes the results of the field reconnaissance for the Harquahala Floodplain Delineation Study (FDS). The purpose of this report is to:

- Document field conditions relevant to floodplain modeling
- Document the methodology used to select Manning's N values

Study Limits

The Harquahala Floodplain Delineation Study limits include an area approximately 2.8 miles long by 1.3 miles wide. The study area begins at the emergency spillway on the Harquahala Flood Retarding Structure in Section 30 of Township 3 North, Range 8 West. The study area ends just south of the Interstate 10 freeway located in Section 11 of Township 2 North, Range 9 West. (See Figure 1 - General Location Map). In the event of a large discharge of water from the emergency spillway, it is assumed that the water will exhibit a river-like flow through (and overtopping) existing natural channels. The general direction of flow will be southwest. The assumption was made for initial modeling purposes that the flow will naturally spread from approximately 400 feet wide to approximately 1400 feet wide in some areas. This assumption will be verified and adjusted during the HEC-RAS modeling.

Field Reconnaissance Objectives

The project team conducted an initial field reconnaissance visit to the study area on November 18, 1997. The overall goal of the field reconnaissance was to become familiar with the study area prior to floodplain modeling. Specific goals of field reconnaissance included the following:

- Identify and confirm a single primary channel of flow throughout the study area
- Identify possible locations of split flow into a side channel
- Document existing vegetation and topography throughout the study area
- Obtain photographic documentation for use in estimating Manning's N values

This report documents the results of the field reconnaissance for the Harquahala Floodplain Delineation Study.

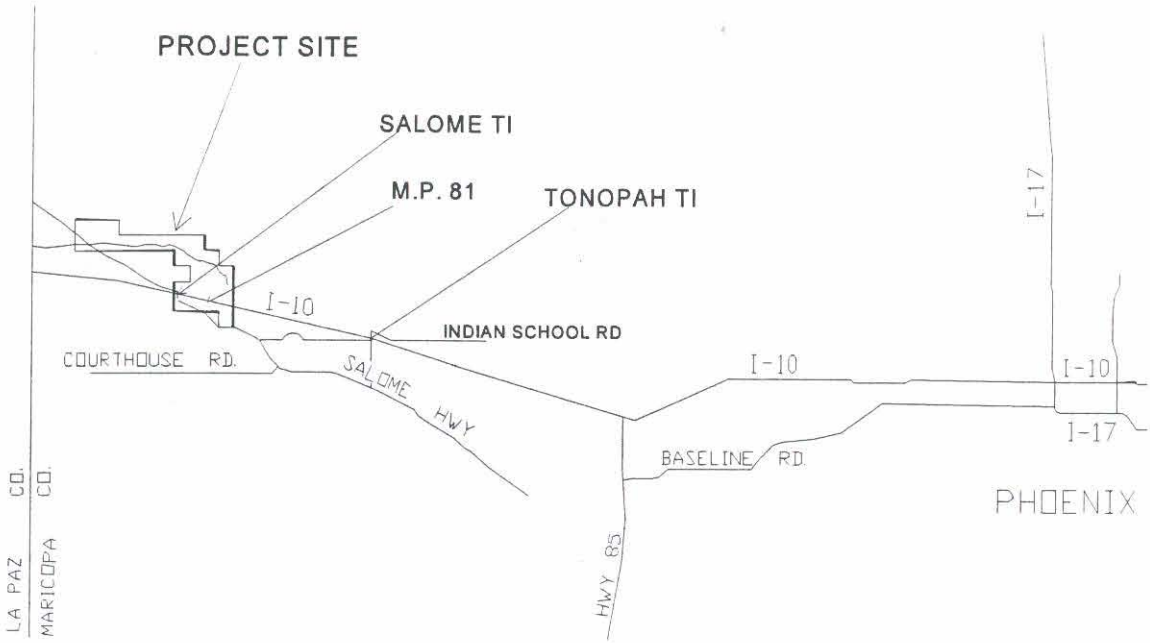


Figure 1 - General Location Map

Study Area Description

The study area is located in western Maricopa County, and is bounded by the Harquahala Flood Retarding Structure (FRS) on the north, and by the Interstate 10 freeway on the south. Immediately south of the FRS, the Granite Reef Aqueduct flows to the southeast. For the purpose of this study it is assumed that all flows are a result of a discharge of water from the emergency spillway in the FRS.

The study area is comprised of many small natural drainage channels which slope to the southwest at a slope of approximately 1.15 percent (61 ft/mi). A single natural primary channel was chosen as the flow centerline for this study. (See Study Area Topography Plots, Appendix C). The study area also consists of many smaller low-flow secondary drainage channels. It is anticipated that spillway flows will overtop the primary channel and spread across several secondary channels approximating a sheet flow condition. The existing terrain has experienced high runoff flows from storm water but has never been subjected to the high magnitude of flows that would result from a discharge of water from the emergency spillway. It is assumed that storm water runoff and other low flows would be confined by the existing natural drainage channels. However in the event of the release of water from the emergency spillway, the watershed will likely exhibit characteristics of unconfined flow. In general, there are no obstructions in the watershed that would cause local ponding during a flood event other than the Interstate 10 roadway embankment and the existing concrete box culverts at the freeway crossing.

Reach Definition

The natural primary drainage channels consist of a gravel and sand bed. The walls of the channel consist of a hardened loamy soil which have been formed by erosion from previous flows. The channel bed is clear of vegetation, however the banks of the channel are lined with dense shrubs and trees which often overhang into the channel bed. The overbank areas along the primary channel as well as the rest of the floodplain consist of sparse shrubs and light vegetation. It is estimated that the natural primary channels will be able to convey a flow of approximately 1000 to 2000 cubic feet per second (cfs).

The smaller low-flow drainage channels are defined by natural soil depressions, and lie within the overbank areas of the primary channels, which consist of sparse shrubs and light vegetation. In the case of a storm event, the secondary channels would tend to convey small amounts of runoff to the larger primary channels. It is estimated that the secondary channels would be able to convey a flow of no more than 50 cfs.

The HEC-RAS hydraulic model will be used to model the floodplain using a general centerline alignment of the single natural primary drainage channel chosen.

Hydraulic Structures

The Granite Reef Aqueduct which is immediately south of the FRS is assumed to not convey any flow of water from the emergency spillway. Therefore the aqueduct is ignored in the analysis and modeling of this watershed.

Near the southwest limits of the study reach, there are three culvert crossings to convey water from the main channel under Interstate 10. Each of the crossings contain three barrel concrete box culverts which are 10 feet wide and 7 feet high. There is no earth fill between the top of the box culverts and the roadway surface. At the southeast limits of the study reach (east of the general centerline alignment) there are 5 other Interstate 10 culvert crossings similar to the above described arrangement.

HEC-RAS Modeling

The Harquahala Floodplain Delineation Study will include HEC-RAS modeling of flow throughout the study area using the natural primary channel chosen as the main path of conveyance. The following HEC-RAS modeling considerations are described in the paragraphs below, based on field reconnaissance data:

- Manning's N value selection
- Determination of channel bank stations
- Determination of channel overbank areas
- Observation of possible split-flow areas
- Photographic documentation of floodplain characteristics

Manning's N Value Selection. Manning's roughness coefficients, or "n" values, were determined using procedures adopted by the FCDMC[1]. In addition, the following materials were used to support the analysis:

- Ground Photographs - Color photographs taken during the field reconnaissance trip.
- Field Data - Hydraulic information and geomorphic data gathered during the field reconnaissance trip.

The FCDMC procedure consists of selection of a base "n" value and addition of several adjustment factors to determine a composite roughness coefficient for hydraulic modeling. The base "n" value accounts for roughness due to the bed material (Table 1, FCDMC Manual). Adjustments to the base "n" value include factors for the degree of channel irregularity, obstructions, vegetation, variations in cross section geometry, and degree of meandering (Table 2, FCDMC Manual). Based on this method, typical "n" values were selected which are shown in Table 1 of this report. Roughness coefficient determination worksheets for selected locations have been included in Appendix A along with

---

[1]Thomsen, B.W., and Hjalmarson, H.W., 1991, *Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona*, Report by the USGS to the FCDMC, April.

photographic documentation for those worksheets.

Table 1. Harquahala Floodplain Delineation Study
Typical "N" Values

Description	Average Value	Range
Main Channel	.085	.035 - .090
Left Overbank (East)	.035	.030 - .045
Right Overbank (West)	.035	.030 - .045

Channel Bank Stations. The bank stations in the HEC-RAS model will be defined by the vegetation immediately adjacent to the main channel. The edges of the main channel are covered with dense shrubs and trees which moderately obstruct the flow of water during a large flow event. Therefore the shrubs and trees are considered to be in the main channel. The high main channel "n" value reflects this condition. Figure 2 represents a typical cross section.

Overbank Areas. The channel overbank areas in the HEC-RAS model will be defined as the floodplain area which extends from the bank station out to the end of the cross-section. The ends of the cross-sections are located at ridges in the topography of the floodplain. The overbank areas consist of light, sparse vegetation, including small shrubs and trees.

Split-Flow Areas. It is possible that during a large flow event such as the release of water from the emergency spillway, the flow will be large enough to not be contained within the bank and overbank areas of the primary channel specified as the main path of conveyance. In this case, water will likely spill over into another primary channel and be conveyed along a different path until return to the main channel flow at a downstream point. There are three locations in the Harquahala floodplain at which split flows are a possibility. If the water does split, a set of cross-sections and geometry will be defined for each path of conveyance for use in the HEC-RAS model.

Photographic Documentation. Photographic documentation of typical field conditions, floodplain delineation reaches and hydraulic structures is provided in Appendix B. Photographs show typical "n" value variation for selected channel reaches.

SUMMARY

Field reconnaissance of the Harquahala FDS study area was conducted to support the floodplain delineation. Field tasks included collection of data to assist in definition of hydraulic controls and identification of significant watershed characteristics. Photographic documentation of channel conditions was provided to support the field reconnaissance report, and is attached as Appendix B.

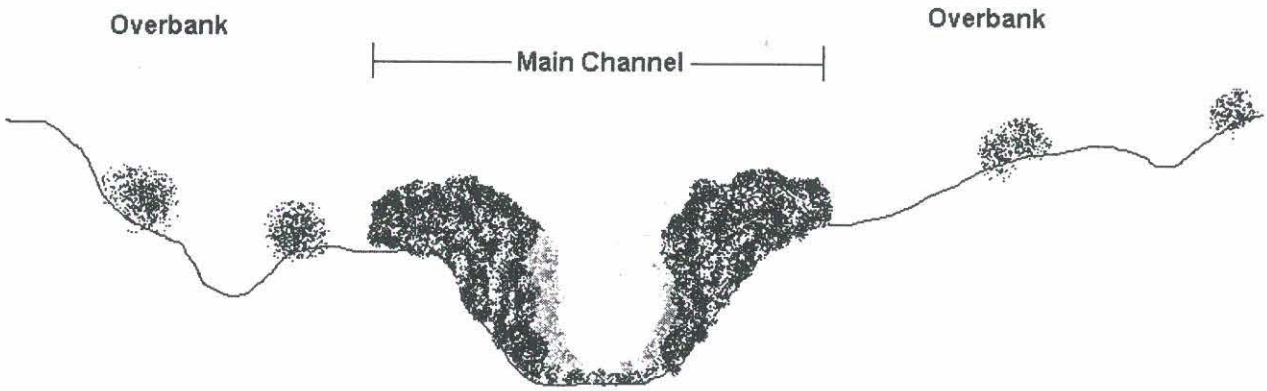


Figure 2 - Typical Main Channel Cross Section

Appendix A: Manning's Roughness Coefficient Worksheets

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Delineation of Spillway Flows for Harquahala and Saddleback Flood Retarding Structures
Stream: Harquahala Floodplain
Location: LOWER MID REACH (typical)
Photo No: A-1, A-2

Channel Conditions		Manning's n Adjustment		Left Overbank (East)	Channel	Right Overbank (West)
Channel Material	Concrete	n_b	.012 - .018			
	Firm Soil		.025 -.032	.025		.025
	Coarse Sand		.026 - .035			
	Gravel		.028 - .035		.028	
	Cobble		.030 - .050			
	Boulder		.040 - .070			
Degree of Irregularity	Smooth	n_1	0			
	Minor		.001 - .005		.005	
	Moderate		.006 - .010			
	Severe		.011 - .020			
Effects of Obstruction	Negligible	n_2	.000 - .004			
	Minor		.005 - .015			
	Appreciable		.020 - .030			
	Severe		.040 - .060			
Vegetation	Small	n_3	.002 - .010			
	Medium		.010 - .025	.010		.010
	Large		.025 - .050		.040	
	Very Large		.050 - .100			
Variations in Channel Cross section	Gradual	n_4	0			
	Occ. Alt.		.001 - .005		.002	
	Freq. Alt.		.010 - .015			
				0.035	0.075	0.035
Degree of Meandering	Minor	m	1	1		1
	Appreciable		1.15		1.15	
	Sever		1.3			
$n = (n_b+n_1+n_2+n_3+n_4)m$				0.035	0.086	0.035

Photo A-1: Main channel looking northeast with large vegetation on banks.

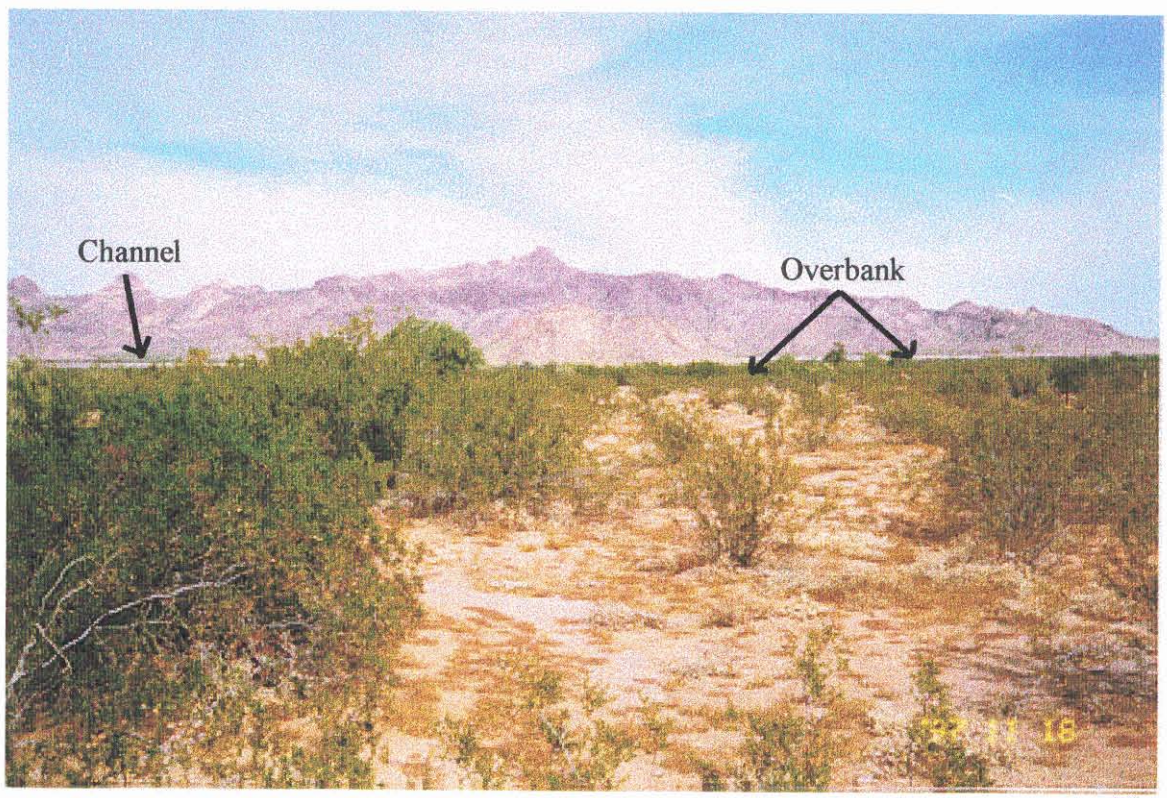


Photo A-2: Left overbank looking southeast with sparse vegetation.

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Delineation of Spillway Flows for Harquahala and Saddleback Flood Retarding Structures
Stream: Harquahala Floodplain
Location: UPPER MID REACH (typical)
Photo No: A-3, A-4

Channel Conditions		Manning's n Adjustment		Left Overbank (East)	Channel	Right Overbank (West)
Channel Material	Concrete	n_b	.012 - .018			
	Firm Soil		.025 -.032			
	Coarse Sand		.026 - .035	.026		.026
	Gravel		.028 - .035		.028	
	Cobble		.030 - .050			
	Boulder		.040 - .070			
Degree of Irregularity	Smooth	n_1	0			
	Minor		.001 - .005		.002	
	Moderate		.006 - .010			
	Severe		.011 - .020			
Effects of Obstruction	Negligible	n_2	.000 - .004			
	Minor		.005 - .015			
	Appreciable		.020 - .030			
	Severe		.040 - .060			
Vegetation	Small	n_3	.002 - .010	.010		.010
	Medium		.010 - .025			
	Large		.025 - .050		.040	
	Very Large		.050 - .100			
Variations in Channel Cross section	Gradual	n_4	0			
	Occ. Alt.		.001 - .005		.001	
	Freq. Alt.		.010 - .015			
				0.036	0.071	0.036
Degree of Meandering	Minor	m	1	1		1
	Appreciable		1.15		1.15	
	Sever		1.3			
$n = (n_b+n_1+n_2+n_3+n_4)m$				0.036	0.082	0.036

Photo A-3: Main channel looking south.

Photo A-4: Left overbank looking east with sparse vegetation.

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Delineation of Spillway Flows for Harquahala and Saddleback Flood Retarding Structures
Stream: Harquahala Floodplain
Location: SPILLWAY IN UPPER REACH
Photo No: A-5

Channel Conditions		Manning's n Adjustment		Left Overbank (East)	Channel	Right Overbank (West)
Channel Material	Concrete	n_b	.012 - .018			
	Firm Soil		.025 -.032			
	Coarse Sand		.026 - .035			
	Gravel		.028 - .035	.028	.028	.028
	Cobble		.030 - .050			
	Boulder		.040 - .070			
Degree of Irregularity	Smooth	n_1	0			
	Minor		.001 - .005		.001	
	Moderate		.006 - .010			
	Severe		.011 - .020			
Effects of Obstruction	Negligible	n_2	.000 - .004			
	Minor		.005 - .015			
	Appreciable		.020 - .030			
	Severe		.040 - .060			
Vegetation	Small	n_3	.002 - .010	.002	.002	.002
	Medium		.010 - .025			
	Large		.025 - .050			
	Very Large		.050 - .100			
Variations in Channel Cross section	Gradual	n_4	0			
	Occ. Alt.		.001 - .005			
	Freq. Alt.		.010 - .015			
				0.03	0.031	0.03
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Sever		1.3			
$n = (n_b+n_1+n_2+n_3+n_4)m$				0.030	0.031	0.030

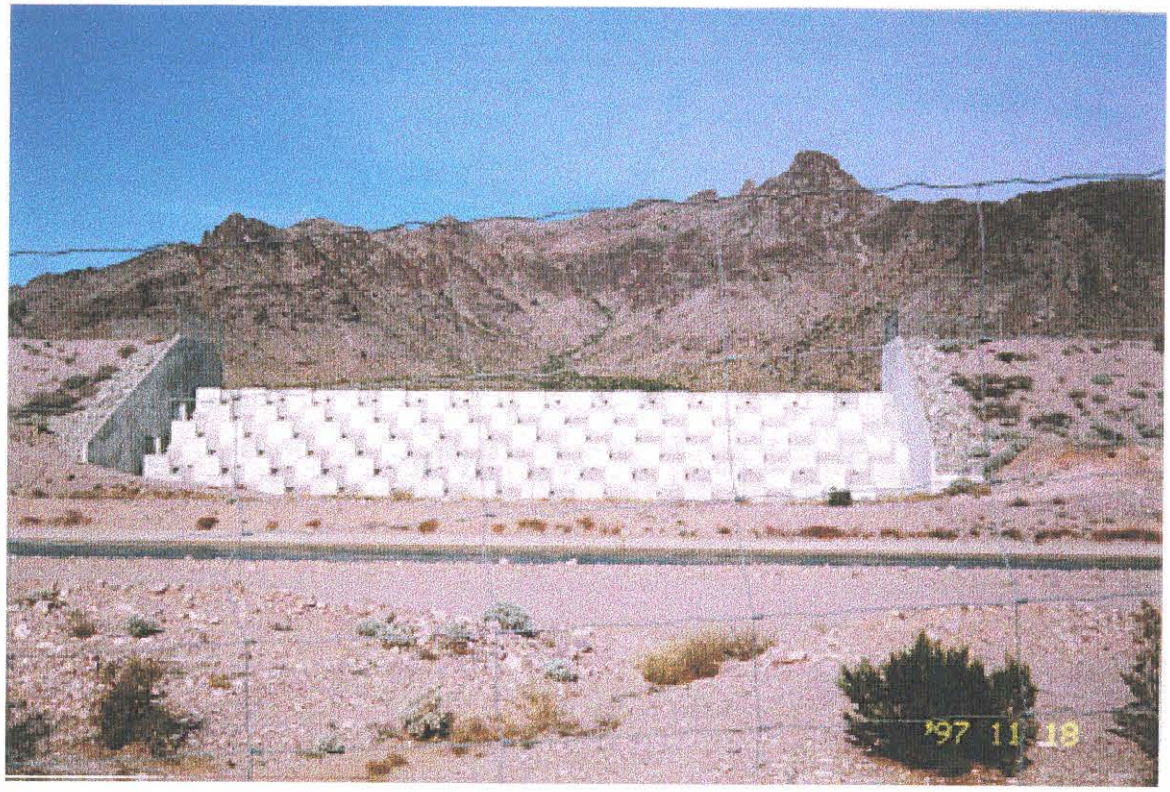


Photo A-5: Emergency Spillway looking north with very little vegetation.

Appendix B: Field Reconnaissance Photographs

Photo B-1: Main channel looking southwest.

Photo B-2: Right overbank looking Northwest.

Photo B-3: Main channel looking northeast.

Photo B-4: Right overbank looking west, just south of emergency spillway.

Photo B-5: Study reach looking south from emergency spillway.

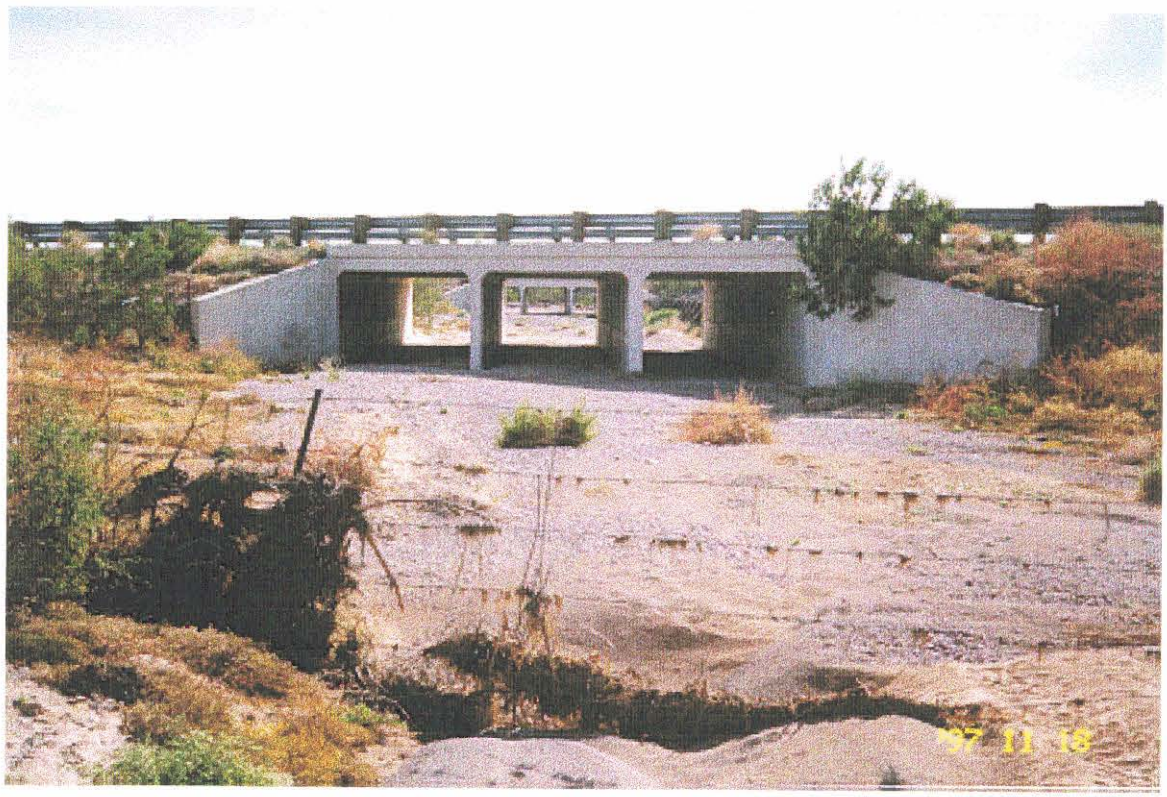
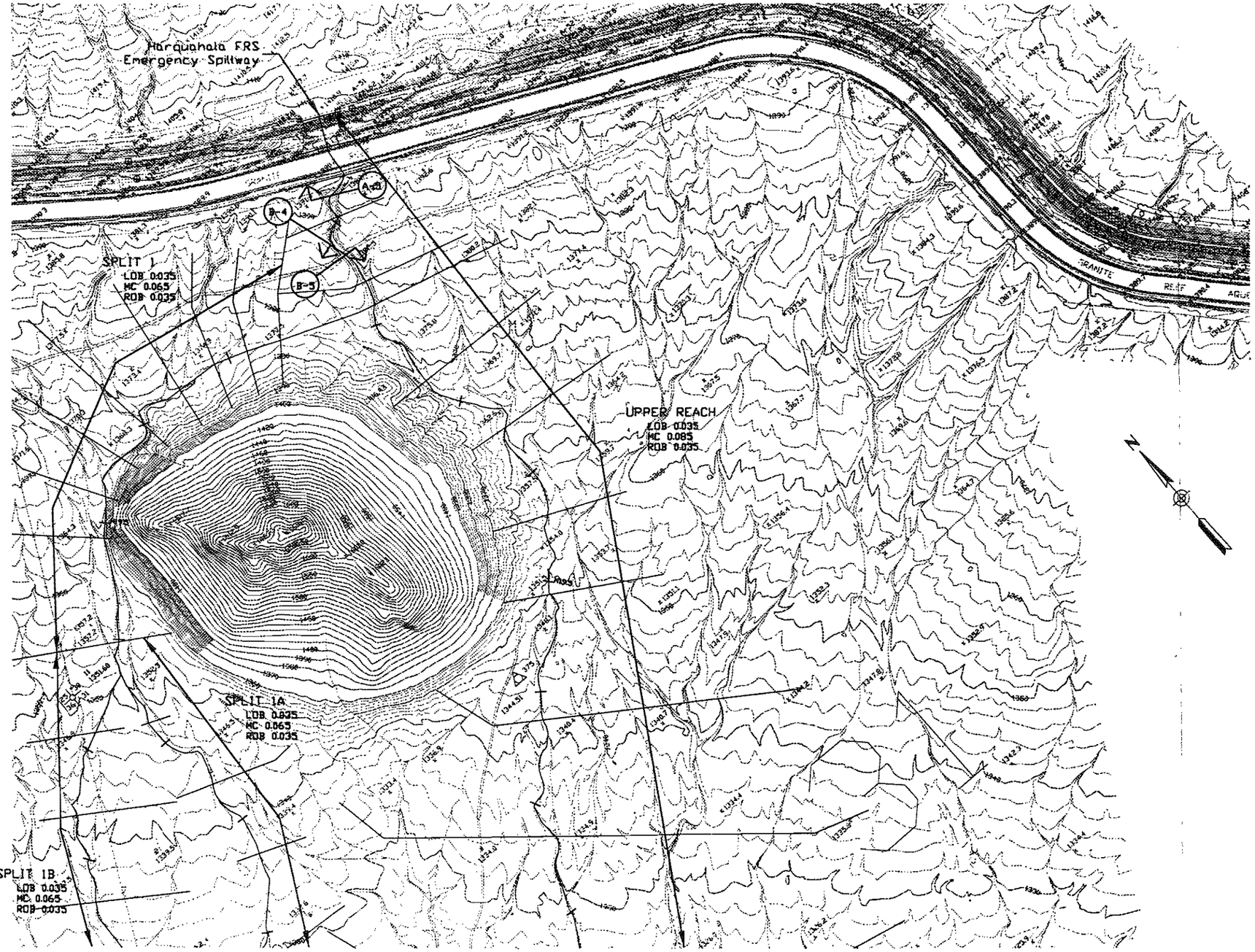


Photo B-6: Concrete box culverts looking south at main channel crossing of Interstate 10.

Appendix C: Study Area Topography Plots



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHAL FRS

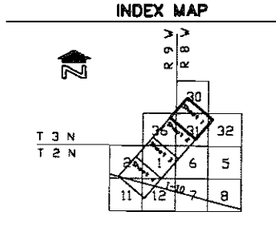
F.C.D. CONTRACT NO. FCD 97-16

LEGEND

A-1 — Photo Location And Direction

REACH LABEL	REACH-1
Left Overbank N-value	LOB 0.035
Main Channel N-value	MC 0.085
Right Overbank N-value	ROB 0.035

INDEX MAP



0 200' 400' 500'

SCALE: 1" = 500'

CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	-	-
DESIGN CHK.	-	-
PLANS	-	-
PLANS CHK.	-	-
SUBMITTED BY:		DATE

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

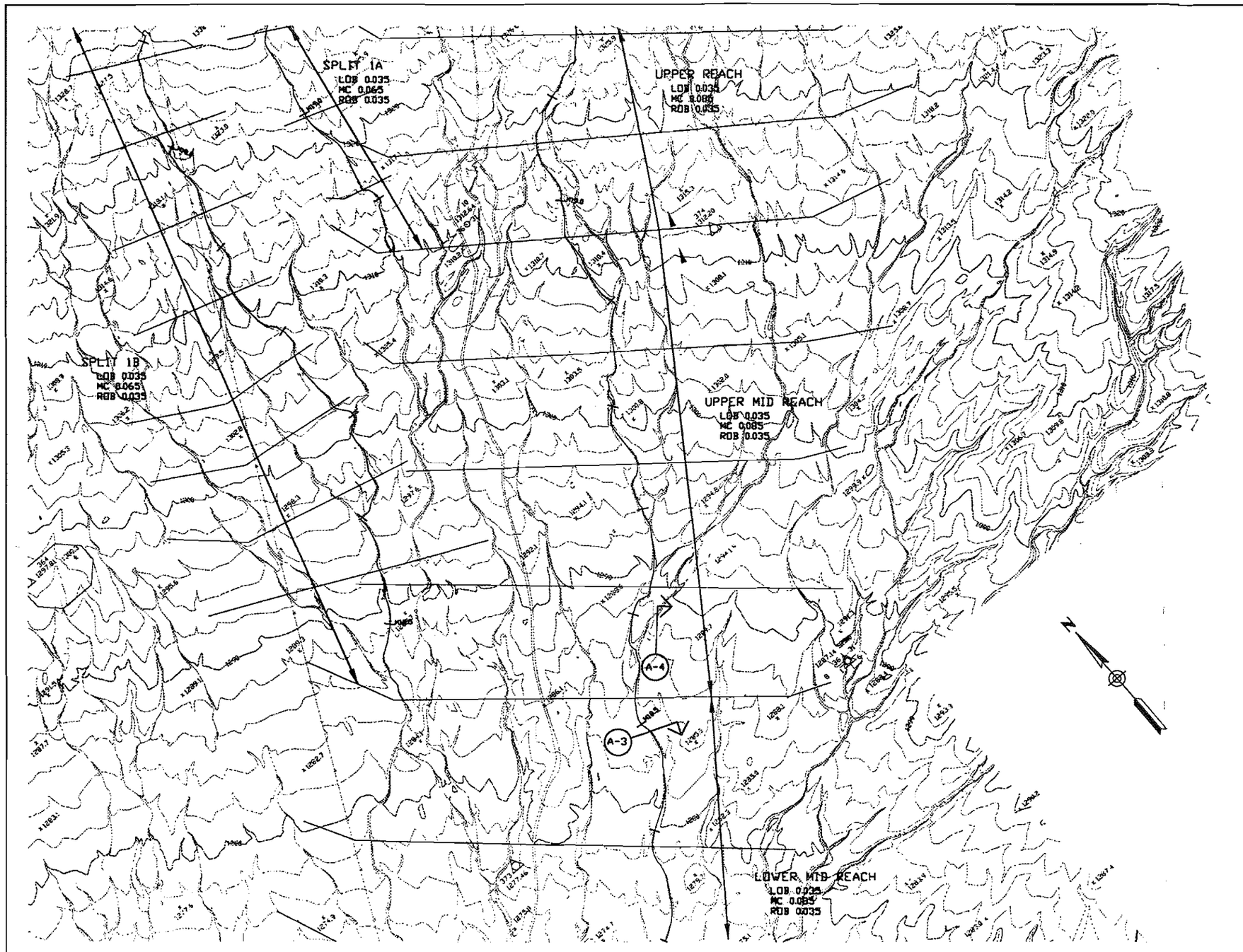
RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 1 OF 4

Filename: J:\9721\ACAD\EXHBSH1.DWG Last Revised: 01/30/1998, 12:06:47 Plot Date: 01/30/1998, 12:06:52
Cross References: 0530=J:\9721\acad\0530.dwg, 0538=J:\9721\acad\0538.dwg, 0531=J:\9721\acad\0531.dwg, CHNL=J:\9721\acad\9721chnl.dwg, EXSH=9721ecsh



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHAL FRS

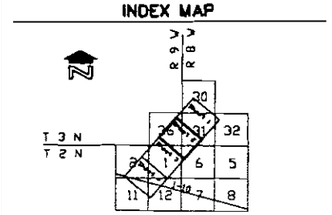
F.C.D. CONTRACT NO. FCD 97-16

LEGEND

A-1 — Photo Location And Direction

REACH LABEL	REACH-1
Left Overbank N-value	LOB 0.035
Main Channel N-value	MC 0.085
Right Overbank N-value	ROB 0.035

INDEX MAP



0 200' 400' 600'

SCALE: 1" = 500'

CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	–	–
DESIGN CHK.	–	–
PLANS	–	–
PLANS CHK.	–	–

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

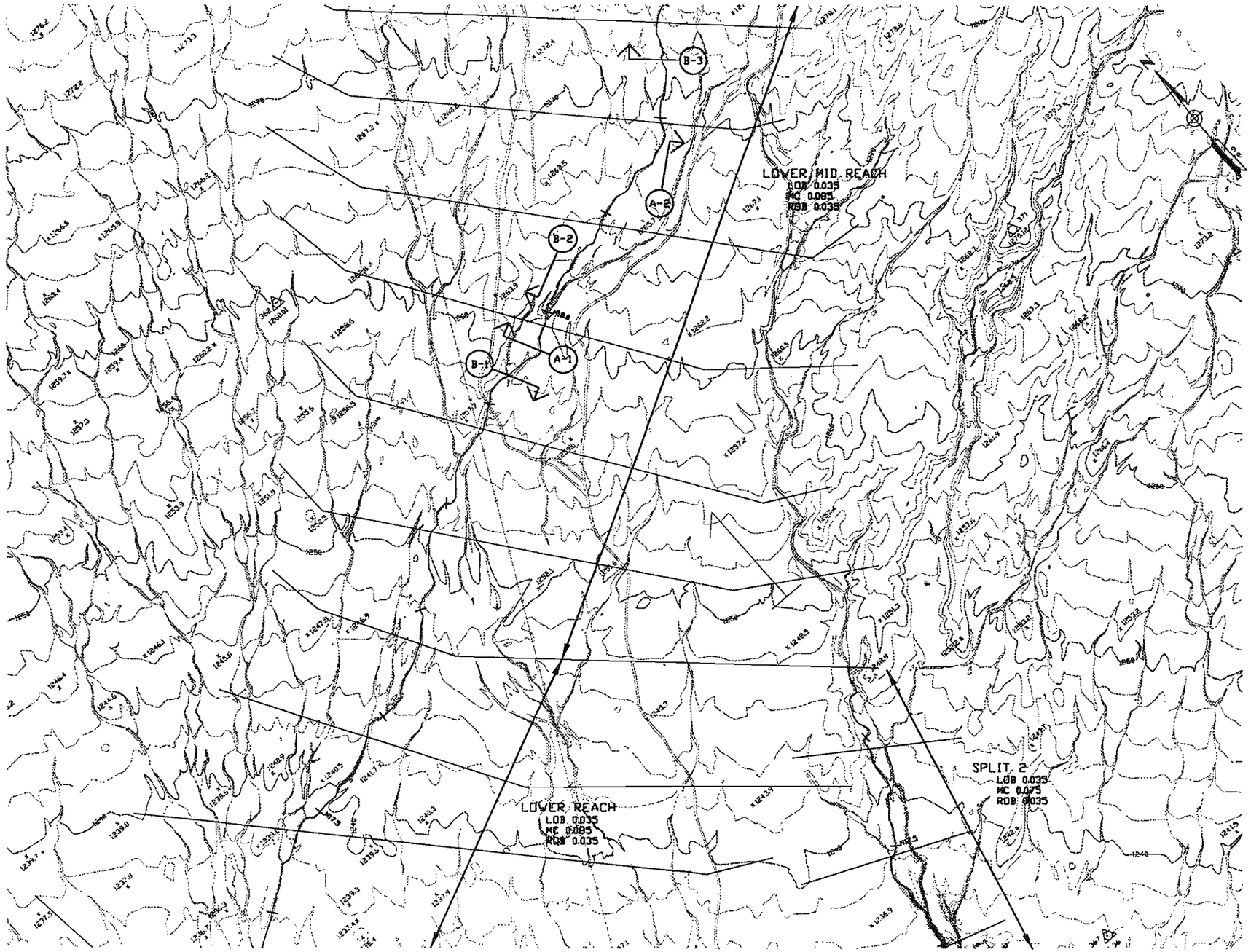
RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 2 of 4

Filename: J:\9721\ACAD\DXHBSH2.DWG Last Revised: 01/30/1998, 12:10:48 Plot Date: 01/30/1998, 12:10:53
Cross References: 0536=J:\9721\acad\0536.dwg, 0531=J:\9721\acad\0531.dwg, 0501=J:\9721\acad\0501.dwg, CHNL=J:\9721\acad\9721chnl.dwg, CESH=9721esh



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHAL FRS

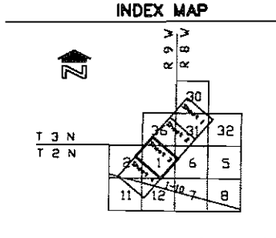
F.C.D. CONTRACT NO. FCD 97-16

LEGEND

(A-1) → Photo Location And Direction

REACH LABEL	REACH-1
Left Overbank N-value	LOB 0.035
Main Channel N-value	MC 0.085
Right Overbank N-value	ROB 0.035

INDEX MAP



0 200' 400' 600'

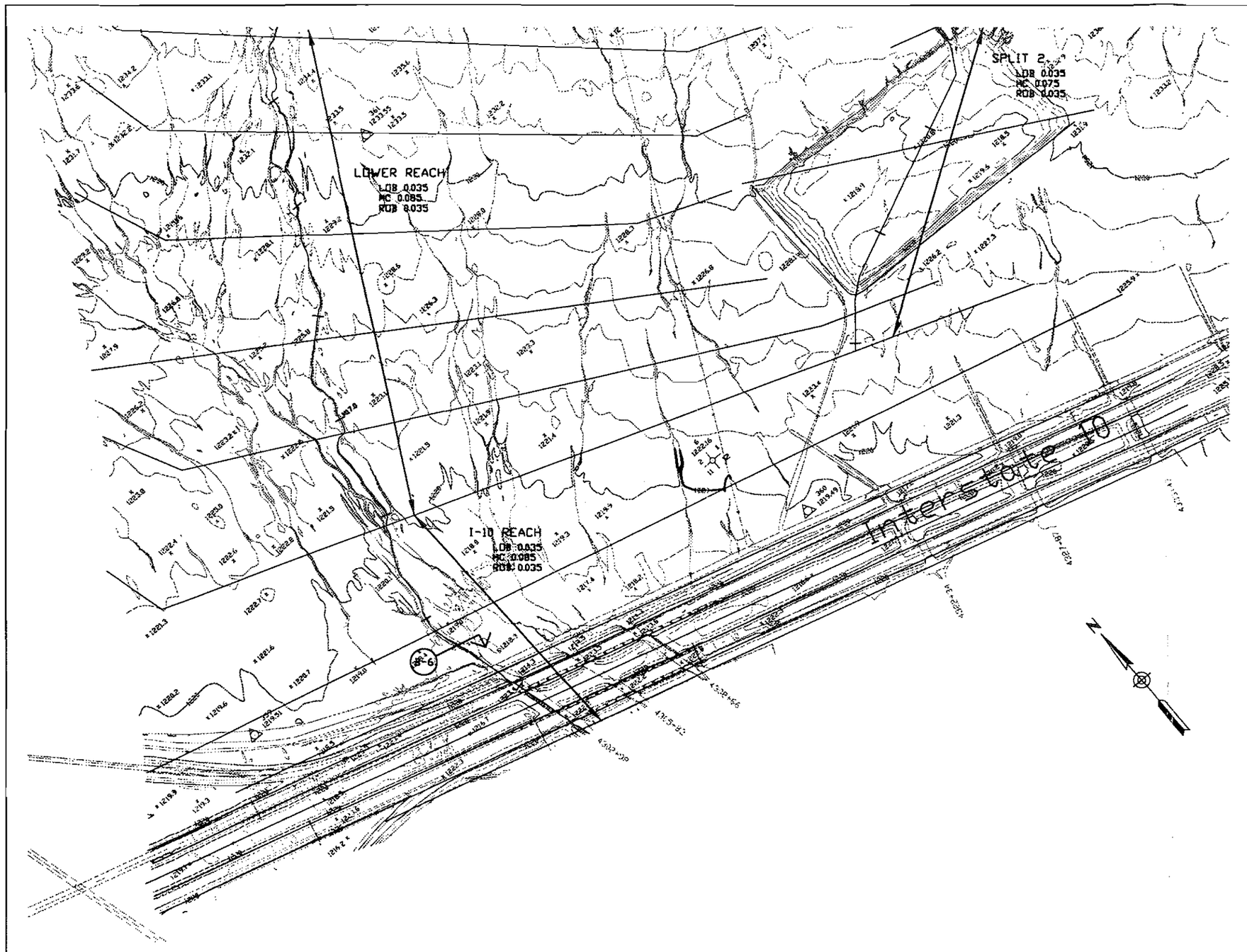
SCALE: 1" = 500'

CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE	
DESIGN	-	-	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DESIGN CHK.	-	-	RECOMMENDED BY: DATE
PLANS	-	-	APPROVED BY: DATE
PLANS CHK.	-	-	CHIEF ENGINEER AND GENERAL MANAGER
SUBMITTED BY: DATE			SHEET 3 OF 4

Filename: J:\9721\ACAD\EXHIBSH3.DWG Last Revised: 01/30/1998, 12:13:18 Plot Date: 01/30/1998, 12:13:18
Cross References: 0536=J:\9721\acad\0536.dwg, 0501=J:\9721\acad\0501.dwg, 0502=J:\9721\acad\0502.dwg, CHNL=J:\9721\acad\9721chnl.dwg, EXSH=9721esph



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHAL FRS

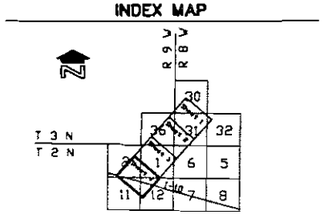
F.C.D. CONTRACT NO. FCD 97-16

LEGEND

A-1 — Photo Location And Direction

REACH LABEL	REACH-1
Left Overbank N-value	LOB 0.035
Main Channel N-value	MC 0.085
Right Overbank N-value	ROB 0.035

INDEX MAP



0 200' 400' 600'

SCALE: 1" = 500'

CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	–	–
DESIGN CHK.	–	–
PLANS	–	–
PLANS CHK.	–	–
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 4 of 4

Filename: J:\8721\ACAD\DXHABSH4.DWG Last Revision: 01/30/1998, 12:14:14 Plot Date: 01/30/1998, 12:14:16
Cross References: Q501=J:\8721\acad\Q501.dwg, Q502=J:\8721\acad\Q502.dwg, Q511=J:\8721\acad\Q511.dwg, Q512=J:\8721\acad\Q512.dwg, CHKL=J:\8721\acad\8721chkl.dwg, FXSH=8721xsh

Appendix B: HEC-RAS Output for One-Third Spillway Discharge

HEC-RAS Version 2.1 October 1997
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Harquahala FRS Spillway Delineation
Project File : harqua.prj
Run Date and Time: 5/25/98 9:54:56 AM

Project in English units

Project Description:
Harquahala FRS Spillway Delineation

PLAN DATA

Plan Title: Q=5000cfs Delineation
Plan File : j:\9721\hecras\harqua.p03

Geometry Title: Delineated Geometry Q=5000cfs
Geometry File : j:\9721\hecras\harqua.g11

Flow Title : Q=5000 cfs (1/3 discharge)
Flow File : j:\9721\hecras\harqua.f02

Plan Summary Information:

Number of:	Cross Sections =	73	Mulitple Openings =	0
	Culverts =	2	Inline Weirs =	0
	Bridges =	0		

Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculaton tolerance	=	0.01
Maximum number of interations	=	20
Maximum difference tolerance	=	0.3
Flow tolerance factor	=	0.001

Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: Q=5000 cfs (1/3 discharge)
Flow File : j:\9721\hecras\harqua.f02

Flow Data (cfs)

River	Reach	RS	PF#1
Harquahala	Upper Reach A	20.0000	5000
Harquahala	Upper Reach B	19.7349	4850
Harquahala	Split1	19.6872	150
Harquahala	Split 1A	19.3216	30
Harquahala	Split 1B	19.3158	120
Harquahala	Upper Mid Reach	18.9676	4880
Harquahala	Lower Mid Reach	18.5237	5000
Harquahala	Split2	17.5883	1280
Harquahala	Lower Reach	17.5767	3720
Harquahala	I-10 Reach	16.8902	5000

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Harquahala	Upper Reach A	PF#1	Known WS = 1415.46	
Harquahala	I-10 Reach	PF#1		Critical

GEOMETRY DATA

Geometry Title: Delineated Geometry Q=5000cfs
Geometry File : j:\9721\hecras\harqua.g11

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
Harquahala	Upper Reach A		Split 1
Harquahala	Upper Reach B	Split 1	Split 1A Ret

Harquahala	Split1	Split 1	1A/1B Jnct
Harquahala	Split 1A	1A/1B Jnct	Split 1A Ret
Harquahala	Split 1B	1A/1B Jnct	Split 1B Ret
Harquahala	Upper Mid Reach	Split 1A Ret	Split 1B Ret
Harquahala	Lower Mid Reach	Split 1B Ret	Split 2
Harquahala	Split2	Split 2	Split 2 Ret
Harquahala	Lower Reach	Split 2	Split 2 Ret
Harquahala	I-10 Reach	Split 2 Ret	

```
CROSS SECTION          RIVER: Harquahala
REACH: Upper Reach A      RS: 20.0000

INPUT
Description: 20.0000 Top of Spillway
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    49001422.0334909.6461421.9834917.2271421.7184921.5231421.757 4922.191421.753
4924.9191421.6364925.5881415.0914926.245 1410.364996.387 1410.365008.933 1410.36
5074.394 1410.365075.4671416.8195075.9211421.7535078.7971421.7535080.0641421.796
5084.4541421.7015084.6621421.701    51001422.112

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    4900     .034924.919     .035075.921     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4924.9195075.921               140     140     140              .1       .3

CROSS SECTION OUTPUT    Profile #PF#1
```

			Left OB	Channel	Right OB
W.S. Elev (ft)	1413.63	Element			
Vel Head (ft)	1.64	Wt. n-Val.		0.030	
E.G. Elev (ft)	1415.27	Reach Len. (ft)	140.00	140.00	140.00
Crit W.S. (ft)	1413.63	Flow Area (sq ft)		485.81	
E.G. Slope (ft/ft)	0.009394	Area (sq ft)		485.81	
Q Total (cfs)	5000.00	Flow (cfs)		5000.00	
Top Width (ft)	149.15	Top Width (ft)		149.15	
Vel Total (ft/s)	10.29	Avg. Vel. (ft/s)		10.29	
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)		3.26	
Conv. Total (cfs)	51586.5	Conv. (cfs)		51586.5	
Length Wtd. (ft)	140.00	Wetted Per. (ft)		154.76	
Min Ch El (ft)	1410.36	Shear (lb/sq ft)		1.84	
Alpha	1.00	Stream Power (lb/ft s)		18.95	
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	2.85	8.88	5.82
C & E Loss (ft)	0.36	Cum SA (acres)	0.82	2.17	4.16

```
Warning - The energy equation could not be balanced within the specified number of iterations.  The
          program used critical depth for the water surface and continued on with the calculations.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
          additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
          than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
          depth, the calculated water surface came back below critical depth.  This indicates that there is
          not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION          RIVER: Harquahala
REACH: Upper Reach A      RS: 19.9735

INPUT
Description: 19.9735
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    48501396.7084860.8071396.463 4866.011396.5124872.9351396.5614877.426 1396.57
4887.1731395.9014888.3111395.8084899.4671394.0314903.5551393.5244910.2891391.835
4918.8191391.5414926.8831390.8664934.8381390.7214947.9131390.307 4954.231390.166
4962.4471390.1084982.0171390.1144988.2871390.0925013.0971390.1415024.0241390.162
5041.984  1390.25048.991 1390.245054.1171390.2735071.604 1390.725078.1181391.038
    50831391.4545095.1561392.3645101.8841393.2225108.2611393.7575118.371 1394.52
5128.9141395.3725136.3081396.1465145.0861396.489    51501396.706

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    4850     .034877.426     .031    5150     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4877.426    5150              139146.2242     139              .1       .3

CROSS SECTION OUTPUT    Profile #PF#1
```

			Left OB	Channel	Right OB
W.S. Elev (ft)	1391.25	Element			
Vel Head (ft)	17.95	Wt. n-Val.		0.031	
E.G. Elev (ft)	1409.20	Reach Len. (ft)	139.00	146.22	139.00
Crit W.S. (ft)	1393.37	Flow Area (sq ft)		147.06	
E.G. Slope (ft/ft)	0.555560	Area (sq ft)		147.06	
Q Total (cfs)	5000.00	Flow (cfs)		5000.00	
Top Width (ft)	158.37	Top Width (ft)		158.37	
Vel Total (ft/s)	34.00	Avg. Vel. (ft/s)		34.00	
Max Chl Dpth (ft)	1.16	Hydr. Depth (ft)		0.93	
Conv. Total (cfs)	6708.2	Conv. (cfs)		6708.2	
Length Wtd. (ft)	143.44	Wetted Per. (ft)		158.42	
Min Ch El (ft)	1390.09	Shear (lb/sq ft)		32.20	
Alpha	1.00	Stream Power (lb/ft s)		1094.67	
Frctn Loss (ft)	4.13	Cum Volume (acre-ft)	2.85	7.86	5.82
C & E Loss (ft)	1.66	Cum SA (acres)	0.82	1.67	4.16

```
Warning - The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
                additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Harquahala
REACH: Upper Reach A       RS: 19.9458

INPUT
Description: 19.9458
Station Elevation Data     num=       46
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
4848.6941394.8584852.2921394.9644862.947 1395.124867.0241395.1214873.3931395.261
4876.8031394.2474878.8011394.2474880.1881394.1434890.6351393.8384894.2291393.712
4905.4591393.1544914.7971392.7334930.189 1392.294934.9611392.2064948.0541391.732
4953.8321391.4754956.8351391.336 4971.891391.038 4977.361390.786 4984.361390.301
4991.7021390.2644993.9321389.9525002.8371389.0515005.0071389.5525012.7871390.497
5013.9781390.5635023.2091391.1655031.8681391.3225040.1971391.4785058.9541391.501
 5067.051391.6275084.4911391.6575095.3951391.7175112.1671391.803 5122.421391.823
5134.8471392.2385145.4151392.5445163.3061393.2925170.9961393.5265184.0161394.053
5200.9081394.0985210.5391394.3635234.7621394.3055238.5061394.3075241.293 1394.24
5250.4951394.125

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4848.694    .035 4971.89    .0855023.209    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       4971.895023.209               149214.1756     183            .1        .3
Left Levee      Station=4873.393      Elevation=1395.261

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)            1393.86   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                1.19   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)            1395.05   Reach Len. (ft)             149.00     214.18     183.00
  Crit W.S. (ft)            1394.10   Flow Area (sq ft)           127.77     184.30     285.22
  E.G. Slope (ft/ft)       0.023086   Area (sq ft)                127.77     184.30     285.22
  Q Total (cfs)             5000.00   Flow (cfs)                 1106.28    1144.60    2749.12
  Top Width (ft)             289.55   Top Width (ft)               82.11      51.32     156.11
  Vel Total (ft/s)             8.37   Avg. Vel. (ft/s)              5.66       6.21       9.64
  Max Chl Dpth (ft)            4.81   Hydr. Depth (ft)              1.56       3.59       1.83
  Conv. Total (cfs)        32907.6    Conv. (cfs)                7281.0     7533.2    18093.4
  Length Wtd. (ft)           193.63   Wetted Per. (ft)             82.17      51.54     156.16
  Min Ch El (ft)            1389.05   Shear (lb/sq ft)              2.24       5.15       2.63
  Alpha                        1.09   Stream Power (lb/ft s)       19.40      32.00      25.37
  Frctn Loss (ft)              9.12   Cum Volume (acre-ft)          2.65       7.31       5.36
  C & E Loss (ft)              5.03   Cum SA (acres)                0.69       1.32       3.91


Warning - The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
                additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Harquahala
REACH: Upper Reach A       RS: 19.9052

INPUT
Description: 19.9052
Station Elevation Data     num=       63
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
4781.1781390.992 4800.051390.8044814.8741390.5514848.6181389.3054851.5491389.276
4869.942 1389.594881.8321389.619 4896.621389.3954903.425 1389.364921.7571389.385
 4934.631389.399 4949.951389.3724964.8291388.8214978.9421388.5174995.9941380.051
4998.0281379.2224998.5931379.0994999.3361379.2695019.0691382.1885021.8621382.926
5033.0461384.9765039.0441386.057 5041.331386.5385055.2881387.4115085.1851388.606
5088.7611388.5885100.1711388.5615112.2261388.5285120.915  1388.45139.3791388.095
5149.1951388.0825167.3541387.871 5182.971387.1475183.3251387.1235183.491 1387.13
5185.9851387.2645192.894 1387.635193.3451387.6615197.473 1387.675212.4021387.729
5231.3881387.6545235.0131387.6255238.0251387.644 5252.851388.0525254.8421388.062
5258.0211388.116 5285.821388.4875288.0371388.2245295.179 1386.825305.6081387.356
5310.9331387.6245312.6781387.788 5315.851387.8755345.1651389.1335356.3821389.521
5377.2391389.9285396.0551389.4345397.6831389.3855399.1171389.3915410.3161389.589
5415.662 1389.815435.4981390.7665446.1971390.657

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4781.178    .0354978.942    .0855055.288    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       4978.9425055.288              305351.3504     259            .1        .3

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)            1388.80   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                1.06   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)            1389.86   Reach Len. (ft)             305.00     351.35     259.00
  Crit W.S. (ft)            1388.99   Flow Area (sq ft)             1.87     390.16     231.80
  E.G. Slope (ft/ft)       0.031005   Area (sq ft)                  1.87     390.16     231.80
  Q Total (cfs)             5000.00   Flow (cfs)                    3.81    3477.13    1519.05
  Top Width (ft)             371.68   Top Width (ft)               13.19      76.35     282.14
  Vel Total (ft/s)             8.01   Avg. Vel. (ft/s)              2.04       8.91       6.55
  Max Chl Dpth (ft)            9.70   Hydr. Depth (ft)              0.14       5.11       0.82
  Conv. Total (cfs)        28396.0    Conv. (cfs)                  21.7    19747.3    8627.0
  Length Wtd. (ft)           313.26   Wetted Per. (ft)             13.19      79.20     282.41
  Min Ch El (ft)            1379.10   Shear (lb/sq ft)              0.27       9.54       1.59
```

Alpha	1.06	Stream Power (lb/ft s)	0.56	84.98	10.41
Frctn Loss (ft)	5.15	Cum Volume (acre-ft)	2.43	5.89	4.28
C & E Loss (ft)	0.04	Cum SA (acres)	0.53	1.01	2.99

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach A RS: 19.8387

INPUT
Description: 19.8387
Station Elevation Data num= 92

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4506.275	1383.274	511.383	1383.168	4527.745	1382.864	532.979	1382.702	4549.307	1382.453
4561.087	1382.252	4562.355	1382.338	4573.781	1382.901	4587.842	1382.639	4588.484	1382.615
4589.761	1382.624	625.955	1382.585	4640.788	1382.238	4649.773	1382.067	4658.899	1381.643
4663.297	1381.49	4675.21	1380.447	4681.114	1379.922	4682.546	1380.043	4693.024	1380.645
4712.173	1381.522	4732.47	1382.398	4761.784	1382.323	4770.583	1382.404	4791.064	1382.433
4807.416	1382.424	4815.276	1382.421	4840.312	1382.255	4853.591	1381.958	4864.729	1381.429
4880.917	1381.598	4891.703	1381.739	4893.141	1381.729	4895.879	1381.727	4904.434	1381.463
4909.461	1381.349	21.128	1381.188	4930.136	1381.201	4941.625	1381.185	4952.23	1380.62
4969.747	1379.514	4979.328	1377.461	4990.311	1374.749	92.221	1374.638	5000.389	1374.3
5012.884	1376.899	5025.157	1379.609	5055.155	1380.243	5071.457	1380.523	5077.887	1380.452
5083.302	1380.438	5115.523	1380.517	5115.908	1380.525	116.037	1380.525	117.029	1380.545
5165.441	1381.553	5183.921	1380.167	5188.222	1379.976	5202.093	1380.669	5209.953	1381.04
5220.923	1381.197	5234.61	1381.416	5236.433	1381.352	5268.201	1380.752	5294.877	1380.896
5322.219	1381.253	5336.278	1381.487	5344.095	1381.765	5353.086	1381.733	5370.341	1381.706
5390.676	1381.573	5400.382	1381.595	5411.564	1381.805	5439.667	1381.799	5474.866	1382.06
5488.603	1381.266	5493.98	1380.749	5497.641	1381.235	507.675	1382.189	5508.6	1382.21
5525.345	1383.122	5527.267	1383.138	5557.334	1382.221	5557.605	1382.241	5559.311	1382.398
5574.858	1383.975	5582.267	1384.443	5594.689	1384.606	5604.142	1384.815	627.125	1385.542
5627.399	1385.549	5639.135	1384.895						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4506.275	.035	4952.23	.085	5055.155	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4952.23	5055.155		100	113.028	166	.1	.3

Left Levee Station=4791.064 Elevation=1382.433

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1382.00	Element			
Vel Head (ft)	0.58	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1382.58	Reach Len. (ft)	100.00	113.03	166.00
Crit W.S. (ft)	1381.99	Flow Area (sq ft)	60.46	396.22	369.73
E.G. Slope (ft/ft)	0.023403	Area (sq ft)	60.46	396.22	369.73
Q Total (cfs)	5000.00	Flow (cfs)	274.50	2582.97	2142.53
Top Width (ft)	647.74	Top Width (ft)	103.39	102.92	441.43
Vel Total (ft/s)	6.05	Avg. Vel. (ft/s)	4.54	6.52	5.79
Max Chl Dpth (ft)	7.70	Hydr. Depth (ft)	0.58	3.85	0.84
Conv. Total (cfs)	32685.6	Conv. (cfs)	1794.4	16885.2	14006.0
Length Wtd. (ft)	143.77	Wetted Per. (ft)	103.43	104.10	441.66
Min Ch El (ft)	1374.30	Shear (lb/sq ft)	0.85	5.56	1.22
Alpha	1.02	Stream Power (lb/ft s)	3.88	36.25	7.09
Frctn Loss (ft)	3.60	Cum Volume (acre-ft)	2.21	2.72	2.49
C & E Loss (ft)	0.01	Cum SA (acres)	0.12	0.29	0.84

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach A RS: 19.8173

INPUT
Description: 19.8173
Station Elevation Data num= 128

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4341.934	1381.116	4345.682	1381.344	354.828	1381.173	4362.271	1381.069	4375.636	1380.535
4379.268	1380.343	4391.253	1378.759	4395.547	1378.141	4396.497	1378.289	4400.502	1378.608
4412.651	1379.892	4415.701	1379.584	4421.109	1379.187	4427.045	1379.361	4433.112	1379.544
4440.862	1379.177	4446.505	1378.584	4452.557	1379.336	4460.085	1380.275	4487.754	1380.526
4493.535	1380.536	4499.69	1380.503	4521.364	1380.491	4529.914	1380.471	4546.075	1380.314
4556.652	1380.139	4571.517	1379.829	4577.686	1379.875	4586.021	1379.974	4603.135	1380.204
4609.72	1380.292	4614.139	1380.246	636.527	1379.894	4649.409	1379.968	4658.027	1380.143
4664.949	1379.636	4672.983	1378.956	4687.388	1377.763	4694.38	1377.131	4699.663	1377.583
4707.286	1378.119	4729.439	1379.143	4732.261	1379.282	4734.861	1379.327	4767.974	1380.002
4784.292	1379.996	4799.409	1379.844	4812.057	1379.747	4816.513	1379.808	4841.19	1379.435
4843.814	1379.375	4845.496	1379.386	4868.188	1379.584	4871.109	1379.485	4876.109	1379.31
4883.235	1379.204	4889.776	1379.099	4890.298	1379.096	4890.955	1379.084	4907.992	1378.791
4929.271	1378.428	4930.308	1378.397	4930.624	1378.393	4932.967	1378.243	4952.849	1377.033
4959.297	1377.422	4968.26	1377.946	4974.336	1377.642	4980.238	1377.354	4985.706	1375.696
5000.289	1372.545	5026.003	1375.855	5035.197	1376.982	5036.45	1377.156	5037.804	1377.436
5045.791	1377.493	5073.646	1377.747	5073.737	1377.744	5090.788	1377.181	5115.204	1376.629
5122.556	1376.212	5138.31	1376.797	5138.673	1376.816	5140.375	1376.723	5149.336	1376.211
5149.824	1376.171	5152.586	1376.307	5169.092	1377.582	5196.704	1377.665	5205.42	1377.65
5213.899	1377.782	5242.37	1377.713	5261.751	1376.969	5266.815	1376.669	5300.714	1377.215
5308.396	1377.322	5328.654	1376.885	5352.169	1376.882	5360.856	1377.429	5369.636	1377.545
5394.513	1377.187	5416.81	1377.477	5434.349	1377.435	5435.126	1377.458	5438.25	1377.406
5454.81	1377.065	5473.156	1377.345	5485.929	1377.572	5493.904	1377.468	5516.293	1377.522
5544.63	1377.789	5555.997	1377.953	5560.31	1377.555	5572.103	1376.563	5590.625	1377.934

5597.829 1378.63 5603.831378.5895619.8931378.7225628.3441378.6465651.7711378.925
5658.3521378.9915663.336 1379.175685.2291379.3995700.9771378.7865709.7341379.364
5733.6331380.2945756.3061380.5425762.2421380.612

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4341.934	.035	4968.26	.0855073.737		.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4968.265073.737			347435.1131	500	.1	.3

Left Levee Station=4767.974 Elevation=1380.002

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1378.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1378.97	Reach Len. (ft)	400.00	400.00	400.00
Crit W.S. (ft)	1378.27	Flow Area (sq ft)	25.44	229.32	532.36
E.G. Slope (ft/ft)	0.026920	Area (sq ft)	25.44	229.32	532.36
Q Total (cfs)	5000.00	Flow (cfs)	140.19	1097.48	3762.33
Top Width (ft)	662.21	Top Width (ft)	36.11	105.48	520.63
Vel Total (ft/s)	6.35	Avg. Vel. (ft/s)	5.51	4.79	7.07
Max Chl Dpth (ft)	5.75	Hydr. Depth (ft)	0.70	2.17	1.02
Conv. Total (cfs)	30474.1	Conv. (cfs)	854.4	6688.9	22930.7
Length Wtd. (ft)	400.00	Wetted Per. (ft)	36.17	106.40	520.93
Min Ch El (ft)	1372.55	Shear (lb/sq ft)	1.18	3.62	1.72
Alpha	1.08	Stream Power (lb/ft s)	6.51	17.34	12.14
Frctn Loss (ft)	7.19	Cum Volume (acre-ft)	2.14	2.11	1.78
C & E Loss (ft)	0.00	Cum SA (acres)			

Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.7349

INPUT
Description: 19.7349
Station Elevation Data num= 110

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4357.5961374.4234358.7851374.3554367.9631374.0144376.0431373.615								4385.1	1373.23
4393.0021373.4454401.9521373.4094405.4171373.0924408.3761372.9624413.6721372.953									
4423.0071373.1854427.8021373.4444429.8711373.0894437.3591372.2454443.7971373.298									
4445.3121373.6114453.2291373.7574458.6271373.2994474.853 1372.294475.885 1372.22									
4476.4231372.1724483.7221372.2544499.7791372.1284503.9521371.759 4505.941371.467									
4510.4161371.6224524.9341371.479 4526.311371.3714528.203 1371.3 4541.36 1370.43									
4547.6391370.9854561.1161372.531 4568.52 1372.684593.3091372.5044595.7531372.439									
4617.2661371.863 4620.891371.7414626.8351371.5164632.1021371.2494636.3211371.272									
4642.1881371.8234663.9391371.945 4673.071371.9514687.6871371.4124691.7081371.383									
4722.9611371.7394728.1021371.7924728.8681371.7384729.9641371.6344734.4241371.276									
4758.8831369.193 4762.051368.9874779.3151367.6084788.6151366.9024801.346 1368.29									
4810.289 1368.954815.6521369.0274837.6351369.9364838.3941369.9654838.535 1369.97									
4838.692 1369.984860.8251370.2914863.2561370.2624878.0221369.8444899.068 1369.36									
4900.8471369.3154902.2751369.2624913.9411368.6584919.9991368.3524924.8451368.401									
4935.6191368.572 4938.11368.5784955.3031368.8754959.685 1368.854967.0491368.706									
4974.3341367.6964975.8391367.4544978.2441367.2394985.7611366.1284991.8371366.392									
4999.951366.3315007.5211366.6965012.7381367.0535018.1351366.6865023.3061366.535									
5031.8661368.185 5032.711368.3345033.1521368.4115034.6431368.6055049.4061370.597									
5059.61372.0565064.2151372.3515081.2391373.6285097.1941373.9525102.8351374.139									
5109.0861375.0075109.7761375.0745122.2861375.1485123.8351375.257 5127.531375.433									
5129.3011375.457 5130.821375.0765140.4571375.6485145.7631375.6735147.1481375.555									
5150.5391375.9325159.0581376.8895169.6111378.2175182.0261379.6895182.9421379.757									

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4357.596	.0354967.049		.0855034.643		.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4967.0495034.643			398466.6451	399	.1	.3

Left Levee Station=4728.102 Elevation=1371.792

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1371.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1371.78	Reach Len. (ft)	398.00	466.65	399.00
Crit W.S. (ft)	1370.60	Flow Area (sq ft)	448.76	274.48	22.22
E.G. Slope (ft/ft)	0.012743	Area (sq ft)	448.76	274.48	22.22
Q Total (cfs)	4850.00	Flow (cfs)	3354.59	1373.50	121.91
Top Width (ft)	315.61	Top Width (ft)	230.04	67.59	17.97
Vel Total (ft/s)	6.51	Avg. Vel. (ft/s)	7.48	5.00	5.49
Max Chl Dpth (ft)	4.73	Hydr. Depth (ft)	1.95	4.06	1.24
Conv. Total (cfs)	42963.6	Conv. (cfs)	29716.5	12167.1	1079.9
Length Wtd. (ft)	416.68	Wetted Per. (ft)	230.38	67.97	18.14
Min Ch El (ft)	1366.33	Shear (lb/sq ft)	1.55	3.21	0.97
Alpha	1.10	Stream Power (lb/ft s)	11.58	16.08	5.35
Frctn Loss (ft)	6.15	Cum Volume (acre-ft)	49.19	7.11	13.21
C & E Loss (ft)	0.01	Cum SA (acres)	39.38	3.01	7.69

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.6465

INPUT

```
Description: 19.6465
Station Elevation Data     num=       81
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4438.7591367.868 4452.451367.7714452.8211367.7564452.9811367.7494484.7541366.369
4486.586 1366.094489.842 1365.374494.4051364.4824497.811 1364.664515.1811366.064
 4525.291365.5994526.9861365.5714546.3121365.1524551.2761365.0694552.0041365.052
4552.4551365.007 4564.271364.4794578.4171365.8174581.1221366.0894590.7991366.262
4621.4911366.6654628.5971366.3694644.1981365.3884654.4851365.3014673.4191365.365
4686.1381365.2514692.9391365.2014698.4711365.1354715.6431365.0884718.8471365.111
4730.7991365.1394740.5321364.8624750.7311363.9424770.1081362.9974772.7471362.995
4774.4651363.0644776.3271363.1084791.2741363.2374803.492 1363.794805.3631363.763
4806.989 1363.754813.1641363.6294817.7971363.661 4834.841363.0764836.0671362.976
4837.2921362.8874842.2691362.533 4845.581362.849 4858.321363.597 4862.011363.499
4879.7711363.459 4884.761363.5144912.2171363.1824913.0351363.1764913.2071363.173
4930.2041362.6864938.607 1362.324957.0451362.4194969.3921362.2774976.2871362.092
4984.9221361.2654999.5821359.8545000.4771359.8955001.2071359.9755016.4621361.383
5019.4351361.3765033.7871361.2775046.8091362.2075054.0681362.7415058.8661363.131
5076.333 1364.575104.8641364.7555107.3341364.7555108.7041364.836 5118.681364.666
5130.4961364.4875132.3981364.7315156.6131368.1155161.7711368.5165166.5991369.051
5175.6631369.887

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4438.759     .0354976.287     .0855033.787     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4976.2875033.787              523455.3716     397              .1        .3
Left Levee      Station=4621.491      Elevation=1366.665
Right Levee     Station=5108.704      Elevation=1364.836

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1364.84   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.78   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)          1365.63   Reach Len. (ft)             523.00     455.37     397.00
  Crit W.S. (ft)          1364.84   Flow Area (sq ft)           393.61     222.47      94.10
  E.G. Slope (ft/ft)     0.017245   Area (sq ft)                393.61     222.47      94.10
  Q Total (cfs)           4850.00   Flow (cfs)                 3088.67    1256.08     505.25
  Top Width (ft)           392.47   Top Width (ft)              235.55      57.50      99.42
  Vel Total (ft/s)           6.83   Avg. Vel. (ft/s)              7.85       5.65       5.37
  Max Chl Dpth (ft)          4.99   Hydr. Depth (ft)              1.67       3.87       0.95
  Conv. Total (cfs)       36932.3   Conv. (cfs)                23519.9     9564.9     3847.5
  Length Wtd. (ft)         502.21   Wetted Per. (ft)            235.72      57.68      99.57
  Min Ch El (ft)          1359.85   Shear (lb/sq ft)              1.80       4.15       1.02
  Alpha                      1.08   Stream Power (lb/ft s)       14.11      23.45       5.46
  Frctn Loss (ft)            7.76   Cum Volume (acre-ft)         45.34       4.45      12.68
  C & E Loss (ft)            0.01   Cum SA (acres)               37.25       2.34       7.16


Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program selected the water surface that had the least amount of error between computed and
                assumed values.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
                depth, the calculated water surface came back below critical depth.  This indicates that there is
                not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION           RIVER: Harquahala
REACH: Upper Reach B       RS: 19.5602

INPUT
Description: 19.5602
Station Elevation Data     num=       82
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4645.9361358.6584662.5781358.2214669.0461358.0544670.2051358.0134681.5441357.748
4696.2521357.4664706.6151357.3144716.3331356.8134717.6541356.7854723.4611356.484
4727.9181356.1744732.4551355.7544736.7071355.861 4749.581356.0384766.377 1354.68
4775.383 1353.964791.8661354.591  4805.31355.0924808.2091355.2034817.1761355.064
4821.2841355.0324824.4561355.0394841.8821354.9864860.6471354.5124863.826  1354.4
4867.4671354.3294880.3821353.9274898.7881354.7314898.8921354.7364905.0691354.631
4912.7771353.7184913.2181353.6584915.5031353.8054923.6521354.3514926.0031354.456
4930.8521354.3194934.6851354.1934939.4571354.4314947.3351354.8174954.3071354.783
4959.2651354.7154961.4661354.7554964.9981354.7344974.6121354.9144985.9151355.264
4999.1371353.6494999.6941353.5825007.1931354.3145012.3811354.6835015.4031354.236
5018.9941353.9395024.8611353.6785029.1521354.3915036.1561355.3955053.4811355.795
5063.3821356.3695071.9671356.5935079.5381356.6045088.5621356.6545101.8151356.023
5104.0521356.1445115.7581356.4625121.4611357.235 5130.541358.8715145.1421360.807
5149.9251361.2885157.983 1361.745162.5091361.8875180.4271363.2395180.9351363.226
5181.3751363.244    51991363.1865208.7651363.7065210.0371363.7875214.092 1364.51
5216.3991364.9825217.0771365.1075222.9541365.4345233.0281367.0945240.0061368.034
5249.1531369.5495250.0531369.725

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4645.936     .0354985.915     .0855036.156     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4985.9155036.156              375377.9404     331              .1        .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1356.78   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.89   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)          1357.68   Reach Len. (ft)             375.00     377.94     331.00
  Crit W.S. (ft)          1356.81   Flow Area (sq ft)           524.92     124.83      46.37
  E.G. Slope (ft/ft)     0.014575   Area (sq ft)                524.92     124.83      46.37
```

Q Total (cfs)	4850.00	Flow (cfs)	4206.34	481.18	162.48
Top Width (ft)	400.44	Top Width (ft)	268.23	50.24	81.97
Vel Total (ft/s)	6.97	Avg. Vel. (ft/s)	8.01	3.85	3.50
Max Chl Dpth (ft)	3.20	Hydr. Depth (ft)	1.96	2.49	0.57
Conv. Total (cfs)	40172.8	Conv. (cfs)	34841.4	3985.6	1345.8
Length Wtd. (ft)	372.04	Wetted Per. (ft)	268.52	50.57	82.04
Min Ch El (ft)	1353.58	Shear (lb/sq ft)	1.78	2.25	0.51
Alpha	1.19	Stream Power (lb/ft s)	14.25	8.66	1.80
Frctn Loss (ft)	7.94	Cum Volume (acre-ft)	39.83	2.63	12.04
C & E Loss (ft)	0.01	Cum SA (acres)	34.22	1.78	6.33

Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note - Program found supercritical flow starting at this cross section.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.4887

INPUT
Description: 19.4887
Station Elevation Data num= 84

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4506.2941353.9624518.0271353.8344539.6051353.4964543.1791353.3594568.4991352.712
4569.7141352.6234574.927 1352.384589.562 1352.284599.0711352.1474617.933 1350.31
4618.7061350.2344619.321 1350.244643.0061350.3964643.1961350.3984643.4961350.394
4665.9671350.0844676.5631349.8524697.2271349.9384705.5511349.8034714.8231349.439
4725.6561349.0524730.5421348.9134739.0451349.1924760.5591349.6034770.3381349.548
4794.9011349.7024815.1511348.9274817.5091348.8284821.2561348.2854827.366 1347.33
4834.3941348.2484843.5271349.4824847.7581349.191 4859.041349.1274866.277 1349.37
4872.0251349.7114883.6471349.7314887.5881349.7924890.0551349.6324900.1021348.956
4912.2581349.1954914.309 1349.224917.2221349.1364929.9431348.941 4952.431349.365
4954.1221349.4024955.3131349.3184970.9231348.6724978.253 1348.964989.6621349.224
4994.4071348.4544998.9011347.8715005.315 1348.655006.479 1348.685011.3011348.285
5019.1281348.6025026.8331349.1465034.1461349.5765044.7431349.9865053.4951350.279
5059.2711350.4895067.5931350.6585071.9481350.8095080.7581350.9715094.0571351.431
5099.5041351.5565108.3521352.0295116.0271352.4655120.529 1352.56 5128.681352.379
5133.6541352.201 5135.081352.2375143.1951352.2585145.508 1352.475154.6821353.555
5164.8361354.874 5166.251354.9015170.5681355.0385175.5991355.1575183.3921355.929
5190.7881357.1595191.9421357.3525193.8891357.696 5209.881359.748
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4506.294    .0354989.662    .0855006.479    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4989.6625006.479               570594.3238     517              .1        .3
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1350.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1351.72	Reach Len. (ft)	570.00	594.32	517.00
Crit W.S. (ft)	1350.95	Flow Area (sq ft)	564.55	42.14	85.22
E.G. Slope (ft/ft)	0.017485	Area (sq ft)	564.55	42.14	85.22
Q Total (cfs)	4850.00	Flow (cfs)	4137.06	178.69	534.25
Top Width (ft)	467.06	Top Width (ft)	378.11	16.82	72.13
Vel Total (ft/s)	7.01	Avg. Vel. (ft/s)	7.33	4.24	6.27
Max Chl Dpth (ft)	3.60	Hydr. Depth (ft)	1.49	2.51	1.18
Conv. Total (cfs)	36678.4	Conv. (cfs)	31286.8	1351.3	4040.3
Length Wtd. (ft)	563.90	Wetted Per. (ft)	378.53	16.96	72.21
Min Ch El (ft)	1347.87	Shear (lb/sq ft)	1.63	2.71	1.29
Alpha	1.03	Stream Power (lb/ft s)	11.93	11.50	8.08
Frctn Loss (ft)	5.93	Cum Volume (acre-ft)	35.14	1.91	11.54
C & E Loss (ft)	0.03	Cum SA (acres)	31.44	1.49	5.74

Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.3761

INPUT
Description: 19.3761
Station Elevation Data num= 156

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
3863.9451345.8443861.334 1345.683902.8121345.8723914.9041345.8643915.9711346.024
3927.0741345.3683952.3731344.476    39711344.1264025.7031342.867 4031.851342.702
4033.9121342.7214040.4061342.6694065.8221342.5914069.3041342.7794118.7381343.297
4124.9991343.055 4134.531343.0574151.6171342.8784186.8441343.2394192.8211343.052
4216.2121341.3914231.0111339.9134231.1051339.9034231.2211339.9114231.5931339.948
 4251.981342.0434267.5771341.9394277.5741341.7694291.9041342.3934303.5041342.999
 4310.85  1342.84333.8391342.1054338.6551341.8894354.2261341.1254356.7781340.988
4366.5981340.3974372.6311339.5414376.9821339.041 4383.071339.6274391.4611340.107
4398.8431340.2244414.3381340.3954435.2891340.5754438.7491340.5794439.5331340.632
4440.1841340.546 4455.321339.9974464.7831339.3364470.7961339.767 4489.921342.642
4493.0381342.5764515.1451341.8584541.0481342.438 4542.961342.4664547.891 1341.97
4551.6731341.6094552.9181341.6114583.1681341.5184584.853 1341.444596.9961340.997
4603.7681340.7774610.0921340.6014615.9991340.4724616.7771340.5534618.8391340.742
4630.9851341.8264636.5111342.3984642.9941342.1714652.1611341.9354656.7251341.918
4669.1811342.011    46911342.474 4699.05 1342.654710.6381343.2434717.8751343.547
4724.4111343.6634733.9251343.5434740.9161343.3924747.6991342.5154757.5261341.728
4767.3411341.7894784.2321342.5374784.8041342.6014785.8641342.3494796.8521340.118
4804.043 1340.614811.8261341.1384816.0191341.1264818.2451341.1714821.9211341.216
4830.2111340.3864836.0781339.7514841.9161341.314 4844.991341.7734846.6161341.743
4855.0491341.681 4887.871341.6624900.0831341.4964912.3131341.5694932.6761340.985
```

```
4941.8491340.8514957.1221341.2074972.9411341.4394980.9031341.5544989.2911341.799
    49971341.1615000.4461340.8145007.8391341.3295014.078 1341.985016.574  1341.7
5025.4111341.7215028.8831341.6665034.8481341.6325047.697 1340.975053.7041340.616
5061.4541340.5935075.276 1340.815077.7191340.8385079.103 1340.895089.996 1340.89
5097.9441341.2995110.8951341.5935126.9391341.8035143.431 1342.365155.0561342.689
5175.7151342.9665181.6361342.8695182.8391342.8965216.1771341.7025220.0681341.787
5220.3221341.7835273.9211341.7035275.7951341.6985287.5381341.5425300.4531341.401
5301.8971341.3675311.9861341.3525318.9741341.3295319.4711341.2895329.808 1340.39
5337.9491340.7955344.4931341.0135350.0831341.1295372.354 1341.415391.867 1341.82
5402.9081342.1815414.6811342.6965453.6541344.2595455.8371344.3535456.2081344.375
5459.2071344.6195475.4841346.0135484.6771346.7675496.9941347.983 5510.241349.263
5513.729 1349.52

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
3863.945     .0354989.291     .0855014.078     .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
     4989.2915014.078                578  578.96     500            .1          .3
Left Levee       Station=4303.504       Elevation=1342.999
Right Levee      Station=5175.715       Elevation=1342.966

CROSS SECTION OUTPUT     Profile #PF#1
```

W.S. Elev (ft)	1342.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1342.96	Reach Len. (ft)	578.00	578.96	500.00
Crit W.S. (ft)	1342.40	Flow Area (sq ft)	619.39	24.23	125.81
E.G. Slope (ft/ft)	0.016946	Area (sq ft)	619.39	24.23	125.81
Q Total (cfs)	4850.00	Flow (cfs)	4108.44	54.17	687.39
Top Width (ft)	715.07	Top Width (ft)	562.38	24.79	127.91
Vel Total (ft/s)	6.30	Avg. Vel. (ft/s)	6.63	2.24	5.46
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)	1.10	0.98	0.98
Conv. Total (cfs)	37257.2	Conv. (cfs)	31560.6	416.2	5280.4
Length Wtd. (ft)	571.84	Wetted Per. (ft)	563.59	24.88	127.98
Min Ch El (ft)	1340.81	Shear (lb/sq ft)	1.16	1.03	1.04
Alpha	1.05	Stream Power (lb/ft s)	7.71	2.30	5.68
Frctn Loss (ft)	9.65	Cum Volume (acre-ft)	27.39	1.46	10.28
C & E Loss (ft)	0.04	Cum SA (acres)	25.29	1.20	4.56

```
Warning - The energy equation could not be balanced within the specified number of iterations.  The
          program selected the water surface that had the least amount of error between computed and
          assumed values.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid. water
          surface was used.

CROSS SECTION          RIVER: Harquahala
REACH: Upper Reach B       RS: 19.2665

INPUT
Description: 19.2665
Station Elevation Data     num=     233
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 3618.331336.7363645.6921336.7283662.5661336.2283668.6861335.9853684.5411336.024
3710.3031336.3113714.1361336.3413715.2011336.3293716.9581336.299 3741.061335.771
3769.305 1335.543770.5041335.5323774.3961335.4373796.1771334.1553812.8221334.139
3821.5551333.8823833.3971333.4313838.4241333.1833854.9981334.1423856.124 1334.25
3870.5931334.173 3880.891334.1873885.7361334.1833888.197 1333.743892.2221333.228
3895.058 1333.353904.3561333.8953915.4561333.7133915.8751333.7033936.4711333.272
3960.4581333.0343966.9791332.8963973.1971332.2513975.4991331.9343977.1621332.103
 3984.48 1332.97 4005.85 1332.264009.1571332.1594012.1711332.2064014.8791332.255
4042.3781333.0094045.7471331.9844048.4381331.4424055.4851332.5154056.4321332.692
  4085.11332.314 4089.511332.2124090.3411332.2694096.0421332.2564096.3091332.259
4099.6191332.3394103.8411332.4254105.1241332.4194112.6371332.1444113.5631332.108
4119.4721332.4394124.7451332.6924129.2411332.7044156.913  1332.74170.2971332.705
4170.8771332.7044171.7321332.6774186.3051332.1824193.8891331.9634197.6041331.627
4202.2781331.9354216.6311332.5214229.4131332.8434235.3831333.1514264.3721333.806
  4273.81333.8624288.8841333.6094302.1811333.6724313.136 1333.684326.4271333.726
4335.9131333.3224336.5791333.2994340.0491333.1974361.7541332.7014368.425 1332.89
4389.8751333.3584402.8521333.2284403.3721333.2244405.1671333.2534429.0731333.754
4434.7241333.7354455.0961333.3994456.0771333.236 4459.53 1332.784465.483 1331.78
4466.4581331.6694467.0391331.5764476.4941329.5114480.7121330.3844493.1621332.188
4493.4021332.2314493.5521332.2384517.3031333.1034524.5121333.2984526.6951333.214
4532.5951332.9154538.6291332.784 4545.751330.2724546.4331330.0254548.3181330.434
4553.4811331.2584555.3611331.6314557.8121331.8854559.008 1331.924578.597 1332.58
4587.3591332.7054595.9871332.793  4609.21332.8944624.065  1333.14636.9831333.269
4655.5531333.5124680.863 1333.83  4684.31333.8884689.2871334.0044693.9171333.552
4700.5991333.0464703.3591333.4144716.4881334.5034722.5871335.042 4724.481335.201
4748.7991334.4184771.8461335.0844778.9481335.1234782.2341334.9774799.6951334.482
4804.5641333.8724806.4791333.7034819.3051334.3114822.2431334.4544826.5761333.946
4834.0981332.8154837.2071333.2234842.2011333.5914851.0421333.4734855.5921333.418
4858.066 1333.654859.2831333.8394860.283 1333.884867.3581334.6084880.6571334.854
4889.7041334.9644892.1171335.1384908.6751334.2244919.1671333.859 4920.261333.843
4925.0071333.2324932.4371332.2314934.9891332.7864941.9381333.9864948.6341334.184
4957.7641334.5764966.578 1334.224977.9861333.9444979.0011333.9354987.803 1332.54
4999.5881331.0565001.392 1331.315009.0281332.3445015.8871333.2185016.3611333.292
5032.2281333.2085042.1041334.2645058.4021334.2925066.7521334.3275091.935 1334.21
5101.2721334.5085108.9321334.4225117.0391334.1525122.5421333.5145128.1241332.366
5133.5391333.0635136.8961333.7775151.0771333.5985159.2361333.8245167.849 1333.76
5174.3761334.3495192.7321334.3175200.938 1334.545221.037 1334.275224.746 1334.18
5232.0541333.426 5240.371334.5645246.2571334.7145263.8491334.7135285.6271334.172
5312.8291334.579 5333.981334.5495359.3251334.3995376.2921334.2775389.7921334.081
5424.6311333.1245451.5931332.6175469.7011332.1525469.7191332.1515481.615 1331.86
5484.1461331.6085501.3291331.9915504.2111332.1665558.0641332.1875560.5411332.263
5593.9721330.8195628.6221329.3325640.0251328.9555641.8131329.0835646.9311329.758
5651.0111329.2475657.1571328.6345662.8231328.6965670.7551328.9915694.8641330.259
5704.9881330.9415717.8931330.685 5742.531330.9975752.059  1331.45753.0581331.452
```

```
5757.9811331.5375790.3151332.4345803.5012332.6615841.271 1333.395852.0591333.656
5883.9571334.265 5903.661334.5975908.6731334.6435941.818 1335.195954.6361335.353
5964.8341335.6465990.521 1336.126000.081  1336.4

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
 3618.33    .0354966.578    .0855042.104    .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4966.5785042.104               534558.4567     540              .1        .3
Left Levee       Station=3885.736       Elevation=1334.183
Right Levee      Station=5200.938       Elevation= 1334.54

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1333.91   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.41   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)          1334.32   Reach Len. (ft)             534.00     558.46     540.00
  Crit W.S. (ft)          1333.85   Flow Area (sq ft)           884.12      72.59      20.24
  E.G. Slope (ft/ft)     0.014639   Area (sq ft)                884.12      72.59      20.24
  Q Total (cfs)           4850.00   Flow (cfs)                 4619.42     174.23      56.35
  Top Width (ft)           991.64   Top Width (ft)              881.54      59.67      50.43
  Vel Total (ft/s)           4.96   Avg. Vel. (ft/s)              5.22       2.40       2.78
  Max Chl Dpth (ft)          5.28   Hydr. Depth (ft)              1.00       1.22       0.40
  Conv. Total (cfs)       40084.8   Conv. (cfs)                38179.1     1440.0      465.7
  Length Wtd. (ft)         534.60   Wetted Per. (ft)            883.97      60.05      50.70
  Min Ch El (ft)          1331.06   Shear (lb/sq ft)              0.91       1.10       0.36
  Alpha                      1.07   Stream Power (lb/ft s)        4.78       2.65       1.02
  Frctn Loss (ft)            8.30   Cum Volume (acre-ft)         17.42       0.81       9.45
  C & E Loss (ft)            0.01   Cum SA (acres)               15.71       0.64       3.53


Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
          cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
          surface was used.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION          RIVER: Harquahala
REACH: Upper Reach B      RS: 19.1607

INPUT
Description: 19.1607
Station Elevation Data     num=      263
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
3547.9281328.2583566.8691328.1313582.318 1328.023596.8171327.9243618.4231327.682
 3641.431327.4383643.8711327.1093649.5641326.2673650.3281326.3133660.8561326.884
 3662.131327.0263702.0061326.7663718.4931326.6043726.414 1326.57 3743.951326.585
3803.0211325.919 3836.591325.1363846.173 1324.953848.8341324.9293858.2791325.092
3879.4441324.8113887.5761324.7313894.4271323.7323896.4451323.3213899.9641323.861
3903.2471324.5163933.4711324.5483950.9861324.6193957.193 1323.953959.6671323.563
3968.2771324.018 3972.141324.3511979.2571324.8373982.6141325.2553986.191 1325.09
3995.0021324.6713999.5751323.5734003.9771322.5764008.1271324.1054011.324 1324.75
4028.542 1324.634040.5511324.5434045.8271324.5184047.4681324.5044051.8461324.375
4058.5311324.1284060.0591324.0394062.0581324.1174075.047 1324.134090.0371324.793
4094.0951324.8494100.8991325.0894109.4341325.3514115.2251325.4224129.7191325.141
4140.5741324.8454141.9931324.6814146.2991324.6664150.4161324.4714159.8041324.693
4161.5241324.8224162.0971324.7334170.4291323.129 4171.321323.2884178.8621324.819
4180.913 1324.694185.5831324.2664194.1821323.7314195.5411323.6654223.3251324.562
4225.9511324.6514226.1461324.649 4247.461324.8014264.4321324.6924273.5771324.564
4277.5031324.5484288.3941324.4724300.4671324.314    43061323.935 4309.881323.573
4328.3161324.6054328.5821324.6314329.0671324.6454354.8321325.1884363.5261325.122
4366.6591324.9324380.9141324.619  4384.61323.732 4390.141322.6234397.9251324.154
  4399.41324.455  4403.41324.6854422.3131325.5864441.6461325.9554454.4131326.118
4472.1281325.6084476.7771325.4664482.856    13244489.8091322.7234494.1281323.454
4499.2711324.1474513.1631323.5374513.2221323.5384530.1271325.4894533.4041325.783
4538.2951325.8954567.0171325.9764573.0591326.0124581.4091325.4764592.3241324.757
4600.7811322.6124602.5651322.063 4605.391322.561 4614.66 1324.354619.3091323.672
4621.324 1323.844629.0611324.6044630.0241324.5984632.8861324.5764634.2761324.564
4639.8441324.4544646.1231324.2754652.5081324.1234657.9241323.5564659.896 1323.28
4691.7491325.9774695.0271326.2214700.2641326.4574706.6531326.5334741.3921326.318
4767.8561325.8964792.3271325.6824808.1111325.3924819.6111325.239 4837.571325.066
4845.9191324.8784857.489 1325.584858.0991325.6244873.9411325.9074898.7321326.344
 4898.931326.3454901.2531326.3664917.2731326.7674924.201 1326.924934.4541325.714
4935.3571325.6234936.2061325.676 4943.881326.2484948.1811326.4364952.572 1326.68
4965.5131326.7084966.2151326.706  4966.71326.6364974.9181325.5554977.0431326.052
4980.5191326.3794986.2781326.3324991.5421326.286  4992.91326.1624996.5941325.387
5001.0531324.6075003.5211325.0755008.8811326.3295026.1631326.0625034.2071325.932
5047.2081326.1095050.5781326.1515054.0251325.9195057.9861325.7155062.1321326.318
5065.8961326.6815073.9051326.6785089.0921326.635 5110.921326.6435123.305 1326.72
5141.8471326.2265145.0971325.9325162.4661326.4375172.3311326.9085179.0651326.931
5190.6051326.9295205.8961326.8085228.662  1326.65236.6771326.0185241.7321325.457
5246.8751325.9055256.1281326.3665260.4871326.4385262.6611326.5095295.6841326.938
5314.6661327.142 5317.681327.1835334.5731327.2115344.8111326.9625367.9851326.376
5374.0541326.189 5375.841325.8755387.0571323.5375391.3441324.4145397.7571324.968
5403.9331324.8095412.8191324.628  5433.11325.8515436.8841326.0185464.2921326.295
5491.4351326.5655498.479 1326.475527.6721325.7425559.8341324.3585567.2121324.174
 5570.711323.9895582.8041323.0355588.3051322.1685592.8021322.5135597.2341323.085
5599.104 1322.945599.6981322.9075606.187 1322.985608.7171322.9855614.8151321.451
 5617.451320.7675621.6891321.5485628.4661322.8385632.9381323.2925641.195  1323.6
5652.2341323.4135657.7651323.3185666.3731323.6985673.7421323.6555683.9561323.818
5693.3721323.8815697.4361323.8885706.4521323.4795707.3461323.4615716.4741324.174
5719.0191324.3385722.7851324.3135733.4511324.3815767.0861324.649 5785.96 1324.79
5793.2281324.5055803.555 1324.345809.7461324.5635821.3191324.9325849.0661325.715
  5850.61325.7395875.1271325.9535890.9411326.1855897.3861326.3065910.9311326.604
5931.8671326.962 5951.671326.9565954.5331326.8755963.2981326.7455969.3421326.985
5994.8141327.8126017.9381328.1986053.0381328.7076104.1071329.6186107.6361329.657
6108.425 1329.646110.797 1329.65  6140.491329.791
```

```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
3547.928    .0354991.542    .0855008.881    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4991.5425008.881              422554.2729     519            .1          .3
Right Levee      Station=5491.435      Elevation=1326.565

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1325.53   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.49   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)          1326.02   Reach Len. (ft)            422.00     554.27     519.00
  Crit W.S. (ft)          1325.53   Flow Area (sq ft)          824.64       4.54      39.37
  E.G. Slope (ft/ft)     0.016491   Area (sq ft)               824.64       4.54      39.37
  Q Total (cfs)           4850.00   Flow (cfs)                4662.53       6.13     181.34
  Top Width (ft)           879.77   Top Width (ft)             818.61       9.52      51.64
  Vel Total (ft/s)           5.58   Avg. Vel. (ft/s)             5.65       1.35       4.61
  Max Chl Dpth (ft)          4.76   Hydr. Depth (ft)             1.01       0.48       0.76
  Conv. Total (cfs)       37767.1   Conv. (cfs)               36307.3       47.8     1412.1
  Length Wtd. (ft)         463.69   Wetted Per. (ft)           821.90       9.70      51.99
  Min Ch El (ft)          1324.61   Shear (lb/sq ft)             1.03       0.48       0.78
  Alpha                      1.01   Stream Power (lb/ft s)       5.84       0.65       3.59
  Frctn Loss (ft)            6.14   Cum Volume (acre-ft)         6.94       0.32       9.08
  C & E Loss (ft)            0.02   Cum SA (acres)               5.29       0.20       2.90


Warning - The energy equation could not be balanced within the specified number of iterations.  The
          program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
          depth, the calculatad water surface came back below critical depth.  This indicates that there is
          not a valid subcritical answer.  The program defaulted to critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
          surface was used.

CROSS SECTION          RIVER: Harquahala
REACH: Upper Reach B      RS: 19.0557

INPUT
Description: 19.0557
Station Elevation Data     num=     249
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
3277.6671320.2213281.2851320.1893315.3191319.9143325.4761319.9563339.5411319.917
3373.1041319.8623376.6661319.715 3380.61 1319.783388.7311319.7023407.4911319.745
3431.7621319.3283465.2641319.2633506.4571319.3473520.9491319.0583575.874 1317.81
3579.5081317.1523584.7391316.1553592.823  1317.63594.6461317.947 3635.041318.106
3636.2631318.1163638.5121318.0993661.7681318.0473691.5871318.0543693.7731317.561
3699.4811317.0333704.5321316.2973711.4261317.5553714.7321318.3773738.5131318.708
3749.3961318.8783751.7441318.8073764.4911318.3823774.8691318.1363800.2641317.919
3801.3981317.9093801.8871317.8563805.4581317.5073814.1681316.5733816.3331316.765
3825.798 1317.643840.7871318.1013844.5591318.2143867.4221318.5443884.903 1318.78
3885.1451318.773 3886.051318.7393893.4091318.4213919.8221318.0063943.4561317.758
3946.4251317.7173948.8021317.3513952.2851316.9833956.2981316.4673974.3811317.115
3976.5561317.224  3995.11317.9284003.2171318.1914025.0671317.9134037.0311317.661
4048.4181317.5194060.9191317.4824073.7651317.6094077.9191317.6514081.3221317.707
4094.1891318.2114114.1631317.7274128.5831317.5864137.155 1316.554137.1671316.548
4137.1731316.5494144.9981317.2634158.6261317.3034159.0021317.2974159.8161317.279
4172.0381317.0584174.5491317.0414174.7891316.893 4179.66  1315.64180.0611315.525
4187.1981317.2364187.5481317.2654193.6271317.1114206.171 1317.944207.8551317.365
4211.6681316.4334220.3491314.5014224.6381315.2434244.2831317.5024251.5231317.502
4257.1211317.527 4261.381317.6754274.7311317.955  4281.71318.1634287.4981318.051
4297.9431317.7444306.3191317.467 4318.721317.8314340.2461318.6514350.8091318.668
4372.4181318.8384375.9411318.8484383.473 1318.854386.0561318.846 4391.961318.474
4403.4121318.4454407.7911318.4824410.3131318.5394417.0621318.575 4428.771319.289
4439.7631319.9484449.0281319.7774471.8571319.1154488.151 1318.72 4496.091318.399
 4510.241318.0384529.1381317.8274546.1731317.6854549.2481317.3084556.7071316.954
4559.6121317.1374568.0261317.5144570.1161317.6774580.648 1317.814587.1041318.024
4598.5561318.356  4604.11318.3844625.054 1318.674634.323 1318.714637.073 1318.71
4642.0991318.734 4651.081318.2744656.4521318.648  4662.31318.6584680.6371318.145
4695.689 1317.924708.0371317.7344737.1671317.888 4752.321318.0654754.1051317.915
 4759.041317.3744763.6091318.0164766.207 1318.164775.6521318.4334793.1761318.658
 4812.561318.5834823.625 1318.574862.2521317.7384864.655 1317.654870.4081317.571
4873.1811317.6634880.6641318.1864891.9381318.3544897.0531318.4844904.5171318.659
4905.6681318.7014906.9831318.6634912.0421318.4344922.6911318.0144925.3011317.272
4928.371 1316.324932.1781317.0934935.0781317.4144936.4461317.7674944.178  1318.4
4953.573 1318.544964.7211318.691    49871318.3554991.9681318.2464993.7971317.675
4999.8141315.7865006.4281316.9325010.8011318.1915018.337 1318.175033.0291318.262
5038.2011318.1885050.459 1317.595059.734 1317.235066.1121317.5435077.937 1318.03
5101.3471318.3465103.0131318.4065105.5461318.4635121.7681318.9885129.1171318.892
5138.6581318.7255160.5341318.4885175.9721318.3055180.6351318.1225184.7391317.827
5205.2511316.4645208.2621316.4395214.7361316.4875223.7611315.6435224.1111315.615
5224.277 1315.625225.3511315.677 5231.411315.9875232.2581316.0665236.3521315.829
5245.6631315.4575251.0671315.7785259.5911316.5015270.2421317.4395285.2541317.463
5296.1851317.4485300.7781317.351 5326.241316.3725336.494 1316.235339.178 1316.06
 5357.031315.4575360.2841315.0085366.0491314.3085375.1581315.3715380.3941316.058
5385.9051316.0785405.7191316.1475419.2641315.8025419.3781315.8015419.549  1315.8
5443.7671315.5915447.1441315.8365449.6671315.9855454.6961315.8465469.3251316.042
5496.5681316.609  5536.51317.0635551.9561317.0935575.4011315.5255577.3321315.418
5579.5261315.3035587.4961316.2345589.0391316.4125589.3081316.4115592.3661316.431
5632.9961316.6935636.1081316.6935639.7221316.7645671.7341317.5355673.8321317.598
5711.6531318.4635714.9181318.509  5722.81318.6495750.1691319.1035760.7161319.074
5795.7931319.7215819.9571320.0945842.8151320.2765854.8981320.471

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
3277.667    .0354991.968    .0855010.801    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4991.9685010.801              446465.0548     437            .1          .3
Left Levee      Station=3636.263      Elevation=1318.116

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)            1317.85   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.42   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)            1318.26   Reach Len. (ft)            465.05     465.05     465.05
  Crit W.S. (ft)            1317.72   Flow Area (sq ft)          254.02      18.04     713.23
  E.G. Slope (ft/ft)       0.010867   Area (sq ft)               254.02      18.04     713.23
  Q Total (cfs)             4850.00   Flow (cfs)                 883.44      34.34    3932.22
  Top Width (ft)            1016.72   Top Width (ft)             471.94      16.35     528.43
  Vel Total (ft/s)             4.92   Avg. Vel. (ft/s)             3.48       1.90       5.51
  Max Chl Dpth (ft)            3.54   Hydr. Depth (ft)             0.54       1.10       1.35
  Conv. Total (cfs)        46524.4    Conv. (cfs)                8474.5      329.5    37720.4
  Length Wtd. (ft)           465.05   Wetted Per. (ft)           474.08      16.89     529.03
  Min Ch El (ft)            1315.79   Shear (lb/sq ft)             0.36       0.72       0.91
  Alpha                        1.11   Stream Power (lb/ft s)       1.26       1.38       5.04
  Frctn Loss (ft)              6.02   Cum Volume (acre-ft)         1.92       0.15       5.37
  C & E Loss (ft)              0.02   Cum SA (acres)

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION           RIVER: Harquahala
REACH: Split1              RS: 19.6872

INPUT
Description: 19.6872
Station Elevation Data    num=      55
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4757.0631387.2644762.4581386.4424778.2671384.662 4797.351382.6754817.9481379.932
4825.3211378.9554868.6181374.7994879.3341374.1034900.6831373.9334952.2171373.623
4960.4241373.0224969.5121372.0034979.943 1372.344980.2271372.3514980.4761372.359
4981.3621372.4285004.8841374.2595014.0331374.6125020.6681374.8255046.3211375.975
5079.9811376.6955087.596 1376.835092.5971376.9645121.5141377.8065121.8431377.817
5122.7871377.8455149.8231378.2195164.7311378.647  5177.41378.809  5190.51377.195
5200.8591375.6495214.039 1377.275221.0381378.312  5238.61379.0615242.9371379.212
5259.0391379.7075267.7211380.0015283.875 1380.62 5290.661380.8055302.9641381.423
5309.3821381.661 5331.661382.1665336.081  1382.35360.2741383.0245361.7451383.086
5363.0591383.1285377.8951383.7135400.5481384.3515403.6131384.4955420.2491385.313
5427.0081385.5385441.6251385.7495460.6931386.2485469.2241386.3575484.2871386.737

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4757.063    .0354757.063    .0555484.287    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4757.0635484.287              167189.4667     230            .1          .3
Right Levee     Station=  5177.4      Elevation=1378.809

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)            1374.06   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.06   Wt. n-Val.                            0.055
  E.G. Elev (ft)            1374.12   Reach Len. (ft)            167.00     189.47     230.00
  Crit W.S. (ft)            1373.41   Flow Area (sq ft)                      74.60
  E.G. Slope (ft/ft)       0.010143   Area (sq ft)                           74.60
  Q Total (cfs)              150.00   Flow (cfs)                            150.00
  Top Width (ft)             117.29   Top Width (ft)                        117.29
  Vel Total (ft/s)             2.01   Avg. Vel. (ft/s)                       2.01
  Max Chl Dpth (ft)            2.05   Hydr. Depth (ft)                       0.64
  Conv. Total (cfs)          1489.4   Conv. (cfs)                           1489.4
  Length Wtd. (ft)           189.47   Wetted Per. (ft)                      117.45
  Min Ch El (ft)            1372.00   Shear (lb/sq ft)                       0.40
  Alpha                        1.00   Stream Power (lb/ft s)                 0.81
  Frctn Loss (ft)              3.03   Cum Volume (acre-ft)         0.00      2.53
  C & E Loss (ft)              0.01   Cum SA (acres)                         2.79

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Harquahala
REACH: Split1              RS: 19.6513

INPUT
Description: 19.6513
Station Elevation Data    num=      60
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4813.5331385.0414821.8551383.7174840.9921380.6774841.7651380.6094867.796 1377.58
4868.7771377.4344889.9721375.5614897.8661375.2064917.9621373.9244933.1861373.012
4945.0761372.5084963.0051371.5474971.8931371.3584985.5371370.2114996.1631369.562
4999.0551369.2275000.2481369.1685000.8881369.2145002.8051369.3255011.1071369.967
5016.5811370.2015023.0881370.5315049.4451370.8995051.2631370.9115060.7471371.038
5082.2331371.4495087.8911371.386  5103.91370.2655107.5631369.9955109.2761370.106
5111.0191370.1865151.9611372.0565166.002 1372.565177.7851373.0825197.4611373.572
5202.6471373.7385213.959 1374.355234.1571375.1575251.3361375.6775272.197 1376.29
5287.7891376.8735308.415  1377.55328.9541378.3615345.3081378.9245357.7881379.135
5367.8731379.448 5386.311380.1465391.1071380.2665402.4441380.8655414.1591381.278
5432.4171381.6945443.5671381.9535460.7071382.1995480.5311382.8345484.7351382.971
5494.335 1383.415521.0471384.4285545.9991385.0675547.2931385.0875551.2821385.063
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4813.533    .0354813.533    .0655551.282    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4813.5335551.282                194272.8115     298              .1        .3
Right Levee      Station=5082.233       Elevation=1371.449

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1370.94   Element                     Left OB    Channel   Right OB
  Vel Head (ft)                0.14   Wt. n-Val.                             0.065
  E.G. Elev (ft)            1371.08   Reach Len. (ft)              194.00    272.81     298.00
  Crit W.S. (ft)            1370.67   Flow Area (sq ft)                      50.58
  E.G. Slope (ft/ft)       0.029411   Area (sq ft)                           50.58
  Q Total (cfs)              150.00   Flow (cfs)                            150.00
  Top Width (ft)              76.75   Top Width (ft)                         76.75
  Vel Total (ft/s)             2.97   Avg. Vel. (ft/s)                        2.97
  Max Chl Dpth (ft)            1.77   Hydr. Depth (ft)                        0.66
  Conv. Total (cfs)           874.7   Conv. (cfs)                            874.7
  Length Wtd. (ft)           272.81   Wetted Per. (ft)                       76.87
  Min Ch El (ft)            1369.17   Shear (lb/sq ft)                        1.21
  Alpha                        1.00   Stream Power (lb/ft s)                  3.58
  Frctn Loss (ft)              3.75   Cum Volume (acre-ft)          0.00      2.26
  C & E Loss (ft)              0.02   Cum SA (acres)                          2.37


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                 than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                 section.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
REACH: Split1               RS: 19.5997

INPUT
Description: 19.5997
Station Elevation Data     num=       68
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4856.8951385.7894858.9931385.4084869.3451383.5244885.5941380.7624897.7841377.929
4899.3451377.594 4909.081376.5944925.3781374.8894932.7841374.2444940.6861373.446
4955.3451370.4354967.5731366.4474975.0111366.9734979.0991365.7234984.587 1365.61
4997.2611365.1355004.576 1365.835019.2681366.508 5028.761367.0265043.2211367.173
 5060.571367.5535071.9961367.1365080.8641367.7485090.6191368.8035093.4691368.841
5098.1961368.8965123.0521369.073 5147.141369.7275163.6691369.716 5178.281369.995
5192.403 1370.21  5214.11370.3565222.1861370.2165233.7321369.6815254.1921369.845
5255.5641369.9155256.8531369.9085293.9481371.8335299.9241372.0315326.7071372.505
5327.4541372.5465328.1691372.5585356.4691373.4165377.4491374.1055379.1811374.176
5386.6971374.3135403.3351374.559 5407.051374.6175412.2521374.7825421.5231374.863
5438.4371374.892  5470.8 1375.865475.2831375.9635491.1371376.2515511.6941376.892
 5528.121377.4125540.0391377.6285561.8381378.0295576.056 1378.155581.4261378.133
5606.006 1378.075621.5341378.6055630.0041378.9295646.1171379.651 5648.741379.753
5649.4921379.7725685.579 1380.355688.1841380.406

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4856.895    .0354856.895    .0655688.184    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4856.8955688.184                166200.6815     260              .1        .3
Right Levee      Station= 5060.57       Elevation=1367.553

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1367.25   Element                     Left OB    Channel   Right OB
  Vel Head (ft)                0.06   Wt. n-Val.                             0.065
  E.G. Elev (ft)            1367.31   Reach Len. (ft)              166.00    200.68     260.00
  Crit W.S. (ft)            1366.46   Flow Area (sq ft)                      76.99
  E.G. Slope (ft/ft)       0.007914   Area (sq ft)                           76.99
  Q Total (cfs)              150.00   Flow (cfs)                            150.00
  Top Width (ft)              81.69   Top Width (ft)                         81.69
  Vel Total (ft/s)             1.95   Avg. Vel. (ft/s)                        1.95
  Max Chl Dpth (ft)            2.12   Hydr. Depth (ft)                        0.94
  Conv. Total (cfs)          1686.1   Conv. (cfs)                           1686.1
  Length Wtd. (ft)           200.68   Wetted Per. (ft)                       82.09
  Min Ch El (ft)            1365.14   Shear (lb/sq ft)                        0.46
  Alpha                        1.00   Stream Power (lb/ft s)                  0.90
  Frctn Loss (ft)              1.79   Cum Volume (acre-ft)          0.00      1.86
  C & E Loss (ft)              0.00   Cum SA (acres)                          1.87


Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                 section.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
REACH: Split1               RS: 19.5616

INPUT
Description: 19.5616
Station Elevation Data     num=       68
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4913.406 1377.594930.4911373.3154944.194 1370.824984.369 1365.464985.9691365.231
4986.5171365.1964987.5691365.0685001.8371363.2685009.6991363.6615019.1561364.323
5025.8961364.2285046.7181367.0655048.718 1367.325052.308 1367.355062.1261367.284
5085.3631367.144 5097.97 1366.955114.0821366.563 5137.13 1366.625141.8471366.507
 5158.031366.2365175.1791366.3385190.4221366.0565201.2621366.5045222.8181366.981
5224.4111367.0295225.2391367.0485242.3931368.4065252.4561368.6865262.1811368.849
5274.9511369.1855292.4771368.5825293.7821368.4925294.9741368.4385309.4441369.716
5326.9161369.8435337.4951369.8725349.2351370.1285355.5251370.1135404.0841370.944
5404.2161370.9455404.3661370.9455405.8671370.7595422.5581368.7135423.8661368.959
```

5425.829 1369.215443.1421371.1875460.7311373.1745461.8151373.2225462.3271373.235
5465.0421373.3525495.5771374.3825509.612 1374.64 5521.86 1374.595545.781 1374.75
5547.4061374.7215553.489 1374.895565.4691375.1495587.8241375.7585599.3211375.918
5621.583 1376.245648.7121376.5535666.5531376.8515692.2331377.1435692.5251377.147
5712.1841376.344 5715.341376.3025737.4361377.364

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4913.406	.035	4913.406	.065	5737.436	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4913.406	5737.436		175207.8089	272	.1	.3

Right Levee Station=5052.308 Elevation= 1367.35

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1365.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.065	
E.G. Elev (ft)	1365.52	Reach Len. (ft)	175.00	207.81	272.00
Crit W.S. (ft)	1364.78	Flow Area (sq ft)		58.69	
E.G. Slope (ft/ft)	0.010149	Area (sq ft)		58.69	
Q Total (cfs)	150.00	Flow (cfs)		150.00	
Top Width (ft)	49.96	Top Width (ft)		49.96	
Vel Total (ft/s)	2.56	Avg. Vel. (ft/s)		2.56	
Max Chl Dpth (ft)	2.15	Hydr. Depth (ft)		1.17	
Conv. Total (cfs)	1489.0	Conv. (cfs)		1489.0	
Length Wtd. (ft)	207.81	Wetted Per. (ft)		50.20	
Min Ch El (ft)	1363.27	Shear (lb/sq ft)		0.74	
Alpha	1.00	Stream Power (lb/ft s)		1.89	
Frctn Loss (ft)	2.40	Cum Volume (acre-ft)	0.00	1.55	
C & E Loss (ft)	0.02	Cum SA (acres)		1.57	

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split1 RS: 19.5223

INPUT
Description: 19.5223
Station Elevation Data num= 62

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4942.659	1377.0224947	.9661374	.4494986	.7251362	.1774987	.665 1361	.884987	.8131361	.863
4988.225	1361.8315002	.0321360	.6795009	.836 1361	.46 5021	.731362	.4955036	.0511362	.711
5060.995	1363.054 5073	.971362	.648 5080	.421362	.5165098	.3761362	.8475098	.6071362	.854
5120.617	1362.9465127	.1011363	.0115141	.0851363	.8335147	.8141364	.9955156	.9321365	.709
5169.846	1365.7445190	.3681366	.0165224	.9771365	.9235226	.4951365	.9055229	.4371366	.137
5237.186	1366.7265261	.9571368	.3995270	.8351368	.9725281	.6571369	.1185289	.6211369	.173
5307.709	1369.1365336	.1931370	.3975341	.2781370	.5295369	.5961371	.088 5384	.71371	.143
5386.275	1371.1525404	.7391371	.3595407	.4831371	.4195419	.1571371	.6215427	.3251371	.689
5456.189	1371.8225460	.722 1371	.855484	.6981372	.416 5507	.11372	.9495508	.5251372	.974
5547.194	1372.3815552	.8151372	.4515573	.7911372	.7295585	.2661373	.1985594	.2191373	.408
5616.567	1374.0175638	.058 1374	.435653	.114 1374	.755672	.3951375	.1025685	.2371375	.461
5707.185	1375.7195714	.3341375	.5385722	.9521375	.6425756	.2541376	.0865773	.5771376	.418
5794.316	1376.7255823	.2421376	.313						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4942.659	.035	4942.659	.065	5823.242	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4942.659	5823.242		178186.7914	295	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1363.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.065	
E.G. Elev (ft)	1363.10	Reach Len. (ft)	178.00	186.79	295.00
Crit W.S. (ft)		Flow Area (sq ft)		82.48	
E.G. Slope (ft/ft)	0.013275	Area (sq ft)		82.48	
Q Total (cfs)	150.00	Flow (cfs)		150.00	
Top Width (ft)	143.40	Top Width (ft)		143.40	
Vel Total (ft/s)	1.82	Avg. Vel. (ft/s)		1.82	
Max Chl Dpth (ft)	2.37	Hydr. Depth (ft)		0.58	
Conv. Total (cfs)	1301.9	Conv. (cfs)		1301.9	
Length Wtd. (ft)	186.79	Wetted Per. (ft)		143.74	
Min Ch El (ft)	1360.68	Shear (lb/sq ft)		0.48	
Alpha	1.00	Stream Power (lb/ft s)		0.86	
Frctn Loss (ft)	2.92	Cum Volume (acre-ft)	0.00	1.21	
C & E Loss (ft)	0.01	Cum SA (acres)		1.10	

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split1 RS: 19.4869

INPUT
Description: 19.4869
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4964.681	1366.5274972	.9421363	.3724987	.7911358	.6284994	.8331357	.3044998	.419 1357	.78
5008.507	1359.1325013	.9941359	.5925017	.0891359	.8755030	.9411359	.8935038	.4971359	.965
5043.062	1359.9515045	.8361359	.802 5053	.591359	.5145058	.7931360	.1415075	.9671362	.016
5080.118	1362.1595115	.3381363	.6795125	.6811363	.9065152	.2421364	.4085162	.7511364	.594
5187.395	1365.0035206	.8411364	.9475227	.5291364	.8875230	.0221364	.732 5245	.161364	.231
5250.405	1364.0815251	.8191364	.0495274	.7041365	.2525275	.3171365	.2915297	.9491365	.757
5315.922	1366.122 5316	.571366	.1225319	.7561366	.0815344	.3111365	.8265350	.1311365	.086

```
5352.734  1364.85353.6191364.7045354.9641364.8575369.7561366.3585392.5821367.098
5407.4141367.4475430.9591367.3815444.2241367.357 5461.351367.3825471.1831366.915
5504.127 1364.755516.6121363.3595518.5581363.2395522.2991363.4315529.748 1363.85
5546.7811364.4945567.5661365.1465570.2471365.2015573.2571365.2565601.6821365.823
5616.1841366.4275623.5551366.7335632.6161366.673 5654.671366.823 5663.811364.956
 5665.971364.5885670.199 1365.345682.9151367.1715690.9511367.3045707.1641367.333
5748.2131368.616

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
 4964.68    .035 4964.68    .0655748.213    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
       4964 685748.213              459469.5331     543              .1        .3
Right Levee      Station=5187.395       Elevation=1365.003

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1360.08   Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.10    Wt. n-Val.                            0.065
  E.G. Elev (ft)            1360.18   Reach Len. (ft)             459.00    469.53     543.00
  Crit W.S. (ft)            1359.33   Flow Area (sq ft)                     58.15
  E.G. Slope (ft/ft)       0.018059   Area (sq ft)                          58.15
  Q Total (cfs)              150.00   Flow (cfs)                           150.00
  Top Width (ft)              75.02   Top Width (ft)                        75.02
  Vel Total (ft/s)             2.58   Avg. Vel. (ft/s)                       2.58
  Max Chl Dpth (ft)            2.77   Hydr. Depth (ft)                       0.78
  Conv. Total (cfs)          1116.2   Conv. (cfs)                          1116.2
  Length Wtd. (ft)            469.53  Wetted Per. (ft)                      75.57
  Min Ch El (ft)            1357.30   Shear (lb/sq ft)                       0.87
  Alpha                        1.00   Stream Power (lb/ft s)                 2.24
  Frctn Loss (ft)              6.56   Cum Volume (acre-ft)        0.00       0.91
  C & E Loss (ft)              0.01   Cum SA (acres)                         0.64


Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Marquahala
REACH: Split1              RS: 19.3980

INPUT
Description: 19.3980
Station Elevation Data     num=       65
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
4767.3221356.7974783.3061355.0834797.3621354.5994813.3241354.0424825.5841353.585
4834.6041353.7284848.2681353.5724854.0981353.4164864.9981353.7044887.5021354.444
4906.0351354.8944915.6561354.8684946.2811354.8914951.8651352.8994956.1491352.107
4959.5781352.4484976.3951353.5494985.3681353.3084988.2291353.2144989.6971353.183
4992.8571352.8865000.3561352.1325007.7231352.7925010.1761353.0935022.4061352.779
5034.2231352.5755036.0961352.5355045.9271352.2435051.4311353.2025059.8991354.778
5082.2241355.1245090.3591355.3455117.1181355.0235122.9971355.0695138.042 1355.38
5145.5981355.5725148.5361355.5525164.7131355.5095178.752    13555180.3881354.946
5182.3051354.8965185.0621354.5675197.3331353.2975204.3651353.7625215.614 1354.09
5232.4971353.8215240.9391353.4455250.1561353.284 5251.711353.1945255.2111353.432
5268.6211354.4655277.3641354.6055303.5681355.195 5341.351354.8075364.6611354.612
5396.354  1353.55397.3141353.4675397.5431353.4545411.5321352.7815424.6551353.867
5427.7371354.1175456.556 1354.745456.8411354.7485457.2331354.744 5475.521354.702

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
4767.322    .0354946.281    .0655059.899    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4946.2815059.899              399433.8286     377              .1        .3
Left Levee       Station=4946.281       Elevation=1354.891
Right Levee      Station=5059.899       Elevation=1354.778

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1353.55   Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.06    Wt. n-Val.                            0.065
  E.G. Elev (ft)            1353.61   Reach Len. (ft)             433.83    433.83     433.83
  Crit W.S. (ft)            1353.12   Flow Area (sq ft)                     76.48
  E.G. Slope (ft/ft)       0.011054   Area (sq ft)                          76.48
  Q Total (cfs)              150.00   Flow (cfs)                           150.00
  Top Width (ft)              103.29  Top Width (ft)                       103.29
  Vel Total (ft/s)             1.96   Avg. Vel. (ft/s)                       1.96
  Max Chl Dpth (ft)            1.45   Hydr. Depth (ft)                       0.74
  Conv. Total (cfs)          1426.7   Conv. (cfs)                          1426.7
  Length Wtd. (ft)            433.83  Wetted Per. (ft)                     103.76
  Min Ch El (ft)            1352.11   Shear (lb/sq ft)                       0.51
  Alpha                        1.00   Stream Power (lb/ft s)                 1.00
  Frctn Loss (ft)              5.95   Cum Volume (acre-ft)        0.00       0.47
  C & E Loss (ft)              0.00   Cum SA (acres)


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - A flow split was encountered.  The program first calculated the momentum of both channels
                below the junction.  An energy balance was performed across the junction from the stream with
                the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Marquahala
REACH: Split 1A            RS: 19.3216

INPUT
Description: 19.3216
Station Elevation Data     num=       22
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4756.0441351.1234776.431 1350.794793.281 1350.434798.1711350.1564816.9131349.099
4823.3341348.8054841.1161348.0444847.669 1347.554855.5991346.8854859.2371347.412
4869.0651348.763 4900.061349.0914912.3561349.2444949.5361348.7284962.854 1347.24
4964.9441346.9464968.1621347.0014977.5031346.9215000.222 1346.765004.7921347.646
5017.6221349.1145033.4661348.776

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4756.044    .0354912.356    .0655017.622    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4912.3565017.622              338431.8443     325          .1          .3
Left Levee      Station=4912.356      Elevation=1349.244
Right Levee     Station=5017.622      Elevation=1349.114

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1347.47   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.03   Wt. n-Val.                            0.065
  E.G. Elev (ft)          1347.49   Reach Len. (ft)            338.00    431.84     325.00
  Crit W.S. (ft)          1347.16   Flow Area (sq ft)                     22.82
  E.G. Slope (ft/ft)     0.007725   Area (sq ft)                          22.82
  Q Total (cfs)             30.00   Flow (cfs)                            30.00
  Top Width (ft)            43.04   Top Width (ft)                        43.04
  Vel Total (ft/s)           1.31   Avg. Vel. (ft/s)                       1.31
  Max Chl Dpth (ft)          0.71   Hydr. Depth (ft)                       0.53
  Conv. Total (cfs)         341.3   Conv. (cfs)                           341.3
  Length Wtd. (ft)         431.84   Wetted Per. (ft)                      43.14
  Min Ch El (ft)          1346.76   Shear (lb/sq ft)                       0.26
  Alpha                      1.00   Stream Power (lb/ft s)                 0.34
  Prctn Loss (ft)            5.43   Cum Volume (acre-ft)         1.08      0.89       2.97
  C & E Loss (ft)            0.00   Cum SA (acres)               1.47      1.63       2.08


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
             than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
             section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Harquahala
REACH: Split 1A           RS: 19.2398

INPUT
Description: 19.2398
Station Elevation Data     num=      43
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4619.3731343.885 4644.291343.4244679.0231343.0374679.7251343.0224683.2651342.983
4708.1131342.7044716.7761342.6554734.8411342.5394750.2241342.2774783.1881341.669
 4794.541341.339 4804.491341.059 4827.891341.9434832.5921342.1744857.1991343.548
4857.6571343.5644858.5491343.5344885.223 1342.76 4910.821341.3154913.399  1341.2
4915.9571341.3284926.411 1341.854953.6131342.1734968.0211342.3094978.6671342.161
4979.7161342.0784992.5051341.4524999.4681341.0095000.8011341.0245006.0151341.566
5014.5311342.5235024.1581342.4725035.2991342.4415043.5161342.5795072.503 1343.08
5091.833 1343.545098.551  1343.55104.5741343.5235132.0711343.7715132.3221343.773
5133.0651343.776 5169.181343.7445172.9741343.895

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4619.373    .0354857.657    .0655091.833    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4857.6575091.833              377381.3855     359          .1          .3
Left Levee      Station=4968.021      Elevation=1342.309
Right Levee     Station=5091.833      Elevation= 1343.54

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1341.99   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.07   Wt. n-Val.                            0.065
  E.G. Elev (ft)          1342.06   Reach Len. (ft)            377.00    381.39     359.00
  Crit W.S. (ft)          1341.77   Flow Area (sq ft)                     14.05
  E.G. Slope (ft/ft)     0.022332   Area (sq ft)                          14.05
  Q Total (cfs)             30.00   Flow (cfs)                            30.00
  Top Width (ft)            28.36   Top Width (ft)                        28.36
  Vel Total (ft/s)           2.13   Avg. Vel. (ft/s)                       2.13
  Max Chl Dpth (ft)          0.98   Hydr. Depth (ft)                       0.50
  Conv. Total (cfs)         200.8   Conv. (cfs)                           200.8
  Length Wtd. (ft)         381.39   Wetted Per. (ft)                      28.44
  Min Ch El (ft)          1341.01   Shear (lb/sq ft)                       0.69
  Alpha                      1.00   Stream Power (lb/ft s)                 1.47
  Prctn Loss (ft)            5.07   Cum Volume (acre-ft)         1.08      0.71       2.97
  C & E Loss (ft)            0.01   Cum SA (acres)               1.47      1.28       2.08


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
             than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
             section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Harquahala
REACH: Split 1A           RS: 19.1676

INPUT
Description: 19.1676
Station Elevation Data     num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4785.979 1337.024787.6451337.0794790.9331337.2344815.7861337.5114827.7311337.389
 4839.571336.0744844.7731335.6184850.8631335.7134858.4781335.8674872.4231335.984
4884.6921336.1534888.0641336.2294894.3761335.6664900.6031335.263 4906.141335.718
4920.491  1336.64933.5361336.9554948.1141337.3534953.725 1337.334978.7321337.311
```

```
4991.9521336.5474999.9221336.0075017.5531336.4695018.4291336.517 5056.77 1337.68
5057.6261337.706

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4785.979    .0354978.732    .065 5056.77    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
     4978.732 5056.77              441456.6185     438            .1          .3
Left Levee      Station=4978.732      Elevation=1337.311
Right Levee     Station= 5056.77      Elevation= 1337.68

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1336.95   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.03   Wt. n-Val.                            0.065
  E.G. Elev (ft)          1336.98   Reach Len. (ft)            441.00     456.62     438.00
  Crit W.S. (ft)          1336.61   Flow Area (sq ft)                      22.84
  E.G. Slope (ft/ft)     0.008836   Area (sq ft)                           22.84
  Q Total (cfs)             30.00   Flow (cfs)                             30.00
  Top Width (ft)            47.75   Top Width (ft)                         47.75
  Vel Total (ft/s)           1.31   Avg. Vel. (ft/s)                        1.31
  Max Chl Dpth (ft)          1.69   Hydr. Depth (ft)                        0.48
  Conv. Total (cfs)         319.2   Conv. (cfs)                            319.2
  Length Wtd. (ft)         456.62   Wetted Per. (ft)                       47.80
  Min Ch El (ft)          1336.01   Shear (lb/sq ft)                        0.26
  Alpha                      1.00   Stream Power (lb/ft s)                  0.35
  Frctn Loss (ft)            7.97   Cum Volume (acre-ft)         1.08       0.55       2.97
  C & E Loss (ft)            0.01   Cum SA (acres)               1.47       0.94       2.08


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                 than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                 section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Harquahala
REACH: Split 1A            RS: 19.0811

INPUT
Description: 19.0811
Station Elevation Data     num=       49
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4574.3241331.5874599.9211331.4464604.4471331.4364616.5081331.3534634.7741331.438
 4641.661331.4114660.4711331.2774666.4541331.1384712.3341330.1214713.1711330.155
4724.4121330.4954736.0721330.3094751.0861330.2674764.5351330.3034769.9521330.344
4781.3791330.3134813.683 1330.384854.7241329.9124863.1541329.8154870.2961329.456
4872.5471329.2994875.5181329.4754884.3981330.1024887.7371330.2734891.0811330.332
4891.3371330.3244895.7251330.1984900.0571330.1044904.9321329.9474913.1831329.817
4923.2731329.604 4931.731329.4914948.9171329.6984959.796 1329.954974.5091329.148
  4980.1 1328.864998.3321327.9574999.4121328.2515008.6311329.6555014.336 1329.72
5026.0911329.6465055.845 1329.89 5074.351330.2715081.4651330.4955088.312 1330.73
5163.9531330.9785169.0141331.0185173.8741331.0975180.9991331.001

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4574.324    .0354959.796    .0655008.631    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
     4959.7965008.631              421445.8344     442            .1          .3
Left Levee      Station=4959.796      Elevation= 1329.95
Right Levee     Station=5008.631      Elevation=1329.655

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1328.86   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.13   Wt. n-Val.                            0.065
  E.G. Elev (ft)          1328.99   Reach Len. (ft)            421.00     445.83     442.00
  Crit W.S. (ft)          1328.77   Flow Area (sq ft)                      10.27
  E.G. Slope (ft/ft)     0.049080   Area (sq ft)                           10.27
  Q Total (cfs)             30.00   Flow (cfs)                             30.00
  Top Width (ft)            23.31   Top Width (ft)                         23.31
  Vel Total (ft/s)           2.92   Avg. Vel. (ft/s)                        2.92
  Max Chl Dpth (ft)          0.90   Hydr. Depth (ft)                        0.44
  Conv. Total (cfs)         135.4   Conv. (cfs)                            135.4
  Length Wtd. (ft)         444.85   Wetted Per. (ft)                       23.42
  Min Ch El (ft)          1327.96   Shear (lb/sq ft)                        1.34
  Alpha                      1.00   Stream Power (lb/ft s)                  3.93
  Frctn Loss (ft)            6.41   Cum Volume (acre-ft)         1.08       0.38       2.97
  C & E Loss (ft)            0.03   Cum SA (acres)               1.47       0.57       2.08


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                 than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                 section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Harquahala
REACH: Split 1A            RS: 18.9967

INPUT
Description: 18.9967
Station Elevation Data     num=       21
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4894.3611323.3924914.5141322.8834918.1591322.7754920.2221322.4344927.9741321.367
4933.1781322.2084934.4941322.4474937.2381322.4624955.9741322.5244966.4281322.446
4978.7521322.2094990.1721322.1044997.8341321.4014999.8911321.2145001.6851321.486
5014.6121322.6165018.4461322.6265036.5511322.7945048.4911322.9155051.5581322.961
5054.4721322.945

Manning's n Values          num=        3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
4894.361    .0354978.752    .0655018.446    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4978.7525018.446              407 423.507     419            .1        .3
Left Levee      Station=4955.974      Elevation=1322.524
Right Levee     Station=5051.558      Elevation=1322.961

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1322.52   Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.03   Wt. n-Val.                0.035      0.065
  E.G. Elev (ft)          1322.55   Reach Len. (ft)          407.00     423.51    419.00
  Crit W.S. (ft)          1322.14   Flow Area (sq ft)          2.74      20.74
  E.G. Slope (ft/ft)     0.006787   Area (sq ft)               2.74      20.74
  Q Total (cfs)             30.00   Flow (cfs)                 2.37      27.63
  Top Width (ft)            57.00   Top Width (ft)            22.24      34.76
  Vel Total (ft/s)           1.28   Avg. Vel. (ft/s)           0.87       1.33
  Max Chl Dpth (ft)          1.31   Hydr. Depth (ft)           0.12       0.60
  Conv. Total (cfs)         364.2   Conv. (cfs)                28.8      335.4
  Length Wtd. (ft)         422.85   Wetted Per. (ft)          22.24      34.87
  Min Ch El (ft)          1321.21   Shear (lb/sq ft)           0.05       0.25
  Alpha                      1.04   Stream Power (lb/ft s)     0.05       0.34
  Frctn Loss (ft)            6.98   Cum Volume (acre-ft)       1.06       0.22       2.97
  C & E Loss (ft)            0.01   Cum SA (acres)             1.36       0.27       2.08


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION           RIVER: Harquahala
REACH: Split 1A            RS: 18.9165

INPUT
Description: 18.9165
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4859.0281316.3744871.5121316.4954890.8481316.3274893.9211316.2824912.1311316.202
4922.7931316.1364926.3981315.837 4933.181315.4914944.671 1315.674952.6471315.414
4958.0931315.7114964.4381315.6974973.1761315.6814984.143 1315.024984.2531315.001
4985.1851315.0834991.0571315.2994995.3781315.0164998.608 1314.345002.3981314.938
5007.1931316.1325008.5611316.1515013.7031316.1035027.4051316.0435032.8121315.778
5033.9271315.7515037.7591315.5995061.7721315.7735064.2951315.945 5075.851315.841
5094.4511315.785 5117.981315.9845120.9021315.9915122.6811315.5655128.0211314.233
5130.3171314.7015137.3871315.8315149.6341316.0215165.1781316.3335172.1051316.259

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4859.028    .0354973.176    .0655007.193    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4973.1765007.193              354346.1658     218            .1        .3
Left Levee      Station=4973.176      Elevation=1315.681
Right Levee     Station=5007.193      Elevation=1316.132

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1315.38   Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.17   Wt. n-Val.                           0.065
  E.G. Elev (ft)          1315.55   Reach Len. (ft)           50.00     50.00      50.00
  Crit W.S. (ft)          1315.38   Flow Area (sq ft)                    9.08
  E.G. Slope (ft/ft)     0.086150   Area (sq ft)                         9.08
  Q Total (cfs)             30.00   Flow (cfs)                          30.00
  Top Width (ft)            26.09   Top Width (ft)                      26.09
  Vel Total (ft/s)           3.30   Avg. Vel. (ft/s)                     3.30
  Max Chl Dpth (ft)          1.15   Hydr. Depth (ft)                     0.35
  Conv. Total (cfs)         102.2   Conv. (cfs)                         102.2
  Length Wtd. (ft)          50.00   Wetted Per. (ft)                    26.29
  Min Ch El (ft)          1314.34   Shear (lb/sq ft)                     1.86
  Alpha                      1.00   Stream Power (lb/ft s)               6.14
  Frctn Loss (ft)            0.49   Cum Volume (acre-ft)       0.06      0.01       0.17
  C & E Loss (ft)            0.06   Cum SA (acres)


Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
                depth, the calculated water surfece came back below critical depth.  This indicates that there is
                not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION           RIVER: Harquahala
REACH: Split 1B            RS: 19.3158

INPUT
Description: 19.3158
Station Elevation Data    num=      42
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
4874.672 1348.35  4912.71348.2394914.5751348.2224916.4071348.2074919.5451348.193
4944.2431348.0154950.631 1347.924970.2791347.5164978.9381347.5354992.1731347.412
5000.7991347.2885007.5251347.4925019.7951347.5895036.7741346.8295050.0171346.281
5059.3161346.3535065.4861346.3055077.0941347.2215086.4691348.0625107.9221348.058
5124.4541348.1725160.048 1347.585167.6521347.4325181.2261345.8775181.8461345.801
5181.9721345.8045191.0351346.231 5198.721346.7145206.8111347.0515214.2051346.802
 5216.161346.7485217.0821346.6885224.8381345.7415238.0071347.4115241.8691347.938
5245.173 1348.125249.5611347.7085269.4671347.1315276.4271347.2365280.0591347.403
5297.3711348.4125307.3341348.347

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
4874.672    .0354978.938    .0655086.469    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4978.9385086.469              371400.1635     350              .1       .3
Right Levee     Station=5019.795       Elevation=1347.589
Blocked Obstructions      num=        1
   Sta L   Sta R    Elev
5086.4695307.3341348.063
```

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1347.60	Element			
Vel Head (ft)	0.07	Wt. n-Val.	0.035	0.065	
E.G. Elev (ft)	1347.67	Reach Len. (ft)	371.00	400.17	350.00
Crit W.S. (ft)	1347.60	Flow Area (sq ft)	0.77	56.38	
E.G. Slope (ft/ft)	0.018996	Area (sq ft)	0.77	56.38	
Q Total (cfs)	120.00	Flow (cfs)	0.70	119.30	
Top Width (ft)	114.91	Top Width (ft)	12.57	102.34	
Vel Total (ft/s)	2.10	Avg. Vel. (ft/s)	0.91	2.12	
Max Chl Dpth (ft)	1.32	Hydr. Depth (ft)	0.06	0.55	
Conv. Total (cfs)	870.7	Conv. (cfs)	5.1	865.6	
Length Wtd. (ft)	390.58	Wetted Per. (ft)	12.57	102.42	
Min Ch El (ft)	1346.28	Shear (lb/sq ft)	0.07	0.65	
Alpha	1.01	Stream Power (lb/ft s)	0.07	1.38	
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	0.99	3.11	3.98
C & E Loss (ft)	0.00	Cum SA (acres)	2.21	3.12	4.82

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 19.2400

INPUT
Description: 19.2400
Station Elevation Data num= 52

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4564.7611343.6124569.1071343.806 4579.041343.6074615.269 1342.534621.2181342.507
4662.8051342.0944696.4571342.0124702.4851342.0764713.4811342.1524719.1421342.085
4756.4781341.503 4759.511341.6474765.1711341.616  4787.81341.3394789.7471341.251
4801.9561340.9864814.4641340.5584834.0261342.1534834.9921342.1844835.3261342.211
 4836.461342.2034879.7281341.8514891.0061341.592 4897.441341.3894911.9681340.969
4916.5631340.8374919.4121340.9434930.4321341.3994941.361 1341.524953.8221341.549
4983.9121341.1094993.144 1341.024998.0971339.5984999.2541339.3375000.7561339.579
5006.2351340.4635006.9371340.3865019.7051339.9055032.7121341.5485033.6211341.672
5034.9991341.6785062.1171341.3925063.2541341.3655069.3461341.3655105.5451341.284
5130.9191341.6285139.1161341.7455141.068 1341.765163.2491342.8585165.0571342.892
5167.6281342.9015168.2111342.883

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
4564.761    .0354993.144    .0655034.999    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4993.1445034.999              384 406.012     396              .1       .3
Left Levee      Station=4953.822       Elevation=1341.549
Right Levee     Station=5034.999       Elevation=1341.678
Blocked Obstructions      num=        1
   Sta L   Sta R    Elev
4564.7614835.3261342.211
```

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1341.69	Element			
Vel Head (ft)	0.02	Wt. n-Val.	0.035	0.065	0.035
E.G. Elev (ft)	1341.70	Reach Len. (ft)	384.00	406.01	396.00
Crit W.S. (ft)	1340.88	Flow Area (sq ft)	41.15	54.96	25.39
E.G. Slope (ft/ft)	0.001765	Area (sq ft)	41.15	54.96	25.39
Q Total (cfs)	120.00	Flow (cfs)	39.00	62.84	18.17
Top Width (ft)	248.02	Top Width (ft)	106.21	41.85	99.95
Vel Total (ft/s)	0.99	Avg. Vel. (ft/s)	0.95	1.14	0.72
Max Chl Dpth (ft)	2.35	Hydr. Depth (ft)	0.39	1.31	0.25
Conv. Total (cfs)	2856.6	Conv. (cfs)	928.4	1495.8	432.4
Length Wtd. (ft)		Wetted Per. (ft)	106.24	42.30	99.95
Min Ch El (ft)	1339.34	Shear (lb/sq ft)	0.04	0.14	0.03
Alpha	1.08	Stream Power (lb/ft s)	0.04	0.16	0.02
Frctn Loss (ft)		Cum Volume (acre-ft)	0.81	2.60	3.87
C & E Loss (ft)		Cum SA (acres)	1.70	2.45	4.42

```
Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION           RIVER: Harquahala
REACH: Split 1B            RS: 19.1631

INPUT
Description: 19.1631
Station Elevation Data     num=       46
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4591.217 1336.474594.6041336.4764603.8381336.4494644.9761336.4334653.2191335.064
4655.4021334.8814658.1691335.0614676.664 1336.134736.5951336.2434761.8911336.328
4773.3731336.1664828.3081335.8814835.3621335.944 4848.271335.898 4891.141335.695
4897.5951335.4614913.364 1334.934918.6661335.1984931.7121335.5914936.3571335.558
4956.6521335.239 4967.851335.5114982.7751335.8184992.8091334.8714999.4481334.116
5008.3581335.2045015.2011335.9155030.7821335.6255037.1351335.582 5038.291335.448
 5045.311334.6475048.4581334.788 5068.291335.3685095.5211335.6485111.7141335.813
5116.0551335.9315129.5461335.7415154.5861335.4695165.2191335.4985176.9451335.389
5213.1971336.3825225.6251336.6415252.9311336.4215258.1911336.4165260.6411336.249
5263.5251336.131

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4591.217    .0354982.775    .0655015.201    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     4982.7755015.201              390419.9715     385            .1        .3
Left Levee      Station=4982.775       Elevation=1335.818
Right Levee     Station=5015.201       Elevation=1335.915

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)            1335.76   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.39   Wt. n-Val.                            0.065
  E.G. Elev (ft)            1336.15   Reach Len. (ft)            390.00     419.97     385.00
  Crit W.S. (ft)            1335.76   Flow Area (sq ft)                      23.88
  E.G. Slope (ft/ft)       0.066915   Area (sq ft)                           23.88
  Q Total (cfs)              120.00   Flow (cfs)                            120.00
  Top Width (ft)              30.32   Top Width (ft)                         30.32
  Vel Total (ft/s)             5.02   Avg. Vel. (ft/s)                        5.02
  Max Chl Dpth (ft)            1.64   Hydr. Depth (ft)                        0.79
  Conv. Total (cfs)           463.9   Conv. (cfs)                            463.9
  Length Wtd. (ft)           405.89   Wetted Per. (ft)                       30.50
  Min Ch El (ft)            1334.12   Shear (lb/sq ft)                        3.27
  Alpha                        1.00   Stream Power (lb/ft s)                 16.44
  Frctn Loss (ft)              0.62   Cum Volume (acre-ft)         0.63       2.23       3.76
  C & E Loss (ft)              0.06   Cum SA (acres)               1.24       2.12       3.96


Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
                depth, the calculated water surface came back below critical depth.  This indicates that there is
                not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION           RIVER: Harquahala
REACH: Split 1B            RS: 19.0836

INPUT
Description: 19.0836
Station Elevation Data     num=       53
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4695.756 1330.254716.637 1330.334728.954 1330.22 4737.931330.0994751.2021329.715
4780.9231329.1254790.1091328.9594797.8891328.8514823.096 1328.954848.073 1328.96
4889.1411328.5614896.8771328.5084912.5551328.4794964.1491328.5524969.9741328.253
4973.7831328.0554977.0071327.9844990.9851327.4914996.3121325.886 4999.841324.911
5001.8661325.3695009.8141327.3525024.576 1327.615036.6441327.7915066.2091327.907
5076.0511327.978 5079.011327.504 5087.651327.4545089.7121327.7565102.6241327.699
5105.9741327.6775109.2291327.6125139.0291327.2745141.5171327.5765148.112 1328.07
5150.5581328.0335169.3471327.7635177.2031327.7345197.2071327.7375214.3921327.854
5217.5161328.2335224.6411328.1355228.7271328.1095248.1661327.7955253.8061327.841
5267.9891328.2525272.7951328.0765277.7261328.0235292.2531328.1155293.1161328.125
5297.6191328.4635323.2141330.3335337.3151330.227

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4695.756    .0354964.149    .0655036.644    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     4964.1495036.644              337360.4106     372            .1        .3
Left Levee      Station=4964.149       Elevation=1328.552
Right Levee     Station=5036.644       Elevation=1327.791

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)            1327.17   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.58   Wt. n-Val.                            0.065
```

E.G. Elev (ft)	1327.75	Reach Len. (ft)	337.00	360.41	372.00
Crit W.S. (ft)	1327.17	Flow Area (sq ft)		19.62	
E.G. Slope (ft/ft)	0.062116	Area (sq ft)		19.62	
Q Total (cfs)	120.00	Flow (cfs)		120.00	
Top Width (ft)	17.04	Top Width (ft)		17.04	
Vel Total (ft/s)	6.12	Avg. Vel. (ft/s)		6.12	
Max Chl Dpth (ft)	2.26	Hydr. Depth (ft)		1.15	
Conv. Total (cfs)	481.5	Conv. (cfs)		481.5	
Length Wtd. (ft)	365.55	Wetted Per. (ft)		17.64	
Min Ch El (ft)	1324.91	Shear (lb/sq ft)		4.31	
Alpha	1.00	Stream Power (lb/ft s)		26.39	
Frctn Loss (ft)	5.41	Cum Volume (acre-ft)	0.63	2.02	3.76
C & E Loss (ft)	0.13	Cum SA (acres)	1.24	1.89	3.96

Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 19.0153

INPUT
Description: 19.0153
Station Elevation Data num= 60

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4714.252	1324.506	4721.373	1324.529	4726.935	1324.527	4730.237	1324.643	4752.105	1324.775
4775.303	1324.564	4790.471	1324.484	4799.966	1324.293	4844.608	1323.572	4880.212	1322.963
4887.344	1321.963	4888.676	1321.757	4890.493	1321.958	4900.221	1322.812	4915.543	1322.713
4929.191	1322.754	4944.084	1322.209	4969.873	1321.258	4975.699	1321.862	4979.633	1322.165
4987.076	1322.208	4992.661	1322.079	4994.544	1321.598	4999.212	1320.412	5001.813	1320.731
5006.673	1321.944	5027.703	1321.795	5043.757	1321.864	5050.837	1320.179	5051.066	1320.098
5051.524	1320.188	5060.434	1321.433	5061.975	1321.485	5064.511	1321.557	5071.388	1320.097
5072.157	1319.926	5073.472	1320.193	5086.038	1322.245	5092.085	1321.992	5095.939	1321.327
5101.113	1321.923	5103.609	1322.444	5130.753	1322.324	5138.182	1322.246	5147.559	1322.293
5153.845	1322.223	5189.629	1321.536	5193.115	1321.479	5196.511	1321.962	5206.738	1321.996
5213.956	1322.139	5225.306	1322.108	5233.083	1322.082	5236.057	1322.167	5243.665	1322.459
5264.017	1322.692	5298.553	1323.086	5314.893	1323.756	5324.444	1324.239	5366.172	1324.438

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4714.252	.035	4987.076	.065	5006.673	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4987.076	5006.673		395	431.1926	422	.1	.3

Left Levee Station=4987.076 Elevation=1322.208
Right Levee Station=5086.038 Elevation=1322.245

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1321.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.065	0.035
E.G. Elev (ft)	1321.92	Reach Len. (ft)	395.00	431.19	422.00
Crit W.S. (ft)	1321.47	Flow Area (sq ft)		9.09	34.37
E.G. Slope (ft/ft)	0.006469	Area (sq ft)		9.09	34.37
Q Total (cfs)	120.00	Flow (cfs)		13.48	106.52
Top Width (ft)	51.35	Top Width (ft)		12.22	39.13
Vel Total (ft/s)	2.76	Avg. Vel. (ft/s)		1.48	3.10
Max Chl Dpth (ft)	1.86	Hydr. Depth (ft)		0.74	0.88
Conv. Total (cfs)	1492.0	Conv. (cfs)		167.6	1324.4
Length Wtd. (ft)	425.86	Wetted Per. (ft)		12.54	39.76
Min Ch El (ft)	1320.41	Shear (lb/sq ft)		0.29	0.35
Alpha	1.15	Stream Power (lb/ft s)		0.43	1.08
Frctn Loss (ft)	5.51	Cum Volume (acre-ft)	0.63	1.90	3.61
C & E Loss (ft)	0.01	Cum SA (acres)	1.24	1.77	3.80

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.9337

INPUT
Description: 18.9337
Station Elevation Data num= 63

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4762.993	1318.294	4763.869	1318.302	4767.699	1318.222	4778.225	1318.326	4803.181	1317.893
4811.076	1317.788	4813.949	1317.651	4817.525	1317.603	4827.22	1317.49	4850.741	1317.016
4870.042	1316.275	4870.922	1316.241	4871.373	1316.273	4878.992	1316.964	4890.656	1317.127
4918.483	1317.609	4951.303	1316.995	4970.623	1316.796	4975.072	1316.446	4977.892	1316.173
4980.382	1316.287	4987.136	1316.497	4992.996	1315.446	5000.158	1314.245	5008.011	1315.691
5012.004	1316.489	5027.076	1316.095	5046.344	1315.675	5050.575	1315.759	5076.284	1316.541
5107.439	1316.444	5124.591	1316.504	5130.392	1314.987	5133.337	1314.252	5138.071	1315.493
5141.286	1316.149	5150.928	1316.103	5162.038	1316.069	5185.023	1315.624	5193.47	1315.45
5194.841	1315.536	5203.611	1316.162	5207.054	1316.219	5244.099	1316.226	5257.353	1316.268
5273.623	1315.963	5287.384	1315.634	5292.437	1314.966	5296.491	1314.468	5300.418	1314.847
5304.418	1315.453	1314.056	1315.505	5343.174	1315.763	5365.868	1315.771	5370.87	1315.777

```
5379.161 1315.61 5385.571315.4225397.149 1315 875397.2241315.8745397.854 1315.91
5436.9231317.7495448.3171318.6165453.7341318.448

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4762.993    .0354987.136    .0655012.004    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4987.1365012.004              391410.0502     393              .1        .3
Left Levee       Station=4987.136       Elevation=1316.497
Right Levee      Station=5076.284       Elevation=1316.541

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1316.16   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.24   Wt. n-Val.                            0.065      0.035
  E.G. Elev (ft)            1316.41   Reach Len. (ft)            391.00    410.05     393.00
  Crit W.S. (ft)            1316.16   Flow Area (sq ft)                     20.85      10.13
  E.G. Slope (ft/ft)       0.035459   Area (sq ft)                          20.85      10.13
  Q Total (cfs)              120.00   Flow (cfs)                            87.33      32.67
  Top Width (ft)              60.91   Top Width (ft)                        21.37      39.54
  Vel Total (ft/s)             3.87   Avg. Vel. (ft/s)                       4.19       3.22
  Max Chl Dpth (ft)            1.92   Hydr. Depth (ft)                       0.98       0.26
  Conv. Total (cfs)           637.3   Conv. (cfs)                           463.7      173.5
  Length Wtd. (ft)            402.31   Wetted Per. (ft)                      21.72      39.55
  Min Ch El (ft)            1314.24   Shear (lb/sq ft)                       2.12       0.57
  Alpha                        1.04   Stream Power (lb/ft s)                 8.90       1.83
  Frctn Loss (ft)              0.30   Cum Volume (acre-ft)         0.63      1.75       3.40
  C & E Loss (ft)              0.04   Cum SA (acres)               1.24      1.60       3.42


Warning - The energy equation could not be balanced within the specified number of iterations.  The
          program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
          depth, the calculated water surface came back below critical depth.  This indicates that there is
          not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
          cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
          surface was used.

CROSS SECTION          RIVER: Harquahala
REACH: Split 1B           RS: 18.8560

INPUT
Description: 18.8560
Station Elevation Data     num=      60
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
4807.862 1312.914810.8621312.9894844.2161312.6794857.7851312.5154870.0771312.369
4884.4551312.1454892.4011311.2054894.5241310.9154896.0431311.2174900.5941312.134
4914.4591311.9124938.1941311.3134950.2741311.7744951.5831311.8494957.5361311.819
 4987.761311.9324992.0321311.115 4999.381309.3265005.7811310.8585009.1571311.848
5024.947 1312.045025.2491312.0455025.2611312.0455025.5291312.0345052.2341311.017
5058.5421309.1475058.577 1309.145058.6461309.152 5066.141310.3625068.4621310.618
5105.0591312.3245111.4871312.6695120.1891312.4585149.6261311.6875229.0611309.804
5244.0071309.4875265.5071311.4045266.1061311.4545266.5651311.4415279.0651311.539
5283.1921309.6615284.1681309.4495285.1921309.6485294.3161311.0495300.162 1311.03
5310.7841311.1255340.6081311.5765353.8741311.5055377.0891311.3625381.8171310.941
5390.4861310.3565394.3631310.7055401.1511311.4125412.7131311.1575421.6451311.013
5440.1761311.1885455.738 1311.545463.7231311.6295485.6421312.1685497.2951311.857

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4807.862    .035 4987.76    .0655025.249    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4987.765025.249               365431.1373     427              .1        .3
Left Levee       Station= 4987.76       Elevation=1311.932
Right Levee      Station=5025.249       Elevation=1312.045

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1311.73   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.39   Wt. n-Val.                            0.065
  E.G. Elev (ft)            1312.12   Reach Len. (ft)            365.00    431.14     427.00
  Crit W.S. (ft)            1311.54   Flow Area (sq ft)                     23.83
  E.G. Slope (ft/ft)       0.039703   Area (sq ft)                          23.83
  Q Total (cfs)              120.00   Flow (cfs)                           120.00
  Top Width (ft)              19.93   Top Width (ft)                        19.93
  Vel Total (ft/s)             5.04   Avg. Vel. (ft/s)                       5.04
  Max Chl Dpth (ft)            2.59   Hydr. Depth (ft)                       1.20
  Conv. Total (cfs)           602.2   Conv. (cfs)                           602.2
  Length Wtd. (ft)            429.93   Wetted Per. (ft)                      20.50
  Min Ch El (ft)            1309.33   Shear (lb/sq ft)                       2.88
  Alpha                        1.00   Stream Power (lb/ft s)                14.51
  Frctn Loss (ft)              5.68   Cum Volume (acre-ft)         0.63      1.54       3.35
  C & E Loss (ft)              0.10   Cum SA (acres)               1.24      1.41       3.24


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
          than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
          cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
          surface was used.
```

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.7744

INPUT
Description: 18.7744
Station Elevation Data num= 71

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4903.2461306.6664919.4391306.8874960.9221306.3764975.7721306.1534990.0371305.571
4993.8721304.924 4999.131304.1175007.4071305.7525008.0761305.8455033.3941305.894
5038.5821305.9935043.9251305.9485068.7261305.7155089.184 1306.055104.8471306.476
5120.8111306.377 5132.581306.1755142.5871306.3065166.0811306.3915200.3061305.712
5207.4211305.5495208.8711305.2435213.676 1303.995218.3321304.8025223.3011305.695
5225.5561306.071 5229.821306.1655255.2421306.3595261.1871306.3085268.4221306.188
5300.2281305.9775309.1361305.863 5311.671305.8255335.442 1305.775378.9181305.497
5415.7721305.4925484.3721304.4935494.5281304.3045504.4741304.5275524.7021305.067
5541.7631305.4365560.8631305.2565589.7831305.0285594.3261304.9715594.8871304.885
5598.0031304.399 5602.111303.6335603.0161303.7795607.3171304.8795623.4041304.742
5628.4991304.6955632.848 1304.575641.4611304.7835657.1821305.1085665.4261304.994
5671.7521304.683 5682.871304.1285690.1521304.2345702.1011305.0485710.8021303.456
5712.6871303.205 5715.911303.5035731.4941304.8835740.9141304.8855752.5161305.054
5761.8941305.1425780.7791305.4275786.7211305.5595806.249 1305.785828.7761306.139
5841.3541306.294
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4903.246	.035	4975.773	.065	5008.076	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4975.773	5008.076		292	295.6265	292	.1	.3

Left Levee Station=4975.773 Elevation=1306.153
Right Levee Station=5104.847 Elevation=1306.476

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1306.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.035	0.065	0.035
E.G. Elev (ft)	1306.34	Reach Len. (ft)	292.00	295.63	292.00
Crit W.S. (ft)	1306.06	Flow Area (sq ft)	0.64	31.02	35.11
E.G. Slope (ft/ft)	0.006517	Area (sq ft)	0.64	31.02	35.11
Q Total (cfs)	120.00	Flow (cfs)	0.37	55.40	64.23
Top Width (ft)	131.58	Top Width (ft)	9.27	32.30	90.01
Vel Total (ft/s)	1.80	Avg. Vel. (ft/s)	0.58	1.79	1.83
Max Chl Dpth (ft)	3.09	Hydr. Depth (ft)	0.07	0.96	0.39
Conv. Total (cfs)	1486.5	Conv. (cfs)	4.6	686.2	795.6
Length Wtd. (ft)	294.31	Wetted Per. (ft)	9.27	32.60	90.02
Min Ch El (ft)	1304.12	Shear (lb/sq ft)	0.03	0.39	0.16
Alpha	1.01	Stream Power (lb/ft s)	0.02	0.69	0.29
Frctn Loss (ft)	3.80	Cum Volume (acre-ft)	0.62	1.27	3.18
C & E Loss (ft)	0.01	Cum SA (acres)	1.20	1.15	2.80

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.7184

INPUT
Description: 18.7184
Station Elevation Data num= 65

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4938.9271302.3544954.1171302.036 4969.991302.1564987.302 1302.144993.6711301.233
4998.704 1300.425004.1611301.2115012.5151302.1225018.7071302.3675024.5051302.381
5042.2241302.3565088.2121302.2115127.1021302.354  5141.6 1302.375150.1571302.479
5158.8771302.661 5190.271302.865  5212.31302.1575234.9291301.5255239.8361301.549
5242.4141301.5925246.294 1301.565251.2371301.5175254.6911300.998 5257.331300.544
5258.1331300.6755268.589 1302.255273.0631302.2575304.5731302.1995323.8571301.924
5351.2591301.7965356.5721301.615 5364.651301.183  5368.71301.1365377.3741301.036
 5397.861300.9455459.8851200.9855470.7161301.0035477.9981300.9665489.6021300.974
5557.3021300.934 5574.241300.8415637.6981301.3335639.3011301.3465639.8521301.353
 5645.661301.3815663.3281301.1275664.3341301.1015669.6091300.2115674.8231299.303
5676.278 1299.745683.182 1301.755694.823 1301.695729.1621301.2225766.356 1301.16
5769.8561301.1765773.201 1301.175840.0631301.4035841.329 1301.335850.4721300.777
5853.2911300.9915863.276 1301.395889.1881301.8945920.9131302.4395922.1631302.423
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4938.927	.035	4987.302	.065	5018.707	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4987.302	5018.707		378	422.3776	347	.1	.3

Left Levee Station=4987.302 Elevation= 1302.14
Right Levee Station=5018.707 Elevation=1302.367

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1302.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.035	0.065	
E.G. Elev (ft)	1302.53	Reach Len. (ft)	378.00	422.38	347.00
Crit W.S. (ft)	1302.33	Flow Area (sq ft)	8.93	25.97	
E.G. Slope (ft/ft)	0.033480	Area (sq ft)	8.93	25.97	
Q Total (cfs)	120.00	Flow (cfs)	22.86	97.14	
Top Width (ft)	77.71	Top Width (ft)	47.23	30.47	
Vel Total (ft/s)	3.44	Avg. Vel. (ft/s)	2.56	3.74	
Max Chl Dpth (ft)	3.03	Hydr. Depth (ft)	0.19	0.85	

Conv. Total (cfs)	655.8	Conv. (cfs)	124.9	530.9	
Length Wtd. (ft)	385.49	Wetted Per. (ft)	47.24	30.71	
Min Ch El (ft)	1300.43	Shear (lb/sq ft)	0.40	1.77	
Alpha	1.06	Stream Power (lb/ft s)	1.01	6.61	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.59	1.08	3.06
C & E Loss (ft)	0.04	Cum SA (acres)	1.01	0.94	2.50

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.6384

INPUT
Description: 18.6384
Station Elevation Data num= 105
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
4824.6031299.2294832.1551299.4444851.0151298.7114852.2111298.6424867.9671296.653
4871.5311296.2424877.9231296.766 4888.681297.3574899.9971296.9134904.261 1296.8
4907.2131296.7284912.7381296.6334917.9741296.485 4924.081296.3344929.4251296.922
4933.5311297.4734941.8181297.725 4959.641298.092 4982.44 1297.444989.8471297.225
4994.97 1296.214999.5611295.3175005.7281296.4925010.8561297.4755013.0311297.458
5018.419 1297.285031.6881296.789 5038.941297.1225048.9111297.4195055.9971297.047
5058.8461296.9345060.8721296.7295061.1091296.6865070.2611295.3195073.6121295.611
5082.5541296.4675100.3211296.8445113.5331297.1485123.9761297.2165138.6291297.087
5141.2251296.7975146.5141296.3215150.3891296.403 5153.961296.6495159.1351296.748
5172.021296.9365181.369 1295.745184.0471295.3395187.8831295.7375198.0771297.062
5210.7181297.0885256.1581297.8215259.1521297.8255280.0451297.6795367.2821297.365
5375.6681297.3495376.9951297.3075381.9581297.635 5390.35 1298.075394.748 1298.07
5411.4941297.911 5419.071297.981 5436.251297.0565437.9741296.8875438.499 1296.89
5469.0941296.4125472.086 1296.195478.8421295.6615480.2921295.7285486.3781296.116
5498.3581296.2325521.7041296.0265533.601 12965534.6221295.9815538.8171295.423
5547.1361294.3135551.8231295.1825554.2281295.7155576.3871295.9175596.6921296.222
5627.4221296.2155638.9731296.2825670.4131296.3755671.2521296.2965673.8441296.042
5685.3491294.8545688.0031294.5535697.5471296.2365699.7931296.7775737.8771297.192
5750.676 1297.35753.1331297.3115754.9681297.2995796.3061297.346 5839.781297.224
5863.0621297.2495868.1241297.2765891.9441297.4325914.6011297.609 5917.251297.651
5927.8821297.5375980.9351297.161 5987.151297.8045989.1511298.2546001.9851298.292

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
4824.603 .035 4959.64 .0655010.856 .035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4959.645	5010.856		452474.4267	303	.1	.3

Left Levee Station= 4959.64 Elevation=1298.092
Right Levee Station=5010.856 Elevation=1297.475

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1297.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.43	Wt. n-Val.		0.065	
E.G. Elev (ft)	1297.83	Reach Len. (ft)	452.00	474.43	303.00
Crit W.S. (ft)	1297.39	Flow Area (sq ft)		22.75	
E.G. Slope (ft/ft)	0.066201	Area (sq ft)		22.75	
Q Total (cfs)	120.00	Flow (cfs)		120.00	
Top Width (ft)	26.41	Top Width (ft)		26.41	
Vel Total (ft/s)	5.27	Avg. Vel. (ft/s)		5.27	
Max Chl Dpth (ft)	3.08	Hydr. Depth (ft)		0.86	
Conv. Total (cfs)	466.4	Conv. (cfs)		466.4	
Length Wtd. (ft)	390.54	Wetted Per. (ft)		26.80	
Min Ch El (ft)	1295.32	Shear (lb/sq ft)		3.51	
Alpha	1.00	Stream Power (lb/ft s)		18.51	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	0.55	0.84	3.06
C & E Loss (ft)	0.03	Cum SA (acres)	0.80	0.66	2.50

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.5485

INPUT
Description: 18.5485
Station Elevation Data num= 105
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
4492.6891292.828 4497.161292.8934509.6131293.0984515.8531293.1384521.207 1293.24
4528.9461293.535 4546.641293.3664550.5051293.2594578.9551293.0544596.4461292.896
4602.0211292.9344611.3871292.8434643.237 1292.694652.1141292.5854682.4961292.372

```
4699.5861292.3564708.3891292.1284714.4851292.2484722.4121292.7714740.5731292.859
4752.3951293.0674761.9081292.1674765.5981292 2414771.6211291.875 4777.721291.903
4792.8171292.5124799.2941292.3134805.9671291.9524806.9221292.0474810.3821292.122
4811.4611292.1334814.6441291.4434818.6361290.6154819.6041290.752 4825.941292.159
4836.7671292.333 4837.121292.3344838.0181292.3384847.671 1292.354851.5831291.975
4858.7081291.5384866.108 1291.774874.2891291.9084886.9141292.0764895.595 1292.27
4924.0511292.1314945.0671292.0894959.3571292.1784987.1141292.1514990.4661291.318
4999.813 1290.175001.463 1290.345014.6971291.5055017.3711291.5375023.9581291.678
5041.5611291.8425044.9481291.8475051.044 1291.925096.7491292.5245111.5861292.767
5119.0391292.7525124.4821292.7395160.2561292.7365170.8231292.7175189.6181292.708
5227.6041292.3155241.8491292.2015242.484 1292.195248.0371292.1215263.4511291.842
5274.0141292.0165276.378 1292.075286.9771290.6485289.085 1290.385289.2941290.403
5304.0231292.1525331.4491291.9445346.0261291.9445356.5111291.8745361.7721291.785
5366.1141291.8865376.5381292.0045396.7971292.3495408.2491292.5325412.4111291.885
5418.2521290.7955421.9091291.8825424.829 1292.875458.3541292.8985477.6281292.896
5513.3481292.9065515.6741292.9165519.7431292.9025544.6451292.816 5582.311292.684
5586.0831292.6685612.2481292.6645646.0891292.6395651.7241292.6715677.243 1292.67
5731.0631293.0875744.818 1292.545762.158  1292.45789.4731292.9525792.8881292.993

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4492.689     .0354987.114     .0655051.044     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4987.1145051.044                660632.2013     440            .1        .3
Left Levee       Station=4987.114       Elevation=1292.151
Right Levee      Station=5051.044       Elevation= 1291.92

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1291.83   Element                      Left OB    Channel   Right OB
  Vel Head (ft)                0.27   Wt. n-Val.                              0.065
  E.G. Elev (ft)            1292.10   Reach Len. (ft)                0.00      0.00       0.00
  Crit W.S. (ft)            1291.83   Flow Area (sq ft)                       28.57
  E.G. Slope (ft/ft)       0.074096   Area (sq ft)                            28.57
  Q Total (cfs)              120.00   Flow (cfs)                             120.00
  Top Width (ft)              51.33   Top Width (ft)                          51.33
  Vel Total (ft/s)             4.20   Avg. Vel. (ft/s)                         4.20
  Max Chl Dpth (ft)            1.66   Hydr. Depth (ft)                         0.56
  Conv. Total (cfs)           440.8   Conv. (cfs)                             440.8
  Length Wtd. (ft)             0.00   Wetted Per. (ft)                        51.52
  Min Ch El (ft)            1290.17   Shear (lb/sq ft)                         2.57
  Alpha                        1.00   Stream Power (lb/ft s)                  10.77
  Protn Loss (ft)              0.00   Cum Volume (acre-ft)
  C & E Loss (ft)              0.03   Cum SA (acres)


Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
                depth, the calculated water surface came back below critical depth.  This indicates that there is
                not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION          RIVER: Harquahala
REACH: Upper Hid Reach    RS: 18.9676

INPUT
Description: 18.9676
Station Elevation Data     num=      242
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
3503.6261314.2693515.1941314.2963537.0391314.0563547.8851313.9943557.6161313.333
3558.0631311.2213558.7231311.3863566.781 1313.273594.3961313.578 3618.151313.737
3629.3411313.8443655.0861313.5973678.5481313.2063685.9781312.2393691.2651311.825
3705.0871313.0773706.2381313.1723707.4911313.1893746.5321314.0533759.4921313.887
3789.9251313.2663816.0771313.0543848.9141312.6213885.3961311.9713891.4461311.972
3908.5391312.0963919.1211312.2193922.2481311.7293930.0791310.8333932.9151311.189
3941.2181311.7723954.8181312.1163973.0021312.3293990.0641311.6933996.2271311.479
4007.7121311.7964010.9951311.8334016.6431311.4634022.3371310.8344029.0861311.251
4033.277 1311.334047.3231312.0564052.311 1312.344054.3451312.0144062.0861310.684
4070.6751310.7974075.5521311.0564087.345 1311.76    40951312.2634099.3511311.963
4111.5021311.1174120.1311311.7044120.788 1311.774134.1451312.3024137.7991312.386
4141.4961311.3854148.3721309.5944152.173 1310.164156.267  1311.84159.0351311.759
4161.1031311.6524165.2021311.425 4166.961311.3514168.6831311.4854174.9061312.142
4191.7361312.1974210.5281312.4344229.7611312.2974250.9741312.2314285.2311311.859
4296.7821311.7044307.1891312.1864321.397 1312.774328.4811312.7464335.8271312.611
4375.6551312.1134400.5041312.0594430.9081312.1714432.2431312.1844493.6451312.572
 4508.671312.6674508.8311312.6674565.474 1312.334569.2711312.3754580.3071312.585
4597.3161312.625 4601.921312.622 4607.821312.5824641.7371312.3974647.6211310.466
4650.4421309.5464654.008 1310.374659.4721311.7364665.189 1311.914674.1121311.995
4686.1481311.8444687.4551311.7654688.0571311.5224694.6361308.909 4705.711311.856
4705.8691311.8944706.477  1311.94750.1181312.309 4758.41  1312.24786.2141311.758
4801.872 1311.944810.6971311.8934814.3951311.1114818.2751310.1944824.3381309.758
4825.0441309.5634825.4091309.6314828.0531309.8144833.9241310.2474838.1311310.618
4839.0281310.7294852.1691310.9054856.743 1311.294862.8391311.0784871.4131309.009
4872.7091308.7044873.6121308.9114888.614 1311.874897.9451311.9764913.5891312.291
4918.5011312.3794923.1461312.1234925.9811311.9224940.4271310.7934945.8581311.021
4950.5231310.5944955.4191310.8974966.6981311.8354971.6531312.4294976.5281312.423
4984.5951312.0954991.7381311.6635002.0821309.7945002.5461309.6975011.7071311.279
5015.1341312.0135021.6181312.0655026.685 1312.125050.4491312.4215054.0241312.456
5068.7441312.4415113.045 1312.115135.4411311.9255145.343 1311.925167.1081311.973
5224.4351312.0555232.2041311.1295235.6261310.9335240.5841310.593 5250.221309.956
5253.2421309.7825255.7291309.9135256.2941309.761 5261.651308.7585262.0761308.675
5262.7371308.8275275.7061311.0035303.2231311.7575312.5121312.1255328.0341311.837
```

5335.0251311.9415339.3751311.8915341.9021311.6025370.5441310.2155378.8131308.627
5381.67 1308.185383.0021308.3825386.1481308.927 5392.251309.858 5411.081310.833
5426.5461311.2865439.8571311.1765462.7541310.2775467.1911310.1595467.2541310.103
5468.3391310.0415479.0441309.6035492.2021310.2175496.2611310.4075499.1671310.358
5505.2371310.3285529.8221310.1685536.7461308.6445537.8791308.3215541.5261308.698
5544.2651309.0035546.476 1309.055550.9211309.4245554.9661307.3835556.4621306.751
5565.5871309.9635566.2071310.1795566.5781310.1925571.4951310.2445602.3171310.448
5614.5471310.4945622.9231309.7525625.4151309.3825627.5981309.6025634.3061310.135
5665.79 1310.635686.9761310.9865695.5961311.2235713.1021312.092 5723.61311.947
5724.525 1311.87 5727.131311.8635748.427 1311.545754.2711310.6085755.9821310.415
5757.081310.547 5763.331310.9615776.957 1310.985779.0021310.2425784.1561308.516
5786.608 1309.025788.7921308.4215791.4381309.1215800.2341310.6985817.8231310.813
5842.71310.821 5853.081311.0875857.5761311.138 5869.371311.4185896.9331311.852
5939.831312.5685949.6651312.7395959.9631312.9416015.7931313.2286025.3591312.996
6034.2681312.8266034.3261312.8256040.5161313.3796044.7471313.7766068.3651314.175
6081.463 1314.46095.9741314.309

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
3503.626	.0354976.528		.0855026.685		.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4976.5	5265026.685		559607.2768	521	.1	.3

Right Levee Station=5713.102 Elevation=1312.092

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1311.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.58	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1312.24	Reach Len. (ft)	559.00	607.28	521.00
Crit W.S. (ft)	1311.65	Flow Area (sq ft)	211.89	21.47	583.66
E.G. Slope (ft/ft)	0.015271	Area (sq ft)	211.89	21.47	583.66
Q Total (cfs)	4880.00	Flow (cfs)	1086.86	45.61	3747.53
Top Width (ft)	722.89	Top Width (ft)	269.83	21.67	431.39
Vel Total (ft/s)	5.97	Avg. Vel. (ft/s)	5.13	2.12	6.42
Max Chl Dpth (ft)	4.90	Hydr. Depth (ft)	0.79	0.99	1.35
Conv. Total (cfs)	39490.0	Conv. (cfs)	8795.1	369.1	30325.7
Length Wtd. (ft)	532.28	Wetted Per. (ft)	273.28	22.02	433.83
Min Ch El (ft)	1309.70	Shear (lb/sq ft)	0.74	0.93	1.28
Alpha	1.05	Stream Power (lb/ft s)	3.79	1.97	8.24
Frctn Loss (ft)	6.71	Cum Volume (acre-ft)	12.28	4.14	35.13
C & E Loss (ft)	0.10	Cum SA (acres)	15.63	2.43	29.96

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Upper Mid Reach RS: 18.8526

INPUT
Description: 18.8526
Station Elevation Data num= 225

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3737.6451308.4493753.5771308.4213770.7081307.8583782.7141307.3483791.421 1307.06									
3805.5871306.1013810.9161305.7633816.5021305.8723828.0411306.1193832.9381306.184									
3841.0491306.3783841.125 1306.383841.9911306.2413851.2321304.7243851.7211304.655									
3852.1461304.7333868.3651306.2343869.5661306.2223918.903 1305.83932.4321305.684									
3942.6491305.6913995.2021305.4364011.982 1305.294014.7561305.2534016.6861305.259									
4031.651 1305.234053.9171304.9564067.702 1304.884076.1431304.8654100.2811304.875									
4106.1991304.8924114.0511305.0434114.6691305.0524115.6721305.0344125.7411304.807									
4133.5521304.3934134.175 1304.384134.8321304.4194138.3671304.6524146.6221305.164									
4179.4591305.2364194.7691305.3064204.3121305.4144213.8421305.4294241.2151305.683									
4265.1811305.0724267.8521305.0324269.393 1304.714271.4711304.2584277.581 1303									
4289.2471305.0944289.9621305.208 4290.221305.2394306.0921305.0594313.0461305.332									
4346.9621304.3314349.4471304.2324351.1581304.2284371.228 1304.344375.472 1303.85									
4376.7221303.7194385.8651304.816 4387.061304.9324390.1681304.959 4449.411305.355									
4457.525 1305.224472.1581304.8044505.8311303.9014548.2931304.0614557.1861304.124									
4570.0241304.3864597.5631304.9014601.6031305.0144606.6591305.0784613.0831305.137									
4628.239 1304.774666.8831303.8184687.9271304.5844688.1051304.591 4688.161304.592									
4688.237 1304.594703.1681304.0764705.5441303.7984710.3761303.2494714.1711303.447									
4718.7941303.9384738.7061303.5574740.5781303.5344744.2571303.7334753.7431303.562									
4768.9391303.5624772.4931302.8114775.8951302.3384791.552 1304.034792.2231304.094									
4792.3841304.1014816.8551304.522 4831.941304.3494839.6421304.2444841.5351304.188									
4850.8811303.7434856.9161303.7564869.4941304.3314878.3511304.0734878.4511304.074									
4880.9721304.1714891.8011304.6624900.2441304.794 4923.211305.1844924.1261305.192									
4925.9221305.254 4943.011305.7284957.1341305.0224959.8861304.7594963.865 1304.43									
4970.461304.1154974.6131303.7864978.2811303.6654984.981 1303.914988.7021303.508									
4990.7381303.4694999.1581302.2674999.7271302.1035000.6041302.208 5005.271302.891									
5012.3871303.4455014.213 1303.655016.7811303.739 5028.891304.2215029.7461304.265									
5043.861304.5885046.7521304.5935098.1291304.6455105.8221304.642 5107.16 1304.66									
5171.8281304.4445176.0921304.4485179.605 1304.435181.9331304.3375195.6451303.757									
5197.3271303.8145224.1441304.4415243.6181304.8855244.8811304.8965246.5051304.879									
5294.9291303.7835299.6911303.5195310.133 1303.015315.1211303.3575324.6361304.061									
5351.3351304.522 5358.471304.6315364.8581304.443 5401.291303.4955409.9091302.628									
5410.151302.6045413.0151302.9445418.3871303.5995418.6941303.6025426.9491303.841									
5430.6041303.7935446.3961303.4735452.804 1302.335453.8551302.0685465.4731303.234									
5466.0061303.3195466.7141303.3385480.1261304.234 5499.981303.8395526.3371303.508									
5536.682 1303.36 5545.561303.8045551.952 1304.365561.6191304.6825570.5261304.642									
5574.5091304.7095639.6391304.5625642.683 1304.575658.2591304.5335660.2261304.475									
5676.561 1304.435716.2271304.3095722.3651304.2295731.9751304.0545743.3821303.888									

5769.9841303.308 5771.11303.0995776.8671302.1145782.8421301.1295784.2221300.834
5792.456 1303.525793.6821303.8255796.5721303.8015808.4851303.6775824.441 1303.72
5842.6471303.7615847.2421303.0285851.9961302.5945857.2381302.939 5862.021303.425
5879.3951303.7665880.5371303.7895881.2231303.7985911.7521304.1875922.1921303.864
5929.5381303.6875941.0131302.2515945.9591301.3745953.7581302.771 5962.921304.073
5991.2691304.309 5995.121304.3266020.4321304.6356025.6712304.6966026.3971304.706
6026.6041304.7096026.7731304.7096027.6071304.7226082.0541305.4656113.749 1305.65
6114.61305.6486115.5911305.6586116.5481305.6716145.6871306.0336156.8251306.269

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
3737.645	.035	4943.01	.085	5043.86	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4943.01	5043.86		533581.9578	508	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1304.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1305.10	Reach Len. (ft)	533.00	581.96	508.00
Crit W.S. (ft)	1304.70	Flow Area (sq ft)	360.85	94.25	837.17
E.G. Slope (ft/ft)	0.010586	Area (sq ft)	360.85	94.25	837.17
Q Total (cfs)	4880.00	Flow (cfs)	1295.80	181.00	3403.20
Top Width (ft)	1598.00	Top Width (ft)	522.15	85.14	990.70
Vel Total (ft/s)	3.78	Avg. Vel. (ft/s)	3.59	1.92	4.07
Max Chl Dpth (ft)	4.04	Hydr. Depth (ft)	0.69	1.11	0.85
Conv. Total (cfs)	47429.9	Conv. (cfs)	12594.2	1759.2	33076.5
Length Wtd. (ft)	518.21	Wetted Per. (ft)	523.08	85.42	992.42
Min Ch El (ft)	1302.10	Shear (lb/sq ft)	0.46	0.72	0.56
Alpha	1.06	Stream Power (lb/ft s)	1.64	1.40	2.27
Frctn Loss (ft)	7.07	Cum Volume (acre-ft)	8.61	3.34	26.63
C & E Loss (ft)	0.01	Cum SA (acres)	10.55	1.68	21.46

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION RIVER: Harquahala
REACH: Upper Mid Reach RS: 18.7424

INPUT
Description: 18.7424
Station Elevation Data num= 168

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4053.504	1300.913	4071.806	1300.798	4099.704	1300.746	4113.457	1300.393	4138.35	1299.716
4144.31	1298.4	4145.761	1298.103	4154.103	1299.333	4154.597	1299.424	4159.088	1299.36
4190.487	1299.097	4196.854	1298.61	4200.632	1298.251	4203.915	1298.625	4210.763	1299.354
4217.521	1299.396	4224.364	1299.408	4240.467	1299.235	4253.513	1299.061	4264.489	1299.102
4271.84	1299.146	4272.61	1299.153	4290.261	1299.103	4299.82	1299.235	4323.541	1298.696
4328.826	1298.487	4360.11	1297.845	4373.213	1297.983	4392.029	1298.186	4393.277	1298.224
4395.51	1298.221	4408.417	1297.506	4409.106	1297.381	4411.686	1297.061	4412.748	1296.943
4416.461	1296.141	4419.366	1295.295	4422.207	1295.835	4431.84	7 1298.14	4434.715	1298.135
4448.932	1298.047	4476.628	1297.643	4493.866	1297.315	4497.912	1295.502	4499.682	1295.711
4506.09	1297.357	4525.27	1297.429	4529.586	1297.344	4532.795	1296.824	4537.306	1295.987
4542.753	1296.965	4545.909	1297.418	4574.249	1297.691	4589.705	1297.884	4603.55	1297.775
4614.99	1297.774	4634.257	1297.545	4645.824	1297.316	4670.955	1297.129	4679.811	1297.079
4688.627	1297.048	4691.246	1297.039	4693.759	1297.012	4707.163	1296.929	4713.55	1296.988
4733.399	1297.01	4748.787	1297.105	4774.267	1297.53	4797.08	1297.014	4814.621	1296.876
4832.61	1296.563	4845.079	1296.186	4845.954	1296.472	4847.707	1295.754	4849.55	1295.218
4856.096	1295.776	4858.919	1295.887	4861.481	1296.113	4883.679	1298.523	4906.31	1296.76
4951.205	1297.49	5 4955.7	1297.568	4988.114	1297.113	4988.968	1297.102	4989.02	7 1297.1
4989.477	1296.984	4999.263	1294.505	4999.698	1294.411	4999.997	1294.471	5005.149	1295.294
5009.983	1296.07	1 5022.19	1296.267	5041.852	1296.601	5042.388	1296.606	5055.622	1296.546
5058.27	1 1296.48	5065.693	1296.222	5070.349	1296.634	5076.212	1296.888	5110.217	1297.099
5115.839	1297.155	5124.933	1297.112	5150.229	1297.029	5155.638	1297.005	5172.566	1297.08
5179.958	1297.02	5219.492	1296.911	5222.681	1296.917	5235.081	1296.952	5250.426	1296.907
5261.666	1296.904	5269.451	1296.367	5279.351	1296.869	5281.604	1295.978	5288.392	1296.193
5305.775	1296.655	5309.558	1296.712	5322.96	1296.765	5353.412	1296.968	5362.9	1296.925
5426.528	1297.119	5452.216	1296.879	5482.396	1296.602	5515.361	1296.958	5528.57	1297.02
5531.182	1296.417	5536.319	1295.37	3 5543.06	1296.75	5544.384	1296.949	5548.356	1296.949
5573.326	1296.68	6 5581.07	1296.819	5594.024	1296.881	5613.252	1296.892	5635.664	1296.799
5653.354	1297.34	4 5657.85	1297.529	5668.972	1297.865	5679.333	1297.53	4 5682.53	1297.453
5688.851	1297.439	5695.295	1297.455	5706.03	3 1297.49	5726.188	1297.614	5759.118	1297.438
5770.048	1297.374	5772.168	1297.033	5779.675	1295.472	5784.258	1296.486	5788.293	1297.366
5818.326	1297.623	5842.08	8 1297.79	5849.72	6 1297.55	5859.014	1297.421	5885.639	1297.449
5895	1297.57	5931.389	1297.615	5933.192	1297.619	5937.505	1296.769	5947.751	1294.738
5948.236	1294.806	5949.058	1294.89	7 5962.99	1296.75	5965.818	1296.98	2 5976.68	1297.481
5982.728	1297.775	6017.145	1298.219	6037.354	1298.69	7			

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4053.504	.035	4988.114	.085	5022.19	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4988.114	5022.19		586595.6793	540	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1297.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1298.02	Reach Len. (ft)	586.00	595.68	540.00
Crit W.S. (ft)	1297.65	Flow Area (sq ft)	327.71	64.86	661.60
E.G. Slope (ft/ft)	0.018340	Area (sq ft)	327.71	64.86	661.60
Q Total (cfs)	4880.00	Flow (cfs)	1464.13	233.68	3182.19
Top Width (ft)	1454.68	Top Width (ft)	490.83	34.08	929.77
Vel Total (ft/s)	4.63	Avg. Vel. (ft/s)	4.47	3.60	4.81
Max Chl Dpth (ft)	3.28	Hydr. Depth (ft)	0.67	1.90	0.71
Conv. Total (cfs)	36034.2	Conv. (cfs)	10811.2	1725.5	23497.5

Length Wtd. (ft)	552.83	Wetted Per. (ft)	492.54	34.55	931.04
Min Ch El (ft)	1294.41	Shear (lb/sq ft)	0.76	2.15	0.81
Alpha	1.01	Stream Power (lb/ft s)	3.40	7.75	3.91
Prctn Loss (ft)	7.02	Cum Volume (acre-ft)	4.40	2.27	17.89
C & E Loss (ft)	0.01	Cum SA (acres)	4.35	0.88	10.26

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Upper Mid Reach RS: 18.6296

INPUT
Description: 18.6296
Station Elevation Data num= 193

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4130.8831293.5894133.3711293.5734137.8081293.3594171.7831292.0074175.6541291.994
4178.3751291.9694190.1671291.8814204.8211291.7494211.0651291.5384212.8951291.622
4216.0311291.5474227.8651290.9694231.7781290.7764233.2331290.9484238.9981291.637
4241.4061291.5554241.9561291.5434249.532 1291.414303.0921291.5834309.525 1291.61
 4317.491291.6614324.8661290.4854330.0171289.8224342.4751291.0364351.7671292.127
4363.8671292.2164394.1681291.9964400.8291291.9364403.4591291.949 4433.751292.218
4440.4661292.2394457.9451292.0754492.5681291.8514522.3971291.5164538.4771291.404
4553.749 1291.23 4585.131290.8074595.8611290.3834602.4861290.0664606.4151290.195
4624.1521290.819 4646.591290.9224680.1261291.1294700.7751291.0994717.2091290.954
4748.3911291.066 4752.991291.232 4773.781291.3574789.4861291.0894798.2121290.924
 4817.221290.696 4837.271290.4924843.7881290.4544851.8541290.2274858.9231289.876
4867.3481289.4794873.1471289.125  4880.11288.0724880.2121288.0544880.3161288.076
4885.5081289.077 4889.121289.709 4892.021289.5864902.0861289.2724910.2791290.172
4910.6711290.2024912.7251290.1624935.4851289.5394953.9471289.2474976.659  1288.9
4997.9291288.7375000.4451287.7345001.5511287.2075003.3631287.5975009.9911288.874
5014.4181288.8145030.5081288.5655036.0371287.9045039.3431287.516 5045.251287.948
 5054.021288.8555072.5661288.8035089.1811288.8625094.1351288.988 5111.261289.656
5113.4581289.671 5128.481289.5355163.6231289.1915173.5181289.1615243.8281289.162
5244.1641289.1625244.2361289.161 5244.251289.1615257.6341288.8915259.7421288.962
5261.0861288.9715265.696 1289.055282.5651288.9565299.5031289.289 5312.421289.176
5334.1351289.779 5345.861290.1185359.7551290.0175379.161 1289.975386.689 1289.56
5386.7071289.5585393.9041289.116 5396.021288.4995401.2971287.6195405.7381288.373
5410.1791289.0365432.433 1289.525438.2871289.6445440.9251289.765 5455.08 1290.44
5470.5861290.6655472.3951290.737 5482.291290.8365500.144 1291.155508.7581290.738
5512.4431290.7375548.0231291.3325549.9911291.0865552.1451291.034 5565.251290.852
 5577.691290.8615586.5821290.5825604.0391289.8145610.3461288.8655614.0211288.146
5619.9021289.0475622.3691289.4655631.8011289.7495640.8991289.7935671.9921289.959
5687.6341290.1765732.185 1290.27 5761.411290.2955775.6271289.9565775.8071289.956
5779.6721290.0575801.5011290.6475806.1431290.6275862.1011290.3445870.2751290.472
5878.9861290.6145881.4681290.1635889.3791289.4995892.5061289.8295903.2331290.326
5916.8851290.352 5941.931290.7465943.6031290.7795944.0631290.7765944.4971290.743
5953.104 1289.885959.5021290.4325960.6821290.5725965.6631290.608    59781290.716
5984.0441289.3015984.7951289.177 5985.441289.2476001.6451290.4646029.2471290.778
6046.8191291.0036057.2241290.8896068.0731290.6366071.3361290.2776077.0961289.839
6087.5081290.1656096.6841290.7056115.8911290.9526119.8741291.2046130.1531291.109
6137.5481291.1036157.1621290.9656179.809 1290.796184.7011289.5336188.8411288.591
6192.8221289.8346196.8881290.841 6208.771290.6846217.0831290.4736225.0611290.647
6233.2831290.9156250.7851290.9846254.9451291.0186262.6231291.2356294.2891292.018
6304.9581292.2726315.609 1292.316316.2351292.313
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4130.883    .0354976.659    .0855014.418    .035
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4976.659	5014.418		501559.1249	525	.1	.3

Left Levee Station= 4317.49 Elevation=1291.661
Right Levee Station=6046.819 Elevation=1291.003

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1290.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1290.99	Reach Len. (ft)	559.12	559.12	559.12
Crit W.S. (ft)	1290.47	Flow Area (sq ft)	177.10	79.52	858.98
E.G. Slope (ft/ft)	0.009573	Area (sq ft)	177.10	79.52	858.98
Q Total (cfs)	4880.00	Flow (cfs)	709.92	221.61	3948.47
Top Width (ft)	1124.14	Top Width (ft)	204.70	37.76	881.67
Vel Total (ft/s)	4.37	Avg. Vel. (ft/s)	4.01	2.79	4.60
Max Chl Dpth (ft)	3.47	Hydr. Depth (ft)	0.87	2.11	0.97
Conv. Total (cfs)	49875.2	Conv. (cfs)	7255.6	2264.9	40354.7
Length Wtd. (ft)	559.12	Wetted Per. (ft)	205.16	38.23	882.84
Min Ch El (ft)	1287.21	Shear (lb/sq ft)	0.52	1.24	0.58
Alpha	1.03	Stream Power (lb/ft s)	2.07	3.46	2.67
Prctn Loss (ft)	5.50	Cum Volume (acre-ft)	1.48	0.93	8.34
C & E Loss (ft)	0.00	Cum SA (acres)			

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 18.5237

INPUT
Description: 18.5237
Station Elevation Data num= 206

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4109.8761286.881 4110.481286.8744115.0641286.9064142.8951286.9534149.8171286.358
 4151.861286.4044152.3481286.375 4152.531286.3624152.862 1286.37 4168.911286.738
4173.1091286.0054178.9991284.9664190.3711286.7814192.159  1287.14210.3291286.852
4222.3621286.7124227.9151286.5034233.9821286.2414247.2731285.6624272.853 1287.66
```

```
4273.8991287.7314299.5831288.0244306.1061288.1574307.9871288.1964309.5411288.221
4316.4241288.0464326.0291287.7724328.3481287.7434344.2711287.3764357.133 1287.12
4359.3081287.0714373.3911287.0964397.6821287.1784403.7141287.074 4432.621286.696
4443.0461288.1164444.8521285.8844451.3441286.128 4459.911286.4574472.3821286.593
4481.1211286.6674494.4261287.7764497.7481288.0224499.5761287.9874510.2291287.716
4519.5211287.6144525.6481287.1354536.5031286.2644545.3721286.1394557.4041285.804
 4566.91286.2354572.3681286.3694577.9681286.1234597.1861285.4044600.0971285.246
4605.4321284.9134612.5111283.8834618.1461284.2214631.1821285.1794661.8881285.475
4678.0771285.5874687.4071285.6324743.067 1286.014769.0581286.1094796.6111286.066
4848.125 1285.064870.2641284.5864874.3171284.2464886.562 1283.624897.5661284.362
4900.8851284.5614906.096 1284.444933.5361284.1544935.8321284.1894962.3631284.719
4968.1811284.6464982.9221284.362 4997.571282.2714997.9221282.2244998.2011282.262
5006.3861283.353 5007.321283.2555019.827 1283.585022.6771283.7565042.0521283.948
5053.6771284.0875062.9741284.1625095.5771284.789 5099.621284.8335105.9431284.692
5139.0241283.9495162.6711283.4145171.2211283.3015192.1021282.9095195.0511282.393
5198.7541281.9285201.5271282.1945209.5631282.9365212.705 1282.895229.5461282.665
5233.8131283.1325239.6731283.6685248.9431283.8455249.8941283.841 5251.631283.809
5259.2821283.5885268.9071283.2535274.935 1283.055277.0341283.133 5282.48 1283.37
5291.2711283.5515297.1691283.0225300.0431283.0315305.1781283.2665340.2331285.051
 5367.611286.115 5374.381286.152 5411.841286.235  5411.91286.2125421.1181286.047
5478.3811286.5265484.3371286.5765505.6431285.6955518.5171285.2975536.8171283.783
5542.5911283.0015543.3251283.0225546.4021282.8775552.711 1282.745554.7031282.746
5574.2291282.4455575.6221282.4135576.2121282.3185582.8591280.8455583.0391280.913
5587.718 1283.025592.5911283.7215623.9861283.4745657.4411283.6665689.4051284.324
5732.5091284.8365734.6641284.863 5796.421284.787  5796.51284.7875796.6481284.782
5818.9281283.9095828.4371284.6435829.1641284.7025844.4611284.2995846.9851284.245
 5854.111284.1095884.4281283.7965904.4821284.9815905.2031285.0055915.6281283.293
5915.7731283.2585916.0121283.2815923.8251284.2485928.2851284.1975938.9151283.985
5943.1841284.4435945.1931284.611 5955.411284.7675961.1291285.4295970.5661286.573
5980.9891286.2585985.8691286.2425996.5231286.0916019.5831285.2366023.7081285.137
6026.7871285.1716037.7111284.0636041.7961283.544 6045.181284.237 6051.721285.153
6067.0631285.2036082.4611285.2076089.4781285.2286104.149 1285.326117.3341285.195
6125.9251285.2676139.2331285.3956172.2461285.5666179.3561285.6446182.2081285.662
6221.7061285.9366230.4481285.9936262.428  1286.36290.6481286.5826295.7771286.628
6301.5241286.6326342.9071286.707 6350.921286.782 6369.981286.9326373.3491286.958
6375.6661286.9616377.309 1286.82 6383.761286.1476388.7371286.502 6393.97 1286.86
 6410.93  1287.26432.1571287.4616459.7191287.3636468.5411287.5656496.988 1288.27
6498.6791288.286
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4109.876     .0354968.181     .0855062.974     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       4968.1815062.974                690726.5636     654              .1        .3
Right Levee      Station=5970.566       Elevation=1286.573
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1285.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1285.48	Reach Len. (ft)	690.00	726.56	654.00
Crit W.S. (ft)	1284.95	Flow Area (sq ft)	106.33	131.45	880.01
E.G. Slope (ft/ft)	0.010145	Area (sq ft)	106.33	131.45	880.01
Q Total (cfs)	5000.00	Flow (cfs)	357.00	287.34	4355.66
Top Width (ft)	966.98	Top Width (ft)	154.64	94.79	717.55
Vel Total (ft/s)	4.47	Avg. Vel. (ft/s)	3.36	2.19	4.95
Max Chl Dpth (ft)	4.29	Hydr. Depth (ft)	0.69	1.39	1.23
Conv. Total (cfs)	49640.4	Conv. (cfs)	3544.3	2852.7	43243.4
Length Wtd. (ft)	658.97	Wetted Per. (ft)	154.87	95.04	719.01
Min Ch El (ft)	1282.22	Shear (lb/sq ft)	0.43	0.88	0.78
Alpha	1.12	Stream Power (lb/ft s)	1.46	1.91	3.84
Frctn Loss (ft)	6.49	Cum Volume (acre-ft)	55.95	6.70	61.77
C & E Loss (ft)	0.02	Cum SA (acres)	56.55	3.87	64.93

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

```
CROSS SECTION          RIVER: Harquahala
REACH: Lower Mid Reach    RS: 18.3861

INPUT
Description: 18.3861
Station Elevation Data    num=      183
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
4350.2541280.0754352.682 1280.334361.7681280.8174368.2751281.1864371.034 1281.23
4387.0041280.3284401.9871279.552  4411.8 1279.554432.2571279.5834440.7421279.668
4452.3651279.5264467.4261279.2824471.8661278.3684474.9411277.2944477.9251277.966
4485.4381278.9364486.5431278.9634488.4071278.9124495.3411278.881 4502.811277.443
4504.0951277.1424506.9121277.5054516.8141279.2254537.5291279.1034539.4111279.106
 4540.931279.3524548.0791280.5934550.9631281.0484551.9521281.023 4565.47 1280.88
 4578.881280.2754585.9571280.1054599.7711280.0394619.6841279.9474629.9641279.869
4639.4481279.7344666.2381278.1444675.9921277.7384699.184 1278.764712.2181279.317
4718.3311279.5324733.0591280.0894740.5651280.079 4757.181279.7854759.9661279.014
 4760.141278.9584765.946 1277.294768.0141276.761 4778.931277.6494779.3721277.686
4818.3181278.6474829.793 1278.864842.1641278.6264885.3881277.7594905.2981278.542
4908.6941278.709 4932.351278.8124936.7281278.7974974.4041278.636 4985.74 1278.59
4987.1661278.5275001.3781277.5125002.1421277.5365010.1011277.8915029.5061278.257
5033.3561278.3665034.2821278.2245040.5281277.2375045.2821277.8825050.8951278.662
  5082.51278.4025132.7751278.2065173.7311278.2195208.4461278.2055224.3551277.896
5225.7921277.8685228.751 1277.965248.2911278.6535260.2751278.5995266.2261278.552
5271.3261278.5185286.9231278.4965296.7921277.9125300.8371277.5955302.4091277.634
5303.6361277.5165312.0791276.957 5314.211276.9355321.465 1277.055328.225 1277.54
5331.2161277.6515353.0381279.2065354.1781279.2955356.2911279.3355360.7371279.372
5413.7081279.8075422.3591279.8365436.0321279.7425449.3961279.7335469.7841279.527
5495.3471279.2595511.4731279.6025513.6691279.6345526.8521279.9825561.0221279.317
5566.0291279.1965570.9841278.9825585.281  1278.25596.0121277.854 5600.061277.726
5616.368 1276.435617.2111276.357  5617.71276.3455634.6251276.4025637.8361275.909
5644.0081274.7915650.6881275.9555654.9311276.7075658.4531276.2785658.8821276.243
```

```
5660.6021276.2545674.2631276.9585676.4971277.1935714.7341277.4155722.3991277.614
5730.2811277.7365766.1041277.1355773.3591277.0125773.8891276.9065781.4541275.582
5782.448 1275.915788.0731276.8545791.4751276.885 5799.411276.993 5803.241276.215
5806.5531275.5385810.8551276.6725813.2221277.3465817.6671276.902 5818.071276.665
5819.9341276.4755827.6221275.7175836.0031276.4445839.316 1276 785843.9981277 011
5851.9351277.4135855.4421277.4215863.3331277.4125895.4351276.9595909.9851276 702
5912.5191276.8085916.6891276.9875935.9141277.7555942.9991277.7975946.1561277.786
5973.2161278.1036001.0341277.9646019.2831277.9916055.8911277.6116072.0421277 759
6100.1811278.2556125.608 1278 08  6138.41277.9746143.7491277.9586154.7051278 416
6157.4121278.4796169.5541278.4366191.8131278.1986207.9311278.0286226.6151278.019
6249.1381277.8846252.6511276.9886259.4171275.4476260.8061275.9276267.8341277.547
6300.8851278.1766325.2211278.6686340.4071278.9916415.6761279.4846515.0281280.163
6528.9711280.263 6536.591280.2356569.2911280.361
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4350.254	.035	4985.74	.085	5033.356	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4985.745	5033.356		520	542.3258	497	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1278.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1278.98	Reach Len. (ft)	520.00	542.33	497.00
Crit W.S. (ft)	1278.52	Flow Area (sq ft)	121.52	32.18	1058.34
E.G. Slope (ft/ft)	0.009510	Area (sq ft)	121.52	32.18	1058.34
Q Total (cfs)	5000.00	Flow (cfs)	360.23	42.23	4597.54
Top Width (ft)	1338.42	Top Width (ft)	227.78	47.62	1063.03
Vel Total (ft/s)	4.13	Avg. Vel. (ft/s)	2.96	1.31	4.34
Max Chl Dpth (ft)	3.91	Hydr. Depth (ft)	0.53	0.68	1.00
Conv. Total (cfs)	51271.2	Conv. (cfs)	3693.9	433.0	47144.3
Length Wtd. (ft)	498.34	Wetted Per. (ft)	228.79	47.67	1065.26
Min Ch El (ft)	1277.51	Shear (lb/sq ft)	0.32	0.40	0.59
Alpha	1.06	Stream Power (lb/ft s)	0.93	0.53	2.56
Frctn Loss (ft)	5.14	Cum Volume (acre-ft)	54.15	5.33	47.22
C & E Loss (ft)	0.00	Cum SA (acres)	53.52	2.69	51.56

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION *RIVER: Harquahala*
REACH: Lower Mid Reach RS: 18.2834

INPUT
Description: 18.2834
Station Elevation Data num= 223

```
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4323.4351277.8584324.2541277.8554340.0651277.7874347.1621277.5134350.5281277.459
4365.5881277.2054383 7091276.4954384.9171276.4264386.7711276.3524390.3121275.925
4392.2211275.713 4392.761275.6044395.0561275.3224404.2331274.0464406.9881273.655
4409.7421273.9554415.5281274.6224431.6381275.0714432.6291275.0954433.0491275.081
4433.8811275.0564456.3841274.3534465.0061272.2144465.3961272.1384465.6031272.168
4467.7011272.5734479.7761274.7784480.6011275.0174501.2361275.1144510.7761275.063
4532.4691274.6294541.5551274.4864556.0381274.4784563.496 1274.274580.6681274.302
4584.471    12744590.986 1273 094601.9391274.4064606.3561274.965 4609.66 1274 92
 4622.331274.8354632.3181274.9544662.5551274.7174664.9741274.6624705.011 1273 99
4721.8531273.6384733.5051273.5334744.3121273.4274760.4381273.4764783.1461273 683
 4788.591273.0944792.6021272.8294794.406 1272.95 4800.42 1273.424815.4731273 887
4821.0531273.9964825.1361273.0894829.2791272.2364832.0171272.3374835.6511272.868
4844.7761272.5554849.8071273.095 4856.511273.8674880.216 1273.954892.8521274.013
4897.5161274.0574941.1721274.2174955.246  1273.94964.7551273.7554973.7891273.668
4996.1421273.6254996.4721273.5794999.109 1272.755000.8421272.9545008.7271274.148
5016.7421274.0455017.2491274.0535018.5531274.0165027.7371273.7075043.4171273.193
5044.9291273.1525046.4071273.1945051.5151273.3635055.6921272.8465059.583 1272.22
5067.1831273.2085068.8451273.4155071.6841273.4315099.4781273.5625117.9581273.508
5142.3611273.0185145.3491272.9355150.3691273.2735153.9651273.1785158.8731273.299
 5161.711273.3285186.4811273.2895194.6871272.5125196 3381272.3855202.3621272.686
5221.977 1273.655250.7941273.4865291.2931273.1085305.9871273.1095318.5631273.076
5326.6961272.7725338.116 1273.235344.824 1273.38 5349 911272.7215352.6841272.208
5357.2611272.6945363.0811272.6185366.9581272.8995371 4791273.1725402.139 1274.03
5404.1571274.0695404.9021274.0715447.0621273.6155480.4131273.687 5486.881273.689
5519.7241273.2995523.813 1273.245524.2491273.2645526 5681273.3185534.054 1273.45
5542.4191273.2585555.0021273.0415555.8471272.9955563.8411272.615 5566.541272.552
5596.8861271.3475600.7641271.202 5602.041271.2695625.2541272.2365625.7141272.241
5644.9961272.2555649.4241271.096 5654.591269.8995660.507 1271.17 5665.18 1272.06
5669.2221271.9945687.2262271.6835708.4991271.7725712.5491271.8675718.1531272.452
5726.2191272.8885738.9111271.7685751.3181270.6125755.2321271.4245761.0881272.354
5796.6261272.1825811.6291272.1165831.6041272.6855843.8411272.9265856.1841272.898
 5904.911272.4595911.0581272.3295922.3691270.9355922.4241270.9285922.4631270.938
5929.2921272.1985940.9751272.4095945.9981272.5815984.2331272.8685991.9911272.905
6000.8641272.8366035.2151272.4046040.649 1272.356051.8531272.0896057.9781272.164
6096.7041272.6936117.154 1272.446127.6331272 4686152.5791272.357  6158.41270.948
6161.9551270.3426166.5291271.4526172.4831272.6076205.8371272.4136212.8361272.346
 6215.221272.417 6225.971272.7646240.0021272.9596272.0441273.0096320.0861273.101
6337.2911272.9666343.605 1272.08 6345.29 1271.886350.535 1272.246353.6881272.493
6355.7971272.4576357.0071272.2966362.4761272.1536371.6861273.1026387.0911273.315
6403.0071273.5416403.9941273.5566432.7121273.8386445.3051273.8146446.0181273.813
6447.2721273.831 6471.721274.1016476.0181274.1176509.4081274.2426522.3261274.246
6563.0611274.4336589.6451274.4586619.0781274.9076629.6041274.9896631.422 1274.63
6637.114 1273.816648.804 1274.516652.1231274.7166660.9581274.777  6665.961274.848
6690.5161274.8058726.7251275.1956728.3861275.2236734.2941276.048 6734.721276.048
6735.0361276.0578736.1481276.0746745.3651276.105
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4323.435	.035	4996.142	.085	5008.727	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4996.1	425008.727		460463.5521	404	.1	.2

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1273.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1273.84	Reach Len. (ft)	460.00	463.55	404.00
Crit W.S. (ft)	1273.40	Flow Area (sq ft)	42.46	3.28	1089.68
E.G. Slope (ft/ft)	0.011169	Area (sq ft)	42.46	3.28	1089.68
Q Total (cfs)	5000.00	Flow (cfs)	134.92	3.28	4861.80
Top Width (ft)	1328.71	Top Width (ft)	103.94	8.07	1216.71
Vel Total (ft/s)	4.40	Avg. Vel. (ft/s)	3.18	1.00	4.46
Max Chl Dpth (ft)	3.64	Hydr. Depth (ft)	0.41	0.41	0.90
Conv. Total (cfs)	47310.3	Conv. (cfs)	1276.7	31.0	46002.7
Length Wtd. (ft)	418.78	Wetted Per. (ft)	104.58	8.24	1218.87
Min Ch El (ft)	1272.75	Shear (lb/sq ft)	0.28	0.28	0.62
Alpha	1.01	Stream Power (lb/ft s)	0.90	0.28	2.78
Frctn Loss (ft)	4.14	Cum Volume (acre-ft)	53.17	5.11	34.97
C & E Loss (ft)	0.02	Cum SA (acres)	51.54	2.34	38.55

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 18.1956

INPUT
Description: 18.1956
Station Elevation Data num= 200

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4450.528	1271.599	4459.159	1271.575	4481.467	1271.776	4489.365	1271.606	4498.551	1271.285
4500.435	1271.163	4508.412	1269.737	4514.471	1268.628	4517.579	1268.703	4523.978	1269.012
4533.132	1269.018	4537.857	1268.384	4547.398	1267.164	4552.002	1268.765	4552.168	1268.744
4558.37	1266.711	4562.366	1267.568	4571.479	1269.393	4587.181	1270.334	4588.216	1270.378
4593.514	1270.659	4605.485	1270.572	4631.428	1270.377	4636.032	1270.466	4638.159	1270.516
4642.922	1270.477	4645.72	1270.469	4683.176	1270.166	4698.141	1269.968	4704.258	1269.748
4714.429	1269.532	4735.04	1268.991	4748.975	1269.498	4769.111	1270.547	4779.635	1270.619
4789.52	1270.857	4796.663	1270.614	4801.879	1270.386	4821.141	1269.742	4836.433	1269.255
4845.463	1267.719	4853.208	1266.425	4866.922	1267.963	4870.86	1268.601	4875.726	1268.601
4901.794	1268.602	4917.591	1268.616	4937.299	1268.35	4960.53	1268.271	4963.882	1267.804
4969.575	1268.384	4971.833	1268.745	4979.966	1268.744	4993.028	1268.636	4994.58	1268.619
5000.096	1267.178	5001.744	1267.063	5003.604	1267.891	5010.982	1268.918	5011.755	1269.064
5013.935	1269.148	5017.613	1269.222	5023.964	1268.689	5024.348	1268.667	5024.396	1268.661
5025.293	1268.699	5031.391	1269.032	5034.154	1268.982	5061.15	1268.434	5062.726	1268.493
5076.222	1268.939	5080.979	1269.126	5095.646	1269.803	5136.945	1270.096	5157.188	1270.166
5170.272	1269.691	5184.255	1269.052	5188.845	1268.109	5191.717	1267.265	197.085	1268.372
5200.352	1269.151	5205.191	1268.315	5207.283	1268.138	5224.112	1268.365	5227.499	1267.946
5233.296	1267.532	5237.308	1267.838	5241.333	1268.548	5254.15	1268.658	5261.392	1268.544
5273.667	1268.889	5298.733	1269.242	5301.263	1269.288	5326.897	1269.206	5344.113	1269.198
5358.439	1269.239	5373.844	1269.155	5407.354	1269.274	5416.323	1268.885	5419.14	1268.66
5422.395	1268.993	5429.092	1269.264	5445.136	1269.272	5461.82	1269.345	5492.89	1269.39
5501.806	1269.439	5540.458	1270.039	5567.652	1270.518	5579.358	1270.597	5585.56	1270.614
5612.942	1270.582	5625.174	1270.635	5640.87	1270.258	5673.846	1269.374	5699.843	1268.433
5710.654	1267.949	5722.346	1268.223	5734.735	1268.513	5744.07	1268.565	5754.086	1268.469
5761.042	1268.504	5762.935	1268.099	5771.606	1266.538	5775.122	1267.142	5779.079	1267.909
5792.807	1267.841	5801.092	1267.764	5810.941	1267.07	5824.24	1266.238	5827.703	1267.191
5831.31	1268.102	5837.07	1267.765	5850.202	1267.482	5851.184	1267.599	5859.802	1268.631
5886.829	1268.726	5961.017	1269.156	6013.314	1268.158	6016.741	1268.08	6019.01	1268.07
6026.76	1267.834	6035.333	1268.092	6045.035	1268.305	6061.184	1268.531	6067.253	1268.647
6075.515	1268.449	6098.407	1267.636	6104.935	1267.273	6107.603	1267.029	6115.263	1267.781
6117.658	1268.051	6121.47	1268.04	6132.388	1268.324	6135.978	1268.242	6147.651	1267.894
6156.469	1267.683	6159.403	1267.171	6163.525	1266.487	6169.194	1267.247	6173.785	1267.916
6181.749	1267.733	6192.669	1267.623	6195.219	1267.441	6202.677	1267.042	6207.785	1267.712
6208.735	1267.972	6210.474	1267.965	6216.895	1267.946	6247.053	1268.398	6264.904	1269.012
6280.827	1268.842	6320.674	1268.643	6330.16	1268.719	6356.566	1269.025	6371.795	1269.234
6394.889	1269.489	6403.865	1269.561	8428.673	1269.956	6484.33	1270.043	6500.13	1269.987
6511.324	1270.022	6563.046	1270.215	6565.674	1270.285	6571.269	1268.911	6571.737	1268.841
6572.094	1268.924	6580.468	1270.361	6591.745	1270.375	6616.565	1270.611	6618.241	1270.627
6619.029	1270.637	6627.425	1270.561	6629.682	1270.545	6637.081	1270.699	6644.83	1270.91
6659.781	1271.189	6674.201	1271.701	6690.096	1271.864	6710.975	1272.153	6737.311	1272.406

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4450.528	.035	4979.966	.085	5017.613	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4979.966	5017.613		511	563.677	427	.1	.3

Right Levee Station=6565.674 Elevation=1270.285

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1269.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1269.68	Reach Len. (ft)	511.00	563.68	427.00
Crit W.S. (ft)	1269.21	Flow Area (sq ft)	238.34	36.38	984.25
E.G. Slope (ft/ft)	0.009176	Area (sq ft)	238.34	36.38	984.25
Q Total (cfs)	5000.00	Flow (cfs)	1009.41	59.07	3931.52
Top Width (ft)	1390.24	Top Width (ft)	240.04	37.65	1112.55
Vel Total (ft/s)	3.97	Avg. Vel. (ft/s)	4.24	1.62	3.99
Max Chl Dpth (ft)	3.19	Hydr. Depth (ft)	0.99	0.97	0.88
Conv. Total (cfs)	52196.0	Conv. (cfs)	10537.5	616.6	41042.0
Length Wtd. (ft)	455.24	Wetted Per. (ft)	241.59	38.10	1114.45
Min Ch El (ft)	1267.06	Shear (lb/sq ft)	0.57	0.55	0.51
Alpha	1.03	Stream Power (lb/ft s)	2.39	0.89	2.02
Frctn Loss (ft)	4.20	Cum Volume (acre-ft)	51.69	4.90	25.35
C & E Loss (ft)	0.00	Cum SA (acres)	49.73	2.10	27.75

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 18.0888

INPUT
Description: 18.0888
Station Elevation Data num= 216

```
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
3806.9931270.2883809.288 1270.293816.361 1270.163828.6291270.0233837.8211269.757
3845.1621269.6023854.8231269.3533862.675 1269.273877.6111269.022 3888 16 1268.97
3903.1141268.9553914.3821268.9533921.2981268.8623940.4611268.4993944.6471268.402
3945.7481268.3853970.9621268.1583987.148 1267.774002.6881267.6384014.1481267.538
4025.9191267.5744032.0811267.3844037.3941267.0074046.8291266.4054055.7351266.182
4057.3161266.0894061.8361265.8694066.3381265.9544086.0791266.3244095.2171266.078
4106.1661265.8744117.5571265.7324120.4451264.5914128.911 1261.444141.049 1263.35
4142.5631263.6034146.0881263.7174148.3261263.7644151.6251263.8144162.7731263.902
4166.7471263.9554170.6811262.4484173.9311261.075 4173.961261.0784176.2341261.679
4185.6971264.0174200.4421264.372 4201.29 1264.384204.2661264.258 4215.891263.708
4222.5881262.4394243.8921263.9494263.1471264.1344276.1971264.0084280.1711264.242
4299.9651264.4744299.9691264.4754299.9971264.4754300.1111264.4764356.0811264.877
4359.6011264.8684380.8631264.4244381.9611264.4024382.239 1264.44383.9081264.356
4406.4671263.7764408.6061263.858 4414.41264.1744423.4971264 6464427.2441264.826
4454.8051265.0954493.7551265.5324498.6821265.5814500.0241265 5994501.4991265.614
4567.9831265.2934592.2961265.0324623.5011264.9234634.9081264.9664647.1721265.155
4679.4571265.543 4686.611265.6154729.4961265.3534736.1461265.4864747.9671264.127
4748.8061264.0424749.0571264.0764762.293 1265.924769.6991265.8044788.9121265.479
4814.3641265.1954815.869 1265.174817.8591265.1484820.8891265.1344847.9751265.014
4875.7841265.0964884.5781265.0524887.2351264.7314894.8181263.7834897.9781264.079
4904.4021264.4984918.8821264.3374920.4871264.3154921.4631264.344 4942.281264.422
4943.2361264.2744945.1711263.8434949.5341262.7874956.5671263.8944958.8921264.277
4960.395 1264.274962.0271264.2594990.3141264.0824998.9411262.7694999.9631262.501
5001.9331262.7835007.504 1263.845021.4761263.378 5023.171263.3285036.3591263.568
5063.6921264.0585066.5441264.025 5090.971263.7455122.9151263.6095138.5041263.581
5147.1631264.0595159.4191264.907 5195.871265.2095209.2751265.2945218.0131265.188
5261.4971264.8165317.5581265.8135320.7611265.8635322.3581265.8045355.2761264.744
5357.3641264.6275368.3291264.0035379.8551264.6185387.9361265.1235411.9151265.835
5424.9461266.241 5450.68 1266.315458.1231266.3335461.984 1266.35505.0761266.106
5535.0751265.6765539.702 1265.615542.5081265.5525546.8631265.6975568.6891264.738
5574.9071264.4745578.7761263.6885583.8141262.7475587.2341263.7195589.7541264.419
5606.1891264.6865607.5851264.6955618.3431261.8635619.0141261.7025621.295 1262.24
5629.3121264.3445635.8891264.2125661.7011263.9815665.1921263.9825671.5821263.821
5683.9341263.6895705.2611263.5055712.861 1263.645717.3311263.7445745.8961264.307
5761.6161264.6175767.0281264.662 5772.221264.6995803.9591264.545 5831.691264.482
5838.6981264.4425850.2231261.9575650.9971261.8085861.9181263.8385865.0421264.565
5870.6441264.7465894.0821264.9645903.1541265.1415910.3121265.1375917.3341264.661
5932.3931263.7795942.6141264.3025945.0561264.4035947.0011264.5345970.7691264.921
5987.8291265.187 5989.911265.2075991.8321265.2135994.2431265.1796030.736 1264.91
6048.6731265.0126161.7511265.4886159.6161265.7786161.1021265.7716161.6151265.673
6168.4061264.5886172.5361265.0126182.3661266.2846193.5391266.345 6241.171266.184
6258.4511266.0966263.3381266.0996271.1871266.2856275.5181266.5316288.8691266.563
6365.0821266.7966412.6681267.3646427.9291267.4276467.1781267.5716473.3191267.613
6541.0331268.423
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
3806.993     .0354990.314     .0855007.504     .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4990.3145007.504              557533.7156     426            .1          .3
Right Levee     Station=6161.102       Elevation=1265.771
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1265.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1265.48	Reach Len. (ft)	557.00	533.72	426.00
Crit W.S. (ft)	1265.01	Flow Area (sq ft)	534.21	34.20	719.20
E.G. Slope (ft/ft)	0.009292	Area (sq ft)	534.21	34.20	719.20
Q Total (cfs)	5000.00	Flow (cfs)	2109.56	90.27	2800.17
Top Width (ft)	1481.26	Top Width (ft)	629.82	17.19	834.25
Vel Total (ft/s)	3.88	Avg. Vel. (ft/s)	3.95	2.64	3.89
Max Chl Dpth (ft)	4.17	Hydr. Depth (ft)	0.85	1.99	0.86
Conv. Total (cfs)	51869.3	Conv. (cfs)	21884.3	936.5	29048.6
Length Wtd. (ft)	505.29	Wetted Per. (ft)	632.26	17.44	836.15
Min Ch El (ft)	1262.50	Shear (lb/sq ft)	0.49	1.14	0.50
Alpha	1.01	Stream Power (lb/ft s)	1.94	3.00	1.94
Frctn Loss (ft)	4.49	Cum Volume (acre-ft)	47.15	4.45	17.00
C & E Loss (ft)	0.01	Cum SA (acres)	44.62	1.74	18.21

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 17.9877

INPUT
Description: 17.9877
Station Elevation Data num= 248

```
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 3611.911262.8963623.5331262.9173625.8021262.9233627.483 1262.913634.0151262.831
3657.8941262.3933671.2611262.4413672.1581262.4493689.3021262.2723699.1711262.227
3704.1111262.1873726.6521261.7163727.0061261.7083738.5251261.4523747 6681261.198
3753.0581260.9363768.6541260.2093771.4021260.1533782.1351259.8723785.2341259.572
3790.0191259.4843803.3651259.1563807.5491258.8973817.0111257.865 3818.11257.683
3821.7671258.3093824.1971258.7043825.7711258.6423840.7271258.2143852.6271258.673
3864.899 1259.073882.3261258.624 3894.051258.2553898.3371258.4723909.5881259.429
```

```
3925.3431259.706 3934.351259.8893988.9171259.6563976.045 1259.593978.7471258.731
3986.4471256.3333995.6451259.2163996.0781259.3333996.677 1259.324022.4241258.954
 4023.491259.0244025.2271258.9154031.9771258.758 4036.851258.3454040.4011258.024
4059.7751259.8934062.1541260.0764063.9081260.2714065.7261260.3184065.2051260.719
4090.4231260.2054094.9961259.8764107.8661259.7024112.4861259.6654117.8011259.792
4131.9271259.8614139.8551259.7854153.0181259.8124215.2231260.2234234.0921260.294
 4250.471260.3964272.7791260.5484305.8391260.8554308.4851260.8264314.0821260.784
 4373.621260.2864378.149 1260.054382.8791259.779 4394.611260.1374396.4241260.218
4401.4841260.4884418.9471260.5174420.9371260.4954424.6871260.3524437.8111259.983
4446.7611259.8264447.3351259.9424455.9731260.2164466.7381260.1254467.1421260.115
4472.1981260.1564509.7251260.4754514.3961260.4434525.9021260.4564569.6631260.623
4587.0711260.9324606.9441261.2164611.8041261.0724628.4221260.0714642.964 1260.17
4653.7471260.2984681.9351261.0034690.255 1261.14 4693.921261.0174700.3181260.648
 4710.181260.5484718.0291260.3424730.554 1260.234771.8391260.1974780.9481260.219
4791.4221260.1544802.2741260.0414805.1471259.7674812.1031259.3124814.095 1259.41
4822.9091259.9714837.4671260.1854844.3971260.2524846.9831260.3554850.0311260.403
4860.1141260.6584868.0831260.5464869.6331260.5514880.366 1260.134896.8051259.568
4907.6731260.4074908.604 1260.574910.966 1260.524930.826 1260.374950.8011260.171
4965.364 1260.074971.2751259.0324972.3271258.8634975.7821258.9994991.9211259.797
4997.6151257.9375000.0321256.9185002.578 1257.455015.3381259.8915024.3111259.842
5036.7821259.847 5050.621259.9225064.5671260.0015089.3451260.0785093.813 1258.44
5097.3951256.9115104.5241258.5695106.8551259.1675110.1511259.1515120.3941259.364
5132.5951259.9755134.7361260.0855138.4091259.9775145.4831260.2065160.571  1261.2
5175.323  1261.45186.3221261.8725201.3871262.3995211.8122262.4255245.9831263.018
 5279.081261.9955283.1561261.8285292.536 1261.395327.0271260.1935333.0061260.245
5350.4721260.336 5357.761260.5645372.304 1260.755388.484 1260.97  5394.51260.961
5406.2981260.8695426.3321261.0555435.2571261.1155475.3261260.7255481.9551260.686
5493.5141258.432 5494.361258.2285497.2531259.1275501.1121260.6755503.3051260.636
 5506.011260.4535514.756 1259.775518.9731259.5345520.9461259.4145524.6661259.539
5529.3731259.4765532.8871259.3185540.9821258.6295543.1671258.3025552.3851260.036
5554.1561260.1885567.0571260.1665575.3331260.2555593.5021260.4095597.6921260.544
5604.7681259.7185605.5121259.657 5606.02 1259.675610.9631260.5055616.2441260.676
5619.0961260.7245624.2121260.6645634.643  1260.75658.4561260.8345667.7271260.905
5687.2341260.594 5727.881259.8825732.0591260.1045739.3561260.5645740.9911260.676
5747.2671260.8595763.1351261.3555775.6631261.4665783.9061261.4145789.9811261.398
5800.8691261.6015814.6251261.469 5815.731261.4635816.4581261.4215818.8161261.196
5824.5761260.5555825.9631260.3875831.326 1260.745840.093 1261.245864.6441261.147
5866.0771261.1455867.3071261.1455891.958 1261.145901.7461261.2035935.0381261.548
 5936.141261.6865953.2771261.6865995.5981261.8636031.704 1262.146043.9141262.238
6098.4111262.6576122.8031262.8186129.2341262.8656148.0571262.7936165.8051262.786
6171.2221262.8186178.7781262.8986186.8091263.0236193.5791262.413 6196.831262.129
6208.3131262.8976209.1421263.0276210.614 1263.086220.841 1263.616268.569 1264.16
6270.9231264.1866272.1941264.2046272.3261264.204

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 3611.91     .0354991.921     .0855015.338     .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
       4991.9215015 338                523584.0225     526                .1        .3
Right Levee      Station=5800.869       Elevation=1261.601
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1260.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1260.99	Reach Len. (ft)	523.00	584.02	526.00
Crit W.S. (ft)	1260.55	Flow Area (sq ft)	980.55	55.87	326.84
E.G. Slope (ft/ft)	0.008290	Area (sq ft)	980.55	55.87	326.84
Q Total (cfs)	5000.00	Flow (cfs)	3742.03	155.32	1102.65
Top Width (ft)	1624.57	Top Width (ft)	1153.02	23.42	448.13
Vel Total (ft/s)	3.67	Avg. Vel. (ft/s)	3.82	2.78	3.37
Max Chl Dpth (ft)	4.44	Hydr. Depth (ft)	0.85	2.39	0.73
Conv. Total (cfs)	54916.7	Conv. (cfs)	41100.0	1705.9	12110.8
Length Wtd. (ft)	525.45	Wetted Per. (ft)	1154.80	24.20	450.17
Min Ch El (ft)	1256.92	Shear (lb/sq ft)	0.44	1.19	0.38
Alpha	1.01	Stream Power (lb/ft s)	1.68	3.32	1.27
Frctn Loss (ft)	4.78	Cum Volume (acre-ft)	37.47	3.89	11.88
C & E Loss (ft)	0.00	Cum SA (acres)	33.23	1.49	11.94

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 17.8771

INPUT
Description: 17.8771
Station Elevation Data num= 196

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
3431.6941258.4173436.4681258.4483436.9471258.4593439.4751258.3673461.9351257.619
3472.3051256.7973501.3221254.8373526.3181253.7293531.311 1253.493532.7561253.364
3535.501 1253.263541.0011253.5773546.5211253.9623555.8791254.3693566.885 1254.63
3592.1731254.4343594.8231254.4223595.8021254.3783598.131 1254.243611.875 1253.48
3613.1611253.3653621.7021253.3993625.9171253.4653635.1761251.9473638.2111251.272
3645.4661252.1143650.4921252.8333653.8681252.8563660.8281252.8173670.7191254.208
3673.6231254.6353677.3681254.7113685.1931254.8593724.227 1255.643737.3941255.575
3756.664 1255.663788.5221255.6893806.4251255.6773847.8561255.547 3864.361255.229
3878.4921254.9523920.5281255.4113925.1461255.5013933.3961255.5393941.0741255.984
3952.0121255.9064001.3491255.5784016.1011255.4154018.0751255.3394025.0491254.736
4038.6761254.6454050.8581254.5624059.7891254.5784066.4271254.6644087.7591254.905
4136.7071255.4674139.2451255.3984143.6891254.8874151.662 1255.094185.3461255.044
4214.6741255.032  4215.61254.861 4220.581254.2734223.5371253.9214242.299 1254.94
4261.306  1255.94294.0711256.9544306.7361257.1744339.3281255.9234384.2811254.739
4402.7631254.6364405.6361254.5854408.8241254.6884421.0281255.0124443.3161255.827
4461.4321256.328 4476.16 1256.614502.0891256.6224513.0551256.7214520.4111256.819
4553.8141256.4354558.7711256.3714573.8791257.0694591.8651257.9014626.2331257.436
4650.0591257.1264657.5131257.008 4671.541256.6794697.1661256.2364714.4371253.649
4715.7991253.4274722.0691254.7134726.1321255.5924727.1671255.5524736.4081255.016
```

```
4750.7741255.5364771.8911256.3284795.8061256.0594814.7761255.8564819.8551255.819
4827.1911255.8544855.4531255.5834859.047 1255.454886.1681255.5764917.7071255.191
4935.3441255.7034956.375 1255.574973.0461255.3764991.5741255.9064994.0951255.948
4994.6681255.7454996.1051254.7884996.297 1254.665000.6041252.5755004.4451255.012
5035.1511256.1145068.8261256.844 5073.821256.9465074.4451256.9775110.8321256.601
5121.1881256.3415122.6291256.0935129.656 1255.085134.1151255.8885135.9371256.042
5145.423 1255.995151.6421255.8515160.7071254.7715165.4841253.9445176.2521255.756
5177.9461256.1346196.2531256.1046236.9121255.9955254.1591256.0635265.9241256.078
5271.9871256.0865285.1691256.0135315.5321255.773 5320.131255.5185325.3691255.058
5327.8211255.129 5333.921255.5335343.3211255.1525351.4951254.9845355.6681255.416
 5370.971256.4515377.2611256.0265380.174 1255.915390.5141256.1545395.6611256.444
5398.8321255.6275411.3041254.5265416.0311254.9545421.8481255.4615426.787 1254.65
5431.0081255.0785438.2511255.6745460.3241255.2735470.7711255.0885487.382 1255.45
5490.9361255.4885499.1721255.7265507.8011255.8975509.6461255.6485521.8031253.764
5522.1931253.8595523.4971254.0125532.8781255.5255559.1161255.614 5563.131255.603
5565.646  1255.65566.5961255.4635572.7431254.8075573.5421254.7535580.5441255.084
5592.8981255.3895607.3161255.7795618.7121256.1355631.4551256.4675640.6581256.609
5646.8831256.6355691.3671256.6335694.9521256.6565727.8831256.9585740.1321256.944
5768.9671256.8535796.0711256.8975842.7691257.4055842.7761257.4055842.8011257.406
5860.158 1257.025870.917 1257.765877.2041257.9295883.871 1257.995905.9721258.197
5913.0451258.214

Manning's n Values          num=        3
      Sta    n Val      Sta    n Val      Sta    n Val
3431.694     .0354994.095     .0855035.151     .035

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
      4994.0955035.151                446560.1197      525              .1        .3
Right Levee      Station=5507.801       Elevation=1255.897
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1255.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1256.20	Reach Len. (ft)	446.00	560.12	525.00
Crit W.S. (ft)	1255.90	Flow Area (sq ft)	1003.90	66.16	200.83
E.G. Slope (ft/ft)	0.010197	Area (sq ft)	1003.90	66.16	200.83
Q Total (cfs)	5000.00	Flow (cfs)	4204.50	162.15	633.35
Top Width (ft)	1501.14	Top Width (ft)	1132.58	39.43	329.14
Vel Total (ft/s)	3.93	Avg. Vel. (ft/s)	4.19	2.45	3.15
Max Chl Dpth (ft)	4.68	Hydr. Depth (ft)	0.89	1.68	0.61
Conv. Total (cfs)	49514.9	Conv. (cfs)	41637.1	1605.8	6272.0
Length Wtd. (ft)	459.80	Wetted Per. (ft)	1133.88	40.44	330.31
Min Ch El (ft)	1252.57	Shear (lb/sq ft)	0.56	1.04	0.39
Alpha	1.05	Stream Power (lb/ft s)	2.36	2.55	1.22
Prctn Loss (ft)	4.71	Cum Volume (acre-ft)	25.56	3.08	8.70
C & E Loss (ft)	0.00	Cum SA (acres)	19.51	1.07	7.25

```
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.

CROSS SECTION          RIVER: Harquahala
REACH: Lower Mid Reach    RS: 17.7710

INPUT
Description: 17.7710
Station Elevation Data     num=      244
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
3015.9711254.2593035.3751254.1093048.9121253.8033055.6411253.6593069.2991252.978
3086.1441252.074 3088.361251.9713101.696 1251.363108.2411251.0343113.3841250.896
3115.2321250.5023134.1741249.2473139.1611247.8073140.526  1247.6 3141.341247.431
3142.9961247.8543150.6431248.8763152.4881248.8853162.1921248.8923177.1071249.081
3184.8921249.2063187.8741249.2673193.4061249.4693213.3511249.7743213.8921249.705
3217.0051249.348 3225.421248.3793226.943  1248.23232.6341248.784  3238.41249.326
3240.8491249.3533264.9761249.3433266.9811248.9823272.0921248.0093279.0121246.691
3287.1691248.9693294.9761250.6513309.8191250.645 3316.891250.7813330.229 1251.44
3336.139 1251.563352.414 1252.023355.0071252.0023385.296 1251.55 3394.151251.556
3404.9931251.455 3422.691251.4793452.8311251.0883455.2571251.0673457.0391250.994
3486.8131250.0153491.6621250.1813499.3651250.6353513.1511250.9963514.5241251.019
3520.7191250.9623532.6421250.8563534.3231250.8583563.8251250.7423565.2851250.735
 3578.671251.0053581.715 1250.923613.7761250.6813656.552  1251.23659.7491251.212
3673.0081251.3073693.1051251.3593710.6991251.3433748.0341251.225 3786.171251.838
3788.3431251.7993807.2961251.4653819.7321251.2313820.4861251.2223823.3551250.964
3837.4171249.773 3838.841249.8153845.9871249.9473849.9291250.022  3886.31250.532
3918.1921250.5793925.2351250.6123927.4311250.5933928.8921250.6143938.0591250.769
3945.4951250.7593952.706 1250.463960.6321250.7963967.1551250.9873982.1231250.897
4016.1751251.1974020.3371251.2474053.4011250.821 4056.071250.801 4079.841251.106
4080.7991251.1054098.4631251.2334102.1841251.2584102.4931251.2614103.0491251.255
4135.4791250.7254149.663 1249.254152.3131249.0694156.4121249.6934157.9961249.895
4158.2161249.9264158.6251249.9494160.1861249.9864170.6681250.1044174.3571250.347
4182.3271250.709 4188.441250.9674192.1121250.934 4208.281250.9394213.9321250.727
4223.3111250.3814229.5061250.4324234.6441250.4964243.9391250.4764257.9991250.511
4264.7941250.1014269.2021249.7444273.6221249.9734280.6871250.2274296.1031250.755
4300.9311250.9114307.9781250.9074329.2361251.0584350.3861250.6144354.8461250.535
4357.8581250.4124366.5651250.1064374.0981250.0734389.0731250.3084396.5531250.396
4402.4511250.515  4416.51250.7324428.9851250.7324450.8381250.8154463.6981250.831
4476.813 1250.664480.2061250.6144490.346 1250.734494.3251250.7924524.5431251.128
4562.9531251.1454573.322 1251.174574.3871251.1774580.9361251.1544607.3531251.004
4613.9731251.0284631.5221251.1754671.3841251.3794689.1451251.3624695.5191251.294
4712.5841251.353     4770251.4684792.5091251.4844802.0761249.7324805.097  1249.1
4806.1761249.1894831.154 1252.544841.2381251.0644848.1371249.7064854.2841251.007
4856.8811251.5474860.8411251.554 4888.251251.7594917.8171251.5184919.2491251.504
4920.3421251.4444932.3991250.772 4935.311250.9044945.5851251.2094956.1321251.436
4970.5751251.8764974.9281251.8264980.751251.8094994.3751251.7344999.5791250.462
5002.3541249.9025007.6461250.564 5013.021251.4375020.0421251.1525028.9231250.726
5047.007 1250.635050.6771250.4695050.9981250.418  5053.91250.0845057.824 1249.53
5060.8151249.7255070.239 1250.575075.3111249.7815079.3481249.2375080.2361249.374
```

```
5088.977 1250.575109.5881250.7835133.8791250.8535175.4181250.6035210.717 1250.45
5286.6011250.9775287.1471250.9775287.2711250.9775287.9241250.9755332.9571250.949
5337.5561249.879 5341.111248.9985347.783 1250.415349 2971250.8125359.148 1250.29
5364.7421249.9395366.1171249.9765375.6021249.9535381 9461250.4875382.9371250.587
5383.9161250.6095392.1461250.9665405.8371250.735 5410.511250.7175426.2861251.058
 5429.521251.079 5430.971250.8575438.9341249.4735447.3791250.2115450.604 1250.61
5463.7761250.9985482.7971251.1965483.1761251.1965494.4521251.2545508.6391251.557
 5517.321251.7035529.5041251.6835554.269 1251.955585.2251282.2975621.9631252.413
5673.9131252.5075679.1511252.5085680.0821252.5255683.3111252.4875725.2181252.055
5731.3381252.454 5735.981252.6925746.4051252.8195762.6571253.148

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
3015.971    .0354980.751    .085 5013.02    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4980.751 5013.02               400532.6463     445            .1        .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1251.21   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.27   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)          1251.48   Reach Len. (ft)             400.00     532.65     445.00
  Crit W.S. (ft)          1251.18   Flow Area (sq ft)           941.08      10.49     280.14
  E.G. Slope (ft/ft)     0.010357   Area (sq ft)                941.08      10.49     280.14
  Q Total (cfs)           5000.00   Flow (cfs)                 4126.81      14.46     858.73
  Top Width (ft)          1786.50   Top Width (ft)             1303.60      15.13     467.78
  Vel Total (ft/s)           4.06   Avg. Vel. (ft/s)              4.39       1.38       3.07
  Max Chl Dpth (ft)          4.52   Hydr. Depth (ft)              0.72       0.69       0.60
  Conv. Total (cfs)       49131.3   Conv. (cfs)                40551.2      142.1     8438.1
  Length Wtd. (ft)         414.35   Wetted Per. (ft)           1306.01      15.37     468.79
  Min Ch El (ft)          1249.90   Shear (lb/sq ft)              0.47       0.44       0.39
  Alpha                      1.06   Stream Power (lb/ft s)        2.04       0.61       1.18
  Frctn Loss (ft)            3.62   Cum Volume (acre-ft)         15.60       2.58       5.80
  C & E Loss (ft)            0.03   Cum SA (acres)                7.03       0.72       2.45


Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Harquahala
REACH: Lower Mid Reach     RS: 17.6702

INPUT
Description: 17.6702
Station Elevation Data     num=      220
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
2986.4731249.1572989.3551249.2072994.3821249.2243029.9811248.4083036.1431248.043
3046.2741247.5383049.6961246.9083059.5911244.8193060.5491244.931 3068.911245.846
3076.5331246.672 3077.521246.7333078.1691246.8083083.2961247.2893094.3421248.225
3098.2541248.3053100.171 1248.233112.5411248.2343120.0911244.9933122.685 1243.91
3127.3811244.7313132.2761245.3823153.6631245.8243157.311 1245.773162.6161244.775
3165.4681244.4623176.013 1245.23 3171.081245.4053173.077 1245.423187.7261245.744
 3191.981245.8353192.4751245.8493192.758 1245.873203.4091246.7013208.0181246.883
3231.0051247.0573263.4171247.4743284.3821247.5183341.5031247.4243344.7291247.449
3366.9931247.5253396.938  1247.83402.6491247.8593403.282 1247.863404.0461247.866
3423.0341247.9693450.6541247.4293452.2131247.4013454.2471247.4133461.0841247.479
 3493.241247.8273503.9371247.8913588.848 1247.823635.3881247.9213642.2471247.887
3702.601 1247.553703.0981247.5513767.3641247.577  3781.61247.2473812.5321246.778
3815.6881246.5493824.3411245.8493832.9681246.6063835.5091246.776 3838.581246.858
 3860.011247.1733875.8551247.419  3895.51247.7283929.4191247.9873936.7471247.939
4018.1681247.8754023.0741247.8854068.5091247.8664070.6651247.857 4110.61 1247.82
4154.2521247.7514180.8661247.5884189.3041247.4824236.5931246.868424S.9251246.708
 4255.891246.4844260.3751245.4454264.8251244.6934267.4981245.3044273.6171246.264
4278.4861246.2214284.8181246.4294292.4511246.5164295.4821246.5414298.0311246.585
4302.1861246.6854313.1611247.0564323.8781246.3744350.5681246.647 4375.351246.581
4380.1481246.5944420.8691246.6894429.6671246.6734449.7511246.5284484.5271246.108
 4488.341246.538 4495.431247.0284505.442 1247.124518.8061247.3544524.7271247.234
4533.5741246.9414544.6021247.2434558.216 1247.354566.1041247.3454567.6761247.303
4571.2741247.2584581.8061247.1344591.1371247.3184594.8771247.2684595.5641247.292
4603.4321245.459 4608.741244.4234613.0311245.4864619.2691247.2064630.174 1247.11
4631.5411247.0624640.3941246.9494641.974 1247.01 4647.61 1246.964650.1441246.968
4651.6611246.9574657.7261246.7724662.3051247.1414662.6681247.1564663.252 1247.16
4683.0991247.2454702.9871247.4164704.4081247.4274705.7291247.446 4710.161247.467
4741.2291247.4854745.9421246.6774754.0031247.2454754.4151247.3614756.1931247.376
4793.5611247.8034798.3131247.659 4802.371247.6774805.5311247.9214807.8591247.862
4815.1641247.9564834.4221248.0064837.9791248.0244857.8481247.6724880.859  1246.9
4908.497 1246.89 4918.281246.9214929.0121245.9254929.7011245.8134931.6641246.062
4936.514 1246.894940.6671246.8744964.5411247.0244977.0511246.8624987.7711246.677
4994.9221245.2135000.3611243.9395003.8641244.987 5009.621246.7025013.2531246.291
5013.7251246.2635020.6821246.9255025.7591247.2815056.9721246.0235061.4741245.815
5067.3631246.499 5069.361246.7085071.6381246.7045097.1111247.0025097.9971246.807
5105.7341245.1065111.347 1245.845117.7921246.2285122.1281245.7275129.6231245.432
5130.6291245.7025135.6571246.5315164.7411246.3645173.0591246.3215174.8591246.298
5201.9881246.0465212.638 1246.48  5218.91246.6525285.6931246.8025291.8551246.767
5335.669 1246.34 5350.661246.2195351.7761245.9875358.2751244.9455363.1471246.036
5366.0511246.7345387.3691246.4545391.1231246.3815393.4121246.2355396.6581245.934
5403.7941246.2195422.279 1246.855441.8881247.4195445.8461247.5225463.7541247.409
5465.1131247.4015485.2431247.5425497.0651247.5235507.2151247.5835509.1081247.563
5517.3381247.5725541.3451247.5465558.7031247.6465605.475 1248.125633.7091248.223
5664.4851248.2565676.931248.2425685.4241248.3665699.412 1248.525730.3151248.888

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
2986.473    .0354977.051    .085 5009.62    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4977.051 5009.62               558493.6868     475            .1        .3

CROSS SECTION OUTPUT     Profile #PF#1
```

W.S. Elev (ft)	1247.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1247.83	Reach Len. (ft)	493.69	493.69	493.69
Crit W.S. (ft)	1247.30	Flow Area (sq ft)	951.40	60.29	529.79
E.G. Slope (ft/ft)	0.007446	Area (sq ft)	951.40	60.29	529.79
Q Total (cfs)	5000.00	Flow (cfs)	2975.35	135.18	1889.47
Top Width (ft)	1875.00	Top Width (ft)	1291.79	32.57	550.64
Vel Total (ft/s)	3.24	Avg. Vel. (ft/s)	3.13	2.24	3.57
Max Chl Dpth (ft)	3.75	Hydr. Depth (ft)	0.74	1.85	0.96
Conv. Total (cfs)	57943.3	Conv. (cfs)	34480.3	1566.6	21896.4
Length Wtd. (ft)	493.69	Wetted Per. (ft)	1294.80	33.27	551.57
Min Ch El (ft)	1243.94	Shear (lb/sq ft)	0.34	0.84	0.45
Alpha	1.02	Stream Power (lb/ft s)	1.07	1.89	1.59
Frctn Loss (ft)	4.63	Cum Volume (acre-ft)	10.30	1.51	4.34
C & E Loss (ft)	0.00	Cum SA (acres)			

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split2 RS: 17.5883

INPUT
Description: 17.5883
Station Elevation Data num= 77

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4592.2911244.8214599.4491244.6984616.0151244.6784617.7621244.6844621.9291244.117
4630.5441242.9184635.8721243.6254638.4311244.0054661.6951243.5534667.2851243.464
4679.0351243.4814693.1551243.2214698.1711243.0854718.2351242.7254726.0451242.696
4744.716 1242.634748.6431242.6044752.7111242.6094760.3171242.5654774.323 1242.52
4802.8951242.2464805.4421242.2294808.0721242.2214843.3661242.0354869.9881241.939
4889.9311241.7464900.7641241.6924903.073 1241.764904.8141241.6914909.2481241.618
4915.544 1241.67 4925.181240.157 4926.441239.3414926.9591239.2744932.8641240.613
4940.3961242.0164957.2191242.0734964.9411242.1854969.3181242.2254985.2571242.159
4991.2951242.2434991.7681242.2464992.2751242.2354992.7381242.1025000.9521240.138
5009.4481241.8585011.5971242.2285017.7611242.2085026.8341243.1755029.2471243.534
5033.4621243.9395040.1251244.5485047.4561244.8775053.3181245.1935091.4471245.633
5093.4041245.6535098.3881245.5975122.3791245.3055135.8831244.6695139.8971244.463
 5143.751244.5075160.7441244.5985172.3771244.5575178.7941244.5475181.8321244.562
5190.355 1244.745214.4651244.7535217.9531244.7565220.1261244.7395256.6831244.581
5263.8741244.1855278.2271243.2155284.0631243.3615290.365 1243.645309.7911243.487
5332.0651243.3845336.9621243.281
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4592.291    .0354915.544    .0755017.761    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4915.5445017.761              439512.2301     523          .1          .3
Left Levee      Station=4638.431      Elevation=1244.005
Right Levee     Station=5093.404      Elevation=1245.653
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1243.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.035	0.075	0.035
E.G. Elev (ft)	1243.44	Reach Len. (ft)	439.00	512.23	523.00
Crit W.S. (ft)	1242.83	Flow Area (sq ft)	214.11	164.73	5.09
E.G. Slope (ft/ft)	0.009103	Area (sq ft)	214.11	164.73	5.09
Q Total (cfs)	1280.00	Flow (cfs)	841.52	424.99	13.48
Top Width (ft)	335.81	Top Width (ft)	224.01	102.22	9.58
Vel Total (ft/s)	3.33	Avg. Vel. (ft/s)	3.93	2.58	2.65
Max Chl Dpth (ft)	3.98	Hydr. Depth (ft)	0.96	1.61	0.53
Conv. Total (cfs)	13415.5	Conv. (cfs)	8819.9	4454.3	141.3
Length Wtd. (ft)	468.84	Wetted Per. (ft)	224.02	103.32	9.64
Min Ch El (ft)	1239.27	Shear (lb/sq ft)	0.54	0.91	0.30
Alpha	1.12	Stream Power (lb/ft s)	2.13	2.34	0.79
Frctn Loss (ft)	4.17	Cum Volume (acre-ft)	17.50	24.26	14.33
C & E Loss (ft)	0.01	Cum SA (acres)	8.45	15.97	10.45

Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split2 RS: 17.4913

INPUT
Description: 17.4913
Station Elevation Data num= 75

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4635.5231240.3374640.3671240.404 4643.521240.1974645.1511240.1984648.1361240.122
4656.2521240.1684664.0281239.5644673.7271238.5474693.3081238.6594705.9871238.786
4723.4741238.9324727.4591238.5334735.0961237.822 4741.791238.2034744.6571238.333
4752.8981238.2634773.9761238.1084778.5691238.1014802.7321238.2514835.9691238.133
4852.6431238.096 4856.121237.8544859.6381237.8324866.1611238.0594887.3251237.995
4902.6311237.9514910.8761234.0864913.0281233.1824918.3781236.9434920.2561238.573
4934.559 1238.454954.5111238.272 4963.231238.3744965.4711238.4164977.9121238.433
4983.9191238.3174990.125 1238.34 4999.541235.3075000.5611234.9525001.4351235.126
5011.9481237.8455012.0051237.8455012.036 1237.825015.1681235.0215021.1231238.062
5021.5471238.2825022.4221238.2855029.9671238.3185063.6181238.4645069.7151238.508
5081.9171239.0615097.7871239.2175099.9251239.2615104.0861239.3315117.0051239.583
 5133.911239.5565134.4411239.5525147.3921239.4535148.9131239.4025150.454 1239.35
```

```
5161.608 1239.08 5164.881239.0845216.4071239.1595226.052  1239.25267.1231239.227
 5289.781239.0525301.3271238.9745326.5791239.109 5339.411239.1435347.1881239.069
5360.6671238.9035378.6821239.7295382.2831239.9295389.7111240.008    54211240.334

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4635.523    .0354902.631    .0755021.547    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4902.6315021.547              434 500.395     490            .1        .3
Right Levee      Station=5117.005       Elevation=1239.583

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1239.12   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.15   Wt. n-Val.                  0.035      0.075      0.035
  E.G. Elev (ft)            1239.27   Reach Len. (ft)            434.00     500.39     490.00
  Crit W.S. (ft)            1238.68   Flow Area (sq ft)          196.89     192.84      39.27
  E.G. Slope (ft/ft)       0.008685   Area (sq ft)               196.89     192.84      39.27
  Q Total (cfs)             1280.00   Flow (cfs)                 693.42     476.58     110.00
  Top Width (ft)             419.14   Top Width (ft)             234.32     118.92      65.90
  Vel Total (ft/s)             2.98   Avg. Vel. (ft/s)             3.52       2.47       2.80
  Max Chl Dpth (ft)            5.93   Hydr. Depth (ft)             0.84       1.62       0.60
  Conv. Total (cfs)         13734.8   Conv. (cfs)                7440.6     5113.9     1180.4
  Length Wtd. (ft)           464.81   Wetted Per. (ft)           234.44     124.52      65.91
  Min Ch El (ft)            1233.18   Shear (lb/sq ft)             0.46       0.84       0.32
  Alpha                        1.09   Stream Power (lb/ft s)       1.60       2.08       0.90
  Frctn Loss (ft)              5.20   Cum Volume (acre-ft)        15.43      22.16      14.06
  C & E Loss (ft)              0.04   Cum SA (acres)               6.14      14.67      10.00


Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Harquahala
REACH: Split2             RS: 17.3965

INPUT
Description: 17.3965
Station Elevation Data     num=       68
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
4704.1531234.7264714.4411234.6614733.2411234.8424754.4071234.9114765.2411234.844
 4771.711235.4294773.615 1235.544779.3611235.3614787.6591235.1474791.2891234.844
4799.1981234.1754811.3391232.917 4828.011233.8214833.9311233.8934853.7811233.886
4862.9321233.8484892.0861233.7384905.1571233.4114913.672 1233.334920.9051228.385
4923.327 1226.844933.5731232.1554937.6521232.5474941.717 1231.244944.7341231.911
4950.561    1233    49521233.163 4964.721233.2344965.7371233.266 4966.651233.298
4980.5371233.8264983.6281233.4864986.9061231.8494999.8741225.151 5007.28 1230.95
5012.8221234.6785029.784 1234.555046.6281234.517 5050.411234.4975053.7821234.484
5070.7051234.5525121.3391234.7885123.2241234.795 5148.841235.009 5174.561235.136
 5192.221235.2135228.739  1235.15252.3491235.0715270.9131235.0835278.8411235.049
5383.8131235.4225386.1961235.4245389.4771235.4275391.0511235.4245448.8271235.306
5464.4611235.3525524.7821235.3085529.6891235.423 5529.751235.4225531.2781235.318
5538.4791234.7755540.5281234.8655550.0051235.1635552.4341235.1445554.2961235.179
5615.3821235.6495634.8261235.7455648.6241235.829

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4704.153    .0354980.537    .0755012.822    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4980.5375012.822              9931343.966    1000            .1        .3
Left Levee       Station=4773.615       Elevation= 1235.54
Right Levee      Station=5389.477       Elevation=1235.427

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1233.44   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.58   Wt. n-Val.                  0.035      0.075
  E.G. Elev (ft)            1234.02   Reach Len. (ft)            993.00    1343.57    1000.00
  Crit W.S. (ft)            1232.95   Flow Area (sq ft)          100.01     111.09
  E.G. Slope (ft/ft)       0.015061   Area (sq ft)               100.01     111.09
  Q Total (cfs)             1280.00   Flow (cfs)                 660.97     619.03
  Top Width (ft)              93.98   Top Width (ft)              66.32      27.26
  Vel Total (ft/s)             6.06   Avg. Vel. (ft/s)             6.61       5.57
  Max Chl Dpth (ft)            8.29   Hydr. Depth (ft)             1.51       4.08
  Conv. Total (cfs)         10430.0   Conv. (cfs)                5385.9     5044.2
  Length Wtd. (ft)           1253.36   Wetted Per. (ft)           70.02      32.02
  Min Ch El (ft)            1225.15   Shear (lb/sq ft)            1.34       3.26
  Alpha                        1.02   Stream Power (lb/ft s)      8.88      18.18
  Frctn Loss (ft)              6.94   Cum Volume (acre-ft)       13.95      20.41      13.84
  C & E Loss (ft)              0.17   Cum SA (acres)              4.64      13.83       9.63


Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
                additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION          RIVER: Harquahala
REACH: Split2             RS: 17.1420

INPUT
Description: 17.1420
```

Station Elevation Data num= 224

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3735.148	1231.859	3741.694	1231.823	3748.882	1231.701	3754.237	1231.297	3762.378	1230.478
3762.728	1230.443	3764.521	1230.399	3774.389	1230.502	3776.349	1230.522	3777.002	1230.514
3784.368	1230.568	3789.657	1230.549	3804.539	1230.344	3819.697	1230.278	3823.06	1230.258
3840.061	1230.049	3843.141	229.994	3861.062	1229.959	3863.585	1229.947	3880.417	1229.722
3882.653	1229.685	3898.738	1229.626	3901.661	1229.616	3918.333	1229.495	3939.06	1229.326
3942.803	1229.307	3945.159	1229.278	3963.122	1229.195	3965.529	1229.216	3978.024	1229.311
3984.353	1229.147	3998.623	1228.957	4011.283	1228.888	4017.368	1228.842	4032.563	1228.889
4037.195	1228.878	4051.327	1228.674	4054.666	1228.681	4071.538	1228.743	4073.093	1228.797
4074.236	1228.796	4085.853	1228.941	4088.411	228.899	4102.496	1228.814	4104.717	1228.805
4121.783	1229.444	4124.667	1229.597	4139.522	1229.25	4145.371	229.171	4155.433	1228.961
4162.384	1228.941	4171.662	1228.964	4179.285	1229.002	4188.206	1228.917	4197.165	1228.877
4205.108	1228.939	4218.041	1228.882	4229.425	1228.839	4242.281	1228.765	4254.653	1228.585
4265.261	1228.508	4278.014	1228.273	4286.752	1228.023	4295.368	1227.907	4302.443	1227.818
4311.611	1227.815	4318.778	1227.785	4314.483	1227.792	4324.554	1227.748	4327.28	1227.4
4333.742	1227.178	4341.194	1227.056	4349.444	1227.204	4352.311	1227.447	4357.768	1227.847
4362.459	1227.931	4363.934	1227.975	4365.408	1227.987	4374.798	1228.122	4376.996	1228.021
4387.471	1227.794	4394.289	1227.154	4394.439	1227.154	4394.578	1227.144	4400.914	1227.257
4409.462	1227.358	4412.251	1227.476	4423.758	1227.71	4430.331	1227.774	4441.068	1227.603
4451.022	1227.459	4452.765	1227.419	4463.436	1227.419	4464.124	1227.425	4465.395	1227.415
4471.261	1227.454	4485.329	1227.309	4504.361	1227.135	4506.541	1227.092	4507.042	1227.085
4514.356	1227.106	4527.894	1227.047	4530.944	1227.034	4550.164	1226.359	4571.086	1226.452
4575.011	1226.422	4592.582	1226.843	4594.605	1226.852	4594.894	1226.852	4596.371	1226.857
4613.912	1226.481	4617.424	1226.433	4640.451	1225.983	4661.378	1226.129	4667.805	1226.094
4687.741	1225.955	4703.464	1225.685	4711.018	1225.667	4726.873	1225.256	4743.932	1225.025
4760.065	1225.077	4769.353	1225.025	4784.233	1225.067	4802.212	1225.134	4810.913	1225.271
4823.232	1225.019	4833.949	1224.797	4845.642	1224.787	4860.779	1225.142	4884.062	1225.326
4889.661	1225.412	4894.321	1225.399	4922.579	1225.526	4926.712	1225.555	4953.578	1225.75
4961.075	1225.818	4961.887	1225.814	4962.681	1225.808	4973.815	1225.563	4974.597	1225.578
4990.916	1225.717	4990.964	1225.724	4991.654	1225.734	4998.971	1225.733	5001.52	1225.734
5009.293	1225.271	5024.656	1225.497	5028.397	1225.291	5029.646	1225.247	5043.048	1224.997
5045.341	1225.068	5055.432	1225.027	5058.083	1224.985	5061.097	1225.007	5070.044	1224.828
5074.121	1224.85	5088.109	1224.725	5094.495	1224.698	5103.871	1224.606	5108.634	1224.576
5115.217	1224.406	5123.913	1224.413	5128.585	1224.553	5137.903	1224.799	5147.316	1225.071
5153.035	1225.184	5158.378	1225.308	5168.215	1225.207	5178.272	1225.176	5186.183	1225.293
5198.529	1225.496	5202.695	1225.526	5220.436	1225.895	5223.877	1225.993	5235.706	1226.304
5237.892	1226.385	5252.027	1226.963	5253.474	1226.993	5265.351	1227.429	5266.286	1227.45
5281.807	1227.818	5281.856	1227.819	5281.911	1227.819	5285.375	1227.876	5296.797	1228.007
5313.114	1227.997	5315.932	1228.016	5332.176	1227.939	5344.939	1227.947	5348.765	1227.929
5362.617	1227.871	5373.873	1227.861	5376.884	1227.862	5392.839	1227.985	5398.085	1228.01
5412.509	1228.171	5421.805	1228.387	5433.029	1228.596	5439.743	1228.633	5452.751	1228.63
5466.784	1228.738	5467.805	1228.744	5485.515	1228.695	5503.854	1228.75	5505.815	1228.71
5528.523	1228.828	5529.368	1228.837	5547.256	1229.015	5549.471	1229.049	5569.692	1229.196
5590.626	1229.2	5596.321	1229.231	5614.391	1229.252	5619.402	1229.295	5645.065	1229.915
5650.246	1229.817	5654.208	1229.842	5666.778	1229.821	5668.219	1229.823	5671.561	1229.884
5683.788	1230.065	689.521	1230.245	5692.152	1230.285	5692.363	1230.28		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
3735.148	.035	4374.798	.035	5296.797	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4374.798	5296.797		490	262.011	7 645	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1226.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.075	
E.G. Elev (ft)	1226.91	Reach Len. (ft)	490.00	262.01	645.00
Crit W.S. (ft)		Flow Area (sq ft)		980.46	
E.G. Slope (ft/ft)	0.002851	Area (sq ft)		980.46	
Q Total (cfs)	1280.00	Flow (cfs)		1280.00	
Top Width (ft)	715.06	Top Width (ft)		715.06	
Vel Total (ft/s)	1.31	Avg. Vel. (ft/s)		1.31	
Max Chl Dpth (ft)	2.48	Hydr. Depth (ft)		1.37	
Conv. Total (cfs)	23972.4	Conv. (cfs)		23972.4	
Length Wtd. (ft)	438.83	Wetted Per. (ft)		715.18	
Min Ch El (ft)	1224.41	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)		0.32	
Frctn Loss (ft)	1.51	Cum Volume (acre-ft)	12.81	3.58	13.84
C & E Loss (ft)	0.00	Cum SA (acres)	3.89	2.38	9.63

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split2 RS: 16.9865

INPUT
Description: 16.9865
Station Elevation Data num= 85

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4538.33	1226.476	4544.59	1226.578	4561	1226.131	4567.11	1225.891	4570.46	1225.83
4578.8	1225.6	4585.39	1225.62	4588.24	1225.613	4612.26	1225.37	4616.6	1225.37
4621.71	1225.415	4651.47	1225.414	4653.66	1225.402	4709.39	1225.4	4714.47	1225.28
4727.07	1225.088	4747.32	1224.746	4755.99	1224.521	4767.85	1224.085	4772	1224.174
4780.54	1224.366	4787.19	1224.427	4787.73	1224.431	4795.58	1224.571	4805.36	1224.761
4816.36	1225.253	4823.28	1225.349	4835.23	1225.257	4843.76	1225.208	4847.67	1225.175
4864.93	1225.044	4886.53	1225.045	4891.03	1225.114	4921.59	1224.921	4932.53	1224.86
4963.52	1225.283	4979.06	1225.496	4988.75	1225.053	4993.33	1224.89	4996.15	1224.634
4998.7	1224.48	5000	1224.385	5034.4	1224.898	5059.46	1225.053	5068.23	1225.031
5103.81	1225.092	5119	1225.121	5156.95	1225.01	5203.95	1224.786	5232.43	1224.632
5240.02	1224.254	5241.08	1224.21	5253.43	1224.501	5270.07	1224.9	5279.97	1225.195
5299.33	1224.474	5311.74	1223.986	5314.97	1223.984	5347.55	1224.401	5388.95	1224.835
5394.21	1224.872	5401.38	1224.883	5478.53	1224.596	5501.64	1224.363	5524.86	1224.307
5529.66	1224.363	5534.74	1224.106	5542.03	1223.917	5550.55	1224.144	5558.79	1224.265
5559.24	1224.283	5561.6	1224.274	5575.22	1224.373	5580.07	1222.94	5580.81	1222.778
5581.19	1222.837	5590.7	1224.236	5639.21	1224.487	5653.96	1224.584	5655.66	1224.589
5657.8	1224.597	5706.88	1224.71	5744.75	1224.961	5746.17	1224.968	5746.52	1224.966

```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 4538.33    .035 4979.06    .075  5034.4    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       4979.06  5034.4               130   84.41     190          .1        .3

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1225.34   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.07   Wt. n-Val.                  0.035      0.075      0.035
  E.G. Elev (ft)          1225.40   Reach Len. (ft)            130.00      84.41     190.00
  Crit W.S. (ft)          1225.04   Flow Area (sq ft)          102.86      31.24     497.40
  E.G. Slope (ft/ft)     0.004225   Area (sq ft)               102.86      31.24     497.40
  Q Total (cfs)           1280.00   Flow (cfs)                 171.56      28.68    1079.75
  Top Width (ft)          1016.77   Top Width (ft)             252.80      51.85     712.12
  Vel Total (ft/s)           2.03   Avg. Vel. (ft/s)             1.67       0.92       2.17
  Max Chl Dpth (ft)          2.56   Hydr. Depth (ft)             0.41       0.60       0.70
  Conv. Total (cfs)       19692.5   Conv. (cfs)                2639.4      441.3    16611.8
  Length Wtd. (ft)         179.00   Wetted Per. (ft)           252.84      51.88     712.89
  Min Ch El (ft)          1224.39   Shear (lb/sq ft)             0.11       0.16       0.18
  Alpha                      1.06   Stream Power (lb/ft s)       0.18       0.15       0.40
  Prctn Loss (ft)            1.40   Cum Volume (acre-ft)        12.23       0.53      10.16
  C & E Loss (ft)            0.02   Cum SA (acres)               2.47       0.07       4.36


Warning - Divided flow computed for this cross-section.
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Marquahala
REACH: Split2             RS: 16.8902

INPUT
Description: 16.8902
Station Elevation Data     num=      121
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
 4176.091226.014    41901225.986 4221.721225.767 4243.571225.574 4244.781225.257
 4248.021224.708 4253.531225.415 4255.28 1225.64 4258.941225.617 4282.671225.566
 4291.481225.596 4303.921225.513 4308.771225.133 4310.99 1225.02 4324.671225.301
 4327.011225.354 4328.211225.357 4353.161225.511 4362.071225.206 4362.931225.176
  4365.61225.169  4447.81224.888 4451.39 1225.09 4453.32 1225.12 4457.811224.542
 4462.09    1224 4463.491224.161 4471.151224.769 4480.691224.711 4483.951224.687
 4486.441224.456 4489.371224.249 4491.971224.409 4496.391224.604 4498.72 1224.76
 4503.421224.705 4519.14 1224.49 4524.031223.989  4524.91223.891 4526.17 1223.99
 4533.851224.678 4557.541224.385 4564.061224.311 4566.571224.123 4574.47 1223.76
 4574.86  1223.8 4581.96 1224.51 4583.911224.549    45911224.537 4607.421223.981
 4610.231223.844  4611.3 1223.82 4653.021224.129  4693.61224.562 4696.821224.499
 4708.891224.132 4724.911224.164 4747.771224.225 4755.541224.232 4759.291224.281
 4806.261223.789 4812.441223.722 4820.641222.585 4824.44 1222.18 4834.661222.972
 4837.751223.271 4852.241223.402 4864.961223.678 4866.441223.703 4872.381223.591
 4872.481223.592 4898.511224.051 4905.53 1224.17  4922.61224.223 4924.571224.212
 4925.751224.206 4964.051223.914 4968.771223.906 4970.471223.874 4983.791223.392
    5000 1222.79 5016.081223.032 5029.821223.204 5057.451223.232 5072.111223.264
 5077.691223.378  5115.21223.666 5122.011223.745 5125.251223.764 5134.511223.851
 5135.721223.843 5138.291223.787 5151.031223.579 5170.111223.473 5192.231223.379
 5193.011223.379 5193.561223.377 5229.391223.338 5233.191223.315 5274.381223.635
  5281.41223.735 5291.051223.848 5305.691223.577 5344.391223.024 5356.061222.471
 5356.471222.453 5357.231222.456 5410.121222.579 5413.241222.706 5418.391222.819
 5444.011223.245 5449.17 1223.21 5471.781223.097 5486.151223.017 5488.98 1223.03
  5502.21222.981 5522.551222.957 5525.791223.006 5537.051223.158  5551.8  1223.2
 5558.921223.338

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 4176.09    .035 4983.79    .075 5029.82    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       4983.79 5029.82               280     100     320          .1        .3

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1223.70   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.28   Wt. n-Val.                  0.035      0.075      0.035
  E.G. Elev (ft)          1223.98   Reach Len. (ft)            508.13     508.13     508.13
  Crit W.S. (ft)          1223.70   Flow Area (sq ft)           31.97      30.51     247.92
  E.G. Slope (ft/ft)     0.021222   Area (sq ft)                31.97      30.51     247.92
  Q Total (cfs)           1280.00   Flow (cfs)                 128.85      66.92    1084.23
  Top Width (ft)           603.23   Top Width (ft)              73.97      46.03     483.23
  Vel Total (ft/s)           4.12   Avg. Vel. (ft/s)             4.03       2.19       4.37
  Max Chl Dpth (ft)          1.52   Hydr. Depth (ft)             0.43       0.66       0.51
  Conv. Total (cfs)        8786.5   Conv. (cfs)                 884.5      459.4     7442.6
  Length Wtd. (ft)         508.13   Wetted Per. (ft)            74.12      46.04     483.63
  Min Ch El (ft)          1222.79   Shear (lb/sq ft)             0.57       0.88       0.68
  Alpha                      1.06   Stream Power (lb/ft s)       2.30       1.93       2.97
  Prctn Loss (ft)            0.29   Cum Volume (acre-ft)         8.05       0.42       5.81
  C & E Loss (ft)            0.08   Cum SA (acres)


Warning - The energy equation could not be balanced within the specified number of itetations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
```

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 17.5767

INPUT
Description: 17.5767
Station Elevation Data num= 246

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
2853.9581244.0562860.3341244.1982883.4271243.3022896.3311242.9482912.8951241.557
2915.0181241.375 2916.241241.4212923.8821241.5592932.5451241.6522935.6871241.692
2946.7551242.1722954.1281242.4512965.4941242.818 2967.481242.8752969.6331242.894
2986.8471242.9772990.6451242.6843001.5561241.4683003.6851240.8813007.075 1240.42
 3012.361240.9793021.4371241.9253034.2531241.9913041.8781242.0453067.4261242.349
3135.2691242.9283135.5381242.9193139.9851242.7683210.1561243.4153240.9951243.574
3272.7531243.578 3289.871243.6483297.2541243.5733362.8161242.9133404.998 1242.82
3411.1481242.3933418.7861241.7873422.5051242.251  3429.1 1242.623439.1891242.736
3463.4341242.9723469.1911242.9433488.4791243.0152501.7861243.0633504.8631243.074
3543.0321243.2783545.7951243.2933546.1791243.2923546.248 1243.293546.4061243.286
3548.7521243.2293579.6351242.4473581.5761242.4423582.2821242.2863588.2271241.201
 3599.08 1241.873599.9041241 7883605.7021241.7353624.5361242.7273630.4621242.757
3639.9151242.8953647.2531242.8893656.9881242.8593661.0881242.7333694.0971243.001
3731.5141243.2073763.7031243.1583852.4621242.7233891.0161242.5773925.5261242.489
3981.7891242.4224001.2061242.4154012.3371242.3214013.2581242.3224026.5761242.422
4032.7581241.9834033.658 1241.864046.7281241.9134049.3321241.9764051.835 1241.36
4057.176 1240.134059.3951240.5554065.4781242.0434081.8511241.9994083.3781241.982
4084.8121242.001 4097.881242.362 4102.111242.3274106.9041242.4524116.6371242.483
4116.7451242.483 4117 131242.4954132.7151242.9434146.5831243.4294147.6351243.455
4148.0641243.3294157.2931241.0094164.1681242.2654166.1951242.6954190.3981242.727
4200.4421242.7744228.1881242.6684245.6881242.5354249.2421242.0284253.8611241.186
4261.5821242.5964261.8711242.6534262.8571242.6514277.1121242.6284307.5661242.725
4311.5241242.7354328.9751242.6784362.8391243.2484392.7171243.6144431.8291242.259
4436.8971242.1234439.6671242.104 4454.581242.5444474.7511241.7624507.1511241.688
4513.3821241.7184554.2981242.0364603.4491242.4114645.2921242.2524656.6681242.399
4663.8561242.3624671.1811242.4744675.3381242.3914676.0311242.3124678.1431242.308
4679.4321242.1664680.1081242.3054691.3141242.9974696.1491243.1684702.7721243.092
4715.7791242.8984721.4211242.8454754.2481242.5234772.0531242.4674790.363 1242.23
4796.0931242.1644798.3561242.0944799.9011242.1094815.8711242.252  4817.41242.043
4825.5381241.3624829.9611241.6594836.3311242.1874839.2431242.4134845.9741242.802
4849.6021242.8594858.2581242.9414867.9641242.8524879.8081242.7994888.0731242.737
4898.0351242.7264922.5641242.7784951.3441242.6554951.8241242.6554952.6671242.634
4990.8221242.0074993.8411241.4045000.5361239.9165004.5391240.6435013.2861241.943
5034.3211242.1115053.6241242.2045063.7271242.1465081.3941242.2025126.1141242.105
5141.188 1242.155145.1821241.9825153.3071241.6285153.5951241.5965160.6871240.808
5161.4891240.9145169.5931241.948 5185.311242.0685186.8641242.0795187.6671242.108
5194.2931242.4445199.0061242.7555203.378 1242.765210.4771242.3445215.9461241.856
5223.7451241.999 5235.771242.384 5247.131242.4365251.193 1242.145253.9161242.286
 5259.641242.2175262.2671242.2185263.4851242.2965276.0861242.3775288.5171242.522
5289.408 1242.245295.1041241.2655298.9841242.0565302.3921242.452 5304.031242.906
5306.2151242.788 5314.641242.5315327.8511242.568 5338.141242.4735340.5641242.383
5345.3251242.2725354.6621242.5255360.3561242.9035379.4471242.8145386.9791242.884
5391.2221242.7285393.904 1242.915417.1281243.211 5438.561243.2155453.6361243.287
5472.5931243.3885484.7881243.574 5496.761243.7865511.9381243.6975531.0031243.603
5532.9191243.6025533.4771243.5175538.8671242.0625539.7471242.2645539.8631242.234
5546.492 1243.875550.4391243.9995556.4071243.9935564.2461243.4515566.2161243.343
5570.2071243.4675584.7421243.7185596.6091244.0185597.1251243.8995598.7711243.864
5610.6091243.4645612.7181243.5935619.925 1244.02  5624.21244.2435625.1661244.445
5630.9461244.2745637.559 1244.345656.1911244.2355669.6041244.0855677.4771244.118
5678.8961244.126
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
2853.958    .0354990.822    .0855034.321    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4990.8225034.321              340545.0853     555            .1          .3
Left Levee      Station= 3289.87      Elevation=1243.648
Right Levee     Station= 5496.76      Elevation=1243.786
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1243.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1243.19	Reach Len. (ft)	340.00	545.09	555.00
Crit W.S. (ft)	1242.91	Flow Area (sq ft)	736.98	65.95	265.12
E.G. Slope (ft/ft)	0.013109	Area (sq ft)	736.98	65.95	265.12
Q Total (cfs)	3720.00	Flow (cfs)	2509.67	173.18	1037.14
Top Width (ft)	1761.23	Top Width (ft)	1351.05	43.50	366.67
Vel Total (ft/s)	3.48	Avg. Vel. (ft/s)	3.41	2.63	3.91
Max Chl Dpth (ft)	3.09	Hydr. Depth (ft)	0.55	1.52	0.72
Conv. Total (cfs)	32490.5	Conv. (cfs)	21919.5	1512.6	9058.4
Length Wtd. (ft)	428.73	Wetted Per. (ft)	1352.64	43.88	367.21
Min Ch El (ft)	1239.92	Shear (lb/sq ft)	0.45	1.23	0.59
Alpha	1.02	Stream Power (lb/ft s)	1.52	3.23	2.31
Frctn Loss (ft)	3.37	Cum Volume (acre-ft)	50.22	3.54	39.79
C & E Loss (ft)	0.03	Cum SA (acres)	69.14	2.66	48.02

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 17.4734

INPUT
Description: 17.4734

```
Station Elevation Data     num=      262
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
2914.0071240.4782971.1181240.0732987.5011239.9743008.6071239.9173082.9291239.813
 3126.671239.5933331.9621239.5783167.1221239.7463180.3071239.5443213.959  1239.2
3225.8961239.0923268.0311239.9713270.7051238.9533272.3021238.9543282.3331238.708
3286.2341238.0853288.3271237.8373296.5061236.4413303.6071238.9813321.9731238.798
3339.6211238.684 3349.73 1238.683360.725 1238.77 3365.181237.8323366.8941237.357
3373.2781238.1333376.7681238.4273380.7921238.5343385.3981238.6233390.5551238.727
3396.4541238.9193410.8081238.937 3441.611238.9593447.5061238.9023458.8721238.848
3504.2711238.6973504.4451238.6963504.6111238.6953519.4931239.0563531.4651239.572
3534.6151238.7433542.2491237.3913545.1441238.0773555.5361239.2413563.0711239.351
3575.3761239.5823577.4321239.6523580.6881239.6993602.5541239.6973603.708 1239.68


3605.5391239.381 3608.751238.8463611.9421239.242 3613.921239.5933619.2871239.638
3620.0381239.6293620.8181239.5713626.1231239.0543630.6651239.3733636.3731239.879
3648.112 1239.843665.1031239.8623670.8311239.7963672.8091239.7473677.286 1239.76
3691.4091239.756 3696.141239.3543697.4471239.2223701.826 1239.813702.9151239.922
3708.0941240.0073724.8981240.2033729.9491239.8263730.8991239.7783731.607 1239.83
3741.1311240.1253765.8831239.9683776.9211239.8333787.3231239.7763792.1311239.784
 3817.991239.8533864.5751239.8433888.8431239.8313892.306 1239.763901.7541239.714
3908.7751239.6943914.8661237.7853915.186 1237.683915.5341237.7673924.0421239.648
3972.1381239.652 3979.391239.6533984.1241239.6693986.5151239.6824017.7471239.745
4027.9381239.2284030.5471239.1184040.3461238.7054040.5031238.703 4048.991239.501
4050.8011239.6514061.0291239.8234089.4681240.0834139.849 1239.464150.9281239.247
4157.7961239.2124165.161 1239.114181.8951239.1354241.9581239.2744252.092  1239.1
4273.9051238.6154287.4041238.7954291.5171238.8074294.445 1238.314298.0741237.667
4300.5151238.0064306.9781239.1364328.9091239.087 4340.231239.0264359.292 1239.16
4369.183 1239.264376.672 1239.134417.3731238.2574423.8991239.151 4426.061239.329
 4467.411239.577 4481.11 1239.594496.7081239.2234513.529 1238.934532.7081239.032
4545.2271239.1814549.4141238.5394551.1681238.1474556.2071238.4044562.9711238.873
4568.3891238.8764586.9661238.8454588.1821238.9954590.1171239.0874600.6271239.523
4606.8041239.7144612.7721239.8344615.8041239.9874619.4071240.2314633.9061240.347
4652.7241240.2524672.7341240.1224700.2161239.539 4704.021239.5444718.1691240.316
 4726.781240.7424731.0251240.8794743.563  1241.14749.5181240.9894755.9221240.647
4769.8371239.9214772.6351239.8854794.0241239.3494798.0291239.0214810.2021238.762
4817.4071238.5474829.1141238.7854849.1241239.1214889.6631239.0284904.7491239.077
4913.534 1239.074922.4241239.0464923.626 1238.964931.395 1238.664935.5881239.054
 4940.381239.4784961.4921239.1424964.7751239.0864965.9391239.0814967.4881239.083
4990.8981238.9024995.2461237.5574999.5421236.3745008.4431238.0255010.0811238.403
5012.035 1238.355019.9351238.2685025.178  1238.45034.7371238.3515038.0511238.321
5042.6151238.0725045.7591238.0185056.1861238.1075057.3751238.0785063.9661236.665
5065.5291236.3585067.5171236.667 5077.531237.8485085.2911238.0575099.625 1238.18
5102.3721238.2315103.9281238.2625105.3821238.3295110.353 1238.29 5124.461238.392
5132.3531238.599 5138.891238.6695145.9941239.1845171.4651238.6855175.9091238.636
 5177.141238.5865182.3721238.2485184.5181238.3195194.702 1239.085206.7871238.743
5215.3981238.5925221.3311237.8915227.5121236.897 5231.571237.854 5235.27 1238.61
5252.6391238.7935280.747  1238.95295.1721238.7695309.9061238.5055312.4051238.171
5315.9591237.6285320.3781238.374 5323.43 1238.865330.0751238.6845337.0271238.551
5345.3731238.4955348.4181238.4865350.5571238.1255358.6321236.9965362.0971237.636
5367.9111238.6285373.3531238.771 5394.49 1238.995403.1661236.9045407.8691238.861
5417.1671239.0585424.6711239.0915440.2771239.1435448.6571239.3565461.7871238.219
5463.1081238.0875465.024 1238.295470.7161238.9515473.5931239.3755493.8541239.439
5507.8821239.4595541.6091239.4045547.2031239.4115549.6881239.4165551.8011239.387
 5581.611239.1975587.2161238.4855590.8341238.0075595.8091238.6635598.8811239.218
5619.5291239.266 5623.511239.2935642.9781239.5385661.0681239.7445695.7151240.517
  5702.61240.4715722.035 1240.33

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
2914.007     .0354967.488     .0855025.178     .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4967.4885025.178                491 598.031     608              .1        .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1239.69   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.11   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)          1239.79   Reach Len. (ft)             491.00     598.03     608.00
  Crit W.S. (ft)          1239.39   Flow Area (sq ft)           787.89      79.41     593.56
  E.G. Slope (ft/ft)     0.005251   Area (sq ft)                787.89      79.41     593.56
  Q Total (cfs)           3720.00   Flow (cfs)                 1845.81     123.67    1750.52
  Top Width (ft)          1983.73   Top Width (ft)             1295.11      57.69     630.93
  Vel Total (ft/s)           2.55   Avg. Vel. (ft/s)              2.34       1.56       2.95
  Max Chl Dpth (ft)          3.33   Hydr. Depth (ft)              0.61       1.38       0.94
  Conv. Total (cfs)        51338.1  Conv. (cfs)                25473.2     1706.8    24158.2
  Length Wtd. (ft)          548.61  Wetted Per. (ft)           1297.21      58.25     632.34
  Min Ch El (ft)          1236.37   Shear (lb/sq ft)              0.20       0.45       0.31
  Alpha                      1.06   Stream Power (lb/ft s)        0.47       0.70       0.91
  Frctn Loss (ft)            4.18   Cum Volume (acre-ft)         44.27       2.63      34.32
  C & E Loss (ft)            0.01   Cum SA (acres)               58.82       2.03      41.67


Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Harquahala
REACH: Lower Reach         RS: 17.3602

INPUT
Description: 17.3602
Station Elevation Data     num=      277
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
 2783.031236.2982790.058 1236.42 2798.83 1236.382808.7711236.4212815.8661236.397
 2828.161236.5632830.8451236.5252836.3861236.4312886.1491235.6672898.3031235.601
2908.0471235.5532957.7921235.4742966.0791235.1922974.7181234.855 2979.271234.902
2988.7151235.661  2989.41235.6732991.0861235.6823010.667 1235.783022.4411235.698
```

3036.0191235.3653052.8441235.0813060.6851234.3562061.314 1234.293062.4381234.271
3081.2711233.8813082.924 1233.93089.1761234.0212111.2761234.5283119.7171234.637
3140.3911234.9343142.0221234.9753152.1781235.2083173.4491235.1823174.761 1235.17
3180.0861235.2813210.5281235.925 3215.56 1235.773221.6921235.5943240.2231235.019
3245.1351233.2033246.0311232.8263248.1551833.456 32531235.0353257.6111234.902
3268.3511234.6443286.9691234.837 3303.511235.0533315.4371235.1413352.3781235.231
3385.6131235.1373421.7281235.114 3425.221235.1483433.4451235.1123440.2061235.127
3441.41235.2163443.3141235.208 3449.41235.3523456.6561235.2433463.029 1235.26
3464.7181235.2453483.2441235.1353497.5511235.0593499.5191235.0663501.0711234.773
3504.4881234.339 3506.031234.5893512.5891235.3673522.1351235.7333526.6121235.908
3531.4431233.7053532.088 1233.053533.8751233.2513542.7281235.5943551.0631235.529
3561.7871235.5013568.0461235.5443581.5141235.7073592.9721235.8213616.6171235.853
3625.841235.805 3647.68 1235.853658.0851235.8193670.8721235.7843715.498 1235.76
3754.3711235.6243756.7011235.6173758.6721235.5923810.6971234.8773811.1571234.814
3817.088 1234.113819.2191234.3443827.5371234.8643829.9341234.8853848.5491235.137
3864.8981235.4073896.1271234.704 3898.211234.6573898.981 1234.663931.9071234.682
3940.2771234.785 3956.511234.8093960.745 1234.33962.7281233.9753966.788 1234.34
3974.6561234.7654007.152 1234.87 4024.171235.0354051.3891235.0044075.0141234.928
4088.4561234.8474100.8261234.8564111.0421234.845 4119.971234.6994122.4131234.704
4124.8581234.1144128.813 1233.314135.0931234.4754139.4411235.1824157.2481235.065
4174.0231234.9644182.7481234.9184191.3621235.4744198.7921235.8744223.1321236.026
4230.1491236.0254231.5361236.0574232.584 1236.064251.8231235.9924280.3731235.917
4303.3541235.764 4318.6 1235.654319.9881235.558 4328.91234.8064329.4261234.835
4337.1951235.2134341.8921235.4764355.3951235.3714356.2261235.2684362.2591235.064
4374.7031235.1574380.7911235.2224399.2861235.4784413.3991235.6574417.318 1235.7
4430.7611235.772 4479.751236.1674500.4161236.1534516.8091236.1534551.9821236.034
4575.2271236.1654590.0191236.2674667.2051236.1994679.0251236.1594705.5681236.401
4716.536 1236.464724.619 1236.24765.5471234.7554780.6181234.783 4785.131234.769
4800.0771235.0564813.783 1235.534826.7031235.6254850.4881235.719 4854.971235.707
4878.1621235.364 4882.81234.751 4889.451233.6244896.6181234.1874905.2521234.565
4918.4061234.5914921.7541234.6054930.8911234.1624947.3731234.4724957.5721234.362
4965.8211234.5474979.0121234.7894980.4221234.8274991.9191234.6324993.2111234.611
4993.3641234.6134993.8111234.5275000.9981233.2655001.9731233.4255008.0491234.647
5011.9381233.9075013.8041233.4975016.6241234.3835019.2241234.9925025.9881234.969
5029.3041234.926 5031.651234.636 5037.791234.0725042.5971234.6265044.8391234.881
5048.1981234.7695052.5561233.9675061.8831234.8565063.4261234.8845063.9741234.893
5065.8831234.7795075.8041234.4155078.7261234.4615085.253 1235.125095.3871234.915
5095.6671234.9085095.8131234.9045102.9131234.652 5104.481234.3155108.3811233.071
5110.4411233.4315113.4721233.519 5125.921233.832 5126.81233.6745127.9471233.834
5135.6381234.8775150.947 1234.675166.0451234.5225168.3861234.4385172.9711234.328
5186.6161234.0825196.1691235.0455201.6021235.6415207.6991235.8275218.2991236.004
5226.3591235.9595235.4871236.0055245.7911235.482 5263.061234.761 5275.671234.894
5296.261234.9345330.8051234.4695363.215 1234.185376.6011234.5995376.7881234.602
5396.4921234.5895425.5111234.7975438.5011234.6415454.9491234.6595462.4451234.684
5474.9081234.6465485.9011234.4345503.4751234.6985531.8181234.873 5548.821234.944
5562.6391234.9955575.7111234.681 5591.02 1234.545594.6071234.2295597.5981233.896
5603.2861234.4325608.3631234.7755624.3581235.1885641.1991235.5485657.7261235.646
5708.8211235.9145721.5331235.9875731.6821236.0915740.7461236.1545769.1641236.504
5779.821236.576 5783.951236.5695832.3641236.4425854.3481236.6145883.4661236.695
5919.8571236.9255920.5081236.9315920.655 1236.925921.5471236.9285949.9341236.995
5960.2431237.0755987.9311237.4286011.0741237.6376053.1261237.8936062.7681237.988
6066.8751238.0636073.7851238.148

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
2783.03 .0354980.422 .0855019.224 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4980.4225019.224 401480.8423 450 .1 .3
Left Levee Station=3010.667 Elevation= 1235.78

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1235.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1235.60	Reach Len. (ft)	401.00	480.84	450.00
Crit W.S. (ft)	1235.31	Flow Area (sq ft)	574.29	43.65	430.76
E.G. Slope (ft/ft)	0.012525	Area (sq ft)	574.29	43.65	430.76
Q Total (cfs)	3720.00	Flow (cfs)	1908.68	91.48	1719.84
Top Width (ft)	1698.12	Top Width (ft)	1092.95	38.80	566.37
Vel Total (ft/s)	3.55	Avg. Vel. (ft/s)	3.32	2.10	3.99
Max Chl Dpth (ft)	2.57	Hydr. Depth (ft)	0.53	1.13	0.76
Conv. Total (cfs)	33239.7	Conv. (cfs)	17054.8	817.4	15367.4
Length Wtd. (ft)	421.93	Wetted Per. (ft)	1095.45	39.38	567.18
Min Ch El (ft)	1233.27	Shear (lb/sq ft)	0.41	0.87	0.59
Alpha	1.04	Stream Power (lb/ft s)	1.36	1.82	2.37
Frctn Loss (ft)	3.03	Cum Volume (acre-ft)	36.59	1.78	27.17
C & E Loss (ft)	0.04	Cum SA (acres)	45.36	1.37	33.31

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 17.2691

INPUT
Description: 17.2691
Station Elevation Data num= 284
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
2916.3661234.3552917.8141234.4642921.0241234.4572924.278 1234.472938.0711234.273
2955.451234.0332968.9521233.9282973.3691233.7332979.823 1233.13001.8631233.014
3029.1521233.0063061.4691232.6893062.8571232.6723064.8641232.6593130.5511232.028
3160.3061231.8423163.3371231.8293205.4971231.8073216.3441231.774 3221.871229.342

```
3223.0861228.8853227.8881230.4883229.9711231.1053230.2891231.2253252.5831231.408
3273.4231231.5583313.9291231.7343315.1011231.7433315.527 1231.69 3320.691231.054
3346.753 1231.873350.051 1231.973352.766 1231.952366.7431231.7323378.9791231.779
3397.3821231.5023403.5431231.3243410.1341230.1593410.1991230.1543410.2861230.166
3421.3011231.6013427.3261231.7343437.6511231.9363439.5091232.0263442.7251232.057
3461.619 1232.043490.6051231.9533493.7941231.8633501.4781231.6753523.8681231.852
3550.8261232.0793561.2431232.0153572.594 1231.963573.0841231.9543589.6811231.831
3635.9071231.7943671.4891232.0383687.9071232.1813695.1811232.2493735.0341232.149
3785.8751232.0063793.5841231.9863797.006 1231.993818.7871231.9673855.3211231.969
3883.911 1231.763892.4211231.6823914.5191231.5943917.7011231.5723920.2291231.584
3921.434 1231.593957.6581231.6853979.7781231.4073990.7061231.3673997.7111231.123
4002.4691230.9164007.1871231.2814010.8741231.5024013.8091231.5274057.3861231.571
4098.9781231.5694103.412 1231.594111.8251231.628 4130.531231.7064131.9111231.435
4139.0361230.7294143.0831231.3184146.3081231.7494170.4681231.8674182.7531231.873
4184.691231.5854192.5461230.7744201.8831231.4094206.487 1231.724227.9921231.482
4240.11231.4724252.1791231.4484282.1331231.6624283.1961231.4444287.7491230.682
4295.341231.6884296.0021231.7664296.5761231.7164301.2551231.4094313.6111231.852
4313.8621231.8674346.9551232.1324363.5551232.1994430.5241232.1954459.1541232.441
4461.6851232.5234503.4161232.7314520.491 1232.73 4531.511232.6614565.5531232.868
4568.0161232.9314600.3461233.0724605.6461233.0944619.0341232.9994641.8021233.439
4664.8611232.7754670.5411232.3924674.1411232.2564682.8551232.2064711.4551231.929
4714.591231.8624725.0381231.8574747.7141231.5954747.7921231.5954747.9321231.601
4770.1291232.8844788.6871232.5594792.3351232.4914801.6311232.1674810.5631231.838
4813.941231.8314815.5591231.8264816.5761231.8234842.0181231.7624842.2451231.761
4842.2731231.7624842.3031231.7624858.854 1232.19 4882.771232.3624891.8091232.405
4896.6941232.4174900.6081232.2524928.6681231.2944930.7781231.3874942.5451231.735
4953.517 1231.694967.0921231.5094971.8081230.5054975.8791229.6724981.3241231.157
4985.4111231.9844989.9031231.854 4994.571231.6684998.609 1230.444999.211 1230.19
4999.968 1230.355007.8951231.848  5012.71232.0585016.6161231.6365022.8351231.542
5028.187 1231.985035.5151232.4285042.6411232.3365046.0181232.2325048.9831231.425
5054.6771229.5955058.8211230.5465065.5721232.1665083.2381232.1645098.6131232.121
5107.2841232.0935124.861  1232.15129.8251231.4415132.0441230.9595138.3151231.609
5141.5711231.9355144.5061231.9645147.3431231.8395147.5921232.1725168.0691232.389
5168.746 1232.375169.2151232.3785171.209 1232.355185.5351232.1785189.2241232.085
5196.441230.4165198.7471230.3585204.7081231.1255206.9711231.6375213.9831231.063
5216.911230.8335223.905  1231.7    5225 1231.875225.4911231.9495225.9311231.955
5239.6691232.4415249.942 1232.235260.0241232.1025265.6971231.1265266.2081231.071
5270.5431231.1615275.3591231.5345276.3581231.1265280.7961230.3165285.0771230.814
5292.451231.9315298.6471232.0565299.8291232.0485319.6441231.9245321.0721231.929
5322.561231.7275330.8691230.6415333.8811231.1975335.553 1231.695348.8321231.551
5351.5711231.5785359.9811231.5245371.1691231.4675374.1841230.9595379.2631230.115
5387.5681231.0135388.2491231.0965388.9281231.1035429.1172231.5775456.9881231.384
5460.6521231.3975479.2521231.4955482.7631231.4485489.4431231.4855506.562 1231.57
5511.2991231.0085513.0081230.766 5516.081231.2615520.4911231.878 5525.081231.969
5527.0031232.0345533.0781230.9655533.5471230.8695534.5041230.9375541.3081231.467
5551.2681231.482 5576.591231.655 5581.771231.7545589.077 1231.895594.7381231.918
5604.9471231.9555617.1791231.8825640.9671231.8655646.0081231.895 5679.551232.364
5708.776 1232.56 5753.921232.8455761.2181232.8675763.3611232.886 5796.71 1233.04
5804.6531233.2395805.9551233.1525826.2371233.3915839.4371233.5425869.2661233.733
5873.7651233.729 5874.691233.7375881.1571233.6935887.703 1233.925903.0661234.331
5912.9851234.4525918.2091234.4165921.5971234.4315935.7171234.4815947.4141234.466
5952.5651234.4025957.3631233.9955960.8511233.7765973.5921232.4875978.354 1232.85
5987.8961233.8996000.2171234.0876022.3041234.2586024.5031234.272
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
2916.366	.035	4985.411	.085	5012.7	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4985.411	5012.7		423503.3689	495	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1232.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1232.53	Reach Len. (ft)	423.00	503.37	495.00
Crit W.S. (ft)	1232.16	Flow Area (sq ft)	1100.24	27.32	519.78
E.G. Slope (ft/ft)	0.004667	Area (sq ft)	1100.24	27.32	519.78
Q Total (cfs)	3720.00	Flow (cfs)	2430.37	32.35	1257.28
Top Width (ft)	2365.26	Top Width (ft)	1658.02	27.29	679.95
Vel Total (ft/s)	2.26	Avg. Vel. (ft/s)	2.21	1.18	2.42
Max Chl Dpth (ft)	3.57	Hydr. Depth (ft)	0.66	1.00	0.76
Conv. Total (cfs)	54454.1	Conv. (cfs)	35576.3	473.5	18404.3
Length Wtd. (ft)	453.61	Wetted Per. (ft)	1660.26	27.69	682.44
Min Ch El (ft)	1230.19	Shear (lb/sq ft)	0.19	0.29	0.22
Alpha	1.02	Stream Power (lb/ft s)	0.43	0.34	0.54
Frctn Loss (ft)	3.50	Cum Volume (acre-ft)	28.88	1.39	22.27
C & E Loss (ft)	0.01	Cum SA (acres)	32.69	1.00	26.88

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 17.1738

INPUT
Description: 17.1738
Station Elevation Data num= 283

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
3036.5241230.613 3069.991230.5853075.7921230.5573076.8061230.5543077.8031230.546
3086.0321230.5183136.4561230.297 3147.961230.1953172.0371230.0573192.9221230.079
3210.7971229.5683226.4551229.135 3235.091229.3563252.1691229.4173276.9311228.912
3292.0521228.837 3293.741228.8393298.7971228.2933308.6671227.2563311.6411227.594
3317.986 1228.67 3320.051228.6533355.2561229.1143357.5351229.1383357.8131229.145
3358.0071229.1493358.1461229.1543358.3491229.1513359.7921229.1263382.8541228.711
3388.8111228.6063390.8981228.2173395.2461227.2683399.8651228.0243403.3741228.383
3409.7371228.3383427.4611228.3393430.0771227.4373432.9151226.8823438.3541227.695
```

```
3442.6691228.3023444.764 1228.363454.2921228.8093478.2041228.8023485.3071228.761
3489.4341228.7413496.698 1228.723512.3881228.7283545.8161228.8953568.125 1228.85
3580.3361228.8383587.2911228.6173613.824 1228.493618.4511228.4673621.1811227.923
3626.4231226.8973629.891122?.5793634.1251228.7053642.3321228.7443693.1961229.002
  3727.31228.8413764.5551228.6923794.5261228.6043836.4241228.5813853.7711228.598
3865.3231228.6493942.8571228.6973946.394 1228.684017.7031228.4564027.5861228.482
4058.471 1228.564070.7181228.4864095.7871228.1454126.775 1228.15  4144.31228.188
4159.1111228.0234168.8821227.9394193.1521227.0614197.5041227.2864200.4571227.567
4207.8381228.436 4216.931228.7134223.2381228.8924238.6961229.0314241.8661229.093
4244.0211228.868 4253.471227.866 4263.231227.8674272.8921227.8144278.6031227.047
4279.1021226.9864280.3061227.1414285.962 1227.744313.8681227.882 4325.041227.993
4338.5631228.1084374.473 1228.22 4395.021228.368  4404.61228.3274423.6721228.386
 4426.53 1228.364428.3251228.3814442.6791228.282 4464.081228.1494466.6191228.154
4470.4321227.8614478.156 1227.274483.5091227.6814485.8731227.8594488.0731228.038
4521.7261228.7614528.3651228.9834554.5381229.4914589.0981229.4944597.8731229.372
4610.4891229.2724623.0611229.3064658.9521229.4294663.3591229.4434695.0411229.505
4719.1461229.5164728.6931229.5314776.5011229.5124803.4751229.5244809.2991229.493
4812.2711229.2584819.7291228.3144835.7871228.5134841.0681228.6224845.6521228.629
4847.9651228.5744863.4121228.3194869.2221228.8924870.6731229.0024882.1121228.792
4883.5691228.8094883.5881228.8024886.4461228.8054915.617 1228.834929.2211228.376
4957.3371227.4864962.5021227.8074965.4451228.1474967.9431227.9714976.711 1228.31
4980.5351228.5754988.5231228.5734998.9321226.1644999.433 1226.044999.8541226.119
5001.9831226.482 5011.551228.2835013.406 1228 325019.0231228.6555023.7081227.957
5026.3721227.5765029.0331227.7275034.4831227.9175043.3721227.9735056.6881227.987
5061.2411227.6835071.8661227.6885078.6571227.5385079.4641227.499 5080.571227.664
5090.9631229.0215106.5511228.4785113.5141228.4335120.6961228.4315144.1911228.478
5163.3431228.564 5174.07 1228.125175.6311228.012 5181.731228.6225185.3441228.898
5208.3041228.6575222.9741228.4815238.2881228.5915245.1651228.6085246.5021228.606
5272.6751228.5795275.9651228.226 5283.21  1227.55288.4511227.6595292.6331228.037
5311.5321227.9035316.0611227.8575317.5621227.9165329.0971228.0335337.1711227.782
5338.9261227.8635341.1781227.573 5343.971227.4165350.1471228.6045351.094 1228.83
5378.3931228.4945380.3151228.4795381.3291228.4525385.3091228.4655407.6071228.422
 5409.87 1228.32 5410.881228.3475416.6361227.5695418.1331227.357 5421.641227.624
 5426.43 1227.98 5432.391228.0575437.4911228.2225445.8931227.9765452.9791228.007
5455.7751227.7835457.8891227.811 5461.791227.7735469.3531228.4025469.6431228.422
5472.5871228.1825474.0761228.2745476.7961228.0415481.6451227.6185486.1831228.154
 5487.951228.3255489.2461228.3455500.6241228.3115518.4341227.9635527.2621227.664
5535.4021227.7465550.7211227.7645553.7571227.6265556.7061227.4385557.6491227.515
5567.1551228.1715575.473 1228.265575.6831228.261    5587.1228.3055590.451 1228.37
5593.928 1228.325610.0391228.2155612.5771228.1995618.077 1228.185622.5561228.212
5633.5661228.2235645.241 1228.245648.0781228.0515655.5931227.5615658.9761227.889
5673.4661227.8445678.4481227.8195686.5571228.0485701.9631228.1365705.2981228.136
5705.8691228.1545708.4041228.1035717.1161227.9955724.4331228.1435729.8981228.303
5746.6461228.5495751.448 1228.615757.4961228.6485780.9171228.7765798.6271228.869
5807.4071228.8975832.139 1229.07 5839.981229.0445866.0141228.9935871.6511228.971
5877.1881229.0415889.1091228.3965889.6681228.3115901.2211229.1025901.4821229.143
5903.029 1229.345913.2331229.3095924.2731229.1285935.466 1228.915940.9421228.817
5960.1381229.1915979.3151229.6055981.9911229.6175985.9361229.6636012.9261229.985
6021.3421230.0696034.664 1230.056070.6711230.146

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
3036.524    .0354980.535    .0855019.023    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4980 5355019.023              380501.3424     530              .1        .3
Right Levee     Station=5832.139      Elevation= 1229.07

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1228.80   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.22   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)          1229.01   Reach Len. (ft)            380.00     501.34     530.00
  Crit W.S. (ft)          1228.76   Flow Area (sq ft)          520.55      40.62     444.87
  E.G. Slope (ft/ft)     0.016481   Area (sq ft)               520.55      40.62     444.87
  Q Total (cfs)           3720.00   Flow (cfs)                1858.00      93.67    1768.33
  Top Width (ft)          1887.04   Top Width (ft)            1104.92      38.49     743.63
  Vel Total (ft/s)           3.70   Avg. Vel. (ft/s)             3.57       2.31       3.97
  Max Chl Dpth (ft)          2.76   Hydr. Depth (ft)             0.47       1.06       0.60
  Conv. Total (cfs)       28977.2   Conv. (cfs)               14473.0      729.6    13774.5
  Length Wtd. (ft)         439.56   Wetted Per. (ft)          1106.47      38.99     744.43
  Min Ch El (ft)          1226.04   Shear (lb/sq ft)             0.48       1.07       0.61
  Alpha                      1.02   Stream Power (lb/ft s)       1.73       2.47       2.44
  Frctn Loss (ft)            3.11   Cum Volume (acre-ft)        21.01       1.00      16.78
  C & E Loss (ft)            0.03   Cum SA (acres)              19.28       0.62      18.79


Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION          RIVER: Harquahala
REACH: Lower Reach        RS: 17.0788

INPUT
Description: 17.0788
Station Elevation Data     num=     288
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
2943.7181226.9972967.0421227.1273005.7871227.2923010.4311227.3383014.3821227.378
3019.5631227.4223024.5681227.4053037.3671227.284 3104.191226.7563135.7641226.457
 3157.781226.2993164.1561226.2493178.2081226.4413184.9721226.5363198.4631226.385
3202.148 1226.283205.7731225.943 3211.131225.4753214.4451225.8293220.2951226.361
3223.0481226.284 3241.591226.4753246.8921226.6313267.808 1226.733276.8111226.653
 3277.741226.6883320.9881226.0383328.3661225.9013331.4321226.0383331.5631226.035
3336.2831225.9513339.9091225.8213344.0651225.1433346.8981224.551  3351.71225.033
```

```
3358.7651225.9563374.0931226.0543387.7231226.0893397.7131226.2313415.1331226.673
 3424.061226.7113430.7351225.3953433.8631224.8553436.1581225.395 3441.311226.441
3456.6971226.4493457.1481226.4523457.3061226.4533457.3981226.4563492.3381226.539
3492.7641226.5383493.0271226.5383500.4671226.5053549.989 1226.663569.345  1226.8
3579.0761226.777 3609.951226.7243621.0061226.6673643.6441226.1273684.0891224.716
3684.3841224.7113725.8581224.567 3727.841224.5543730.6291224.6853738 5551225.118
3760.6091226.3263764.417 1225.183770.2631222.9413776.2131223.7853779.5461224.322
3789.2151224.3853792.3051224.3833797.3591224.3733799.8361224.2633816.7931224.072
 3832.571224.2883850.7411224.4173866.3291224.4493889.5241224.4533903.5881224.912
3914.389 1225.463929.6981225.5323931.9791225.5273962.6311224.6383973.6241224.508
4005.407 1224.594024.4361225.326 4029.781225.4184039.7431225.2044070.3611224.539
4124.836 1224.8734151.1591225.1174157.2631225.1014159.7491224.8294167.1751224.409
4183.0941223.7934188.6211223.244 4196.171222.8914201.2231223.1364209.8261223.292
4224.3951223.2364221.0641223.5514222.9371223.6414229.7641223.9634254.1951224.886
4254.8991224.7754259.924 1223.954261.355 1224.074266.9161224.8544273.4531224.168
4273.694 1224.154273.7871224.1544283.1311224.7214284.6081224.6934298.5721224.467
4302.2291224.2414308.0071223.951 4310.381224.3694313.6831224.9064322.0681224.628
4332.8861224.3624341.4831224.2034341.4961224.2034341.4991224.2034341.643 1224.19
4350.1041223.4684350.3641223.4464360.1391224.8044360.4781224.861 4363.981224.905
4403.692 1225.454416.9121225.471 4435.15 1225.584449.4411225.9444458.7851226.113
4488.9251226.1114509.1331226.1114532.5241225.1294533.5311225.0974535.7711225.106
4538.0761225.144 4585.751225.7314599.3071225.4744613.0941225.0334647.3491224.961
4648.8521224.9544650.8051225.021  4671.71225.7184694.948 1225.984715.464 1226.21
4731.9971226.0354740.7961225.8084754.6361225.5144779.6861225.7724780.1091225.773
4781.2321225.7694801.7591225.7094807.3291225.8064814.0721225.9514838.104  1226.3
4856.8091226.4564868.901 1226.244888.7451225.7584901.9881225.6874910.2941225.683
4913.7771225.4454919.0431225.1324925.8941225.5954929.3961225.8714935.6931225.775
 4956.31 1225.834959.9751225.7894968.8751225.6844986.728  1226.34988.3621226.328
4989.1791226.123 4999.551223.6885007.0111224.7345009.7311225.0785014.2471225.085
5031.0041225.129 5042.511224.9555055.1691224.8655072.8041225.0615074.7611225.098
5079.8331225.0385104.0131224.6755107.4241224.4225112.9741224.1775116.2491224.704
5118.9511224.9975129.2031224.6665130.2451224.6345130.4161224.6215130.5971224.635
5131.9691224.7025137.8271225.0645139.7491224.7995145.811 1224.055147.4721224.385
5151.9461225.1735176.6211224.8355182.9561224.7855186.1781224.8335200.2781225.273
5211.1491225.1995224.0581225.0925227.3651225.1215246.3031225.0535264.1411225.093
5282.2811225.198 5302.251225.0825327.4981224.9235345.5431225.0115358.5961224.998
5374.1011224.8715383.567  1224.75389.2491224.6595397.6581224.642 5402.11 1224.48
5407.9571224.7975412.5531224.8735419.1311224.0765428.5181224.4475432.4831224.578
5435.2951224.5675439.3581224.7685443.584 1224.765450.3481225.2685456.2551223.663
5458.1021223.3575462.0451223.9025469.6241224.7765476.2991225.5695478.9561225.471
5487.3461225.3645493.3221224.9115508.4161224.942 5511.031225.0125519.0611225.412
5524.7161225.7525536.9631225.5235543.492 1225.175549.553 1224.745554.304 1224.39
  5559.81225.0635564.0161225.595 5587.891225.0815588.875 1225.065589.0411225.062
  5597.81224.9935599.6551224.9795599.777 1224.995614.4211226.2245621.2631226.161
5629.9671226.1235641.6491225.4735642.6861225.4075648.6891225.4095667.9431225.462
5688.1391225.421 5709.961225.5675720.3291225.7565734.828 1225.775738.5711225.857
5747.0411225.9525781.2541226.6685784.2841226.7425784.7081226.7435785.1651226.747
5786.7941226.7475834.1211226.694 5855.271226.942 5863.091227.0075863.5431227.011
5884.0381227.223 5896.79 1227.295898.3691227.2935902.3651227.3295920.794 1227.29
5924.8211227.1825928.4371227.1065932.5771227.088 5943.631227.3095944.8381227.335
5945.2581227.3445972.0361227.7266011.4321227.687

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
2943.718    .0354988.362    .0855014.247    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4988.3625014.247             348487.5188     495            .1        .3
Left Levee      Station=3267.808      Elevation= 1226.73
Right Levee     Station=5614.421      Elevation=1226.224

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1225.76   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.10   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)          1225.86   Reach Len. (ft)            348.00     487.52     495.00
  Crit W.S. (ft)          1225.36   Flow Area (sq ft)          953.40      26.07     473.79
  E.G. Slope (ft/ft)     0.003969   Area (sq ft)               953.40      26.07     473.79
  Q Total (cfs)          3720.00    Flow (cfs)                2601.61      30.46    1087.93
  Top Width (ft)         1681.87    Top Width (ft)            1063.69      23.52     594.66
  Vel Total (ft/s)          2.56    Avg. Vel. (ft/s)             2.73       1.17       2.30
  Max Chl Dpth (ft)         2.87    Hydr. Depth (ft)             0.90       1.11       0.80
  Conv. Total (cfs)      59047.6    Conv. (cfs)               41295.3      483.5    17268.7
  Length Wtd. (ft)        398.44    Wetted Per. (ft)          1065.42      23.85     595.60
  Min Ch El (ft)         1223.69    Shear (lb/sq ft)             0.22       0.27       0.20
  Alpha                     1.03    Stream Power (lb/ft s)       0.61       0.32       0.45
  Frctn Loss (ft)           3.00    Cum Volume (acre-ft)        14.58       0.61      11.20
  C & E Loss (ft)           0.02    Cum SA (acres)               9.82       0.27      10.65

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Harquahala
REACH: Lower Reach          RS: 16.9865

INPUT
Description: 16.9865
Station Elevation Data     num=      338
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
2236.4721226.4762242.7341226.5782259.1481226.1312265.2471225.891  2268.6 1225.83
2276.945  1225.62283.529 1225.622286.3821225.6132310.402 1225.372314.742 1225.37
2319.8441225.4152349.6151225.4142351.8041225.4022407.531  1225.42412.615 1225.28
2425.2151225.0882445.4671224.7462454.1361224.5212465.9931224.0852470.1441224.174
2478.6881224.3662485.3331224.4272485.8781224.4312493.7191224.5712503.5041224.761
2514.5011225.2532521.4241225.3492533.3711225.2572541.9011225.2082545.8181225.175
2563.0711225.0442584.6751225.0452589.1721225.1142619.7311224.9212630.673 1224.86
 2661.661225.2832677.2011225.4962686.8921225.053 2691.47 1224.892694.2931224.634
```

```
2696.842 1224.482698.1431224.3852732.5391224.8982757.6011225.0532766.3751225.031
 2801.951225.0922817.1411225.1212855.091 1225.01 2902.091224.7862930.5691224.632
2938.1681224.2542939.224 1224.212951.5751224.5012968.211  1224.92978.1171225.195
2997.4721224.4743009.8861223.9863013.1171223.9863045.6981224.4013087.0971224.835
3092.3561224.8723099.5181224.8833176.6751224.5963195.7911224.3633223.0021224.307
3227.7991224.3633232.8841224.1063240.1691223.9173248.6911224.1443256.9371224.265
3257.3791224.2833259.7411224.2743273.3651224.3733278.212 1222.94 3278.951222.778
3279.3351222.8373288.8461224.2363337.3491224.4873352.1081224.5843353.8021224.589
 3355.941224.5973405.019 1224.713442.8921224.961 3444.311224.9683444.6641224.966
3469.3921224.8263474.6241224.8093510.4621224.5433516.0921224.5513546.3231224.563
3567.3641224.2133568.059  1224.23568.3911224.139 3575.671222.9633582.076 1224.57
3582.7581224.7183596.6891224.6573646.4361224.3583658.9141224.2973671.5291224.325
3684.1061224.0633736.8451222.9623759.9251223.1243773.4361223.1383786.6561223.064
3809.3971223.0133820.1911222.7893833.0731222.3933838.4631222.3763853.5091222.212
3862.1911222.5113868.1961222.5123870.4351222.4323876.5621222.4823886.2431222.448
3889.7511222.0263893.6071221.5843896.2881221.8853903.2041222.4473905.3971222.409
3914.991 1222.413920.8391222.911 3926.371223.0233930.4821223.0463941.6341223.208
3954.1631223.0253957.9331222.8083973.7311222.1443987.0811222.1044015.5461222.055
4026.7911222.2694029.9571222.2754058.764 1222.464067.9331222.5434083.4651222.606
4084.0351222.6084084.1851222.6074085.2931222.5994129.8071222.1864144.3111222.359
4153.7161222.4444163.9321222.4274205.7351221.9464238.484 1221.734238.7911221.726
4240.6141221.7054270.2091221.3724275.4921221.4454285.9381221.5644294.7231221.169
4296.8981221.0894298.1251220.9134303.205 1219.97 4307.31 1220.774310.3991221.439
4314.308 1221.184319.8691220.9674321.7721220.5384324.5221220.2894332.3961221.361
4336.2151222.1854338.2471222.5914356.0271222.7434359.1571222.7584369.0591222.529
4386.5241222.1234393.4771222.0634421.1191221.8924426.143 1221.244432.9741220.631
 4435.531220.8244441.952 1221.254445.4581221.2344458.1791221.6754461.2831221.342
4465.1231220.9954474.3281221.2894475.5481221.3494502.1371221.7964511.9441221.997
4515.0011222.0114515.2821222.0244539.9791222.4534550.2491222.6494557.3491222.788
4560.9931222.7444586.0881222.3484610.9911222.1354616.7321222.0934620.7081221.507
4623.9141221.0954626.566 1220.564626.6321220.5494626.6861220.5564635.5391221.273
4640.7511221.8474678.3361221.7434681.572 1221.754683.0391221.7554718.0591222.132
4723.5651222.1584781.3291222.4844830.6731222.7354849.6591222.6274897.8921222.259
4907.1471222.1994910.7151222.162  4930.4 1222.184935.8941222.238 4938.341222.164
4938.9711221.9344954.0371221.6124954.0891221.6114954.1831221.6154960.2081222.019
4961.9071222.0254968.5161222.0184979.1021222.0254981.694     12224987.5531221.953
4990.8661221.9355003.6451220.6825007.8011220.2845008.6691220.4975009.3131220.583
5014.6221220.8115018.9331221.1335019.9251221.2375026.6151221.6115028.9871221.617
5040.9441221.7085048.7131221.6955056.7051221.6975062.1021221.6255073.0631221.599
5076.1921221.1335078.7461220.8415082.1671221.1975086.0591221.6455103.0921221.893
5107.2891221.9675109.1071221.6435114.4811220.4495116.0361220.7955120.9231221.877
5124.896 1221.895126.8771221.869 5132.011220.6145136.5881219.3995141.0821220.311
5146.6211221.116 5151.011221.8655184.9951222.1325185.2081222.1315185.3521222.133
5186.9551222.1285211.4451222.057 5216.891222.0935246.6051222.2255260.2791222.316
5292.2511222.4325294.6811222.4455295.5541222.4455296.2711222.449 5326.631222.632
5363.4771222.6265376.5181222.5895382.8471222.4245389.8151221.9875403.6191221.171
5409.6961221.6655415.2711222.1085420.7431222.386 5421.071222.4215425.1781222.041
5425.2891222.0325425.4311222.024 5433.971220.8125437.287  1221.35441.4441222.178
5447.3141221.8455452.9391221.7225467.6691221.7035475.1721221.7195489.1541222.334
5489.1991222.3375489.2641222.3385508.9381222.6445515.9191222.8245521.6041222.917
5523.1411222.806  5528.21222.5925530.0291222.6895544.308 1223.115559.7951223.202
5574.951 1223.315590.2561223.4945603.236 1223.245606.5751223.2335635.1351223.404
5648.8391223.4885652.3331223.2545658.3631222.8185669.5281223.349    56761223.741
5688.8051224.0255711.2841224.4065722.4231224.4085733.2891224.3055734.1291224.349
5736.2971224.4775736.974 1224.555743.5541225.0895750.667 1225.075754.5711225.014
5758.0721224.9275762.0881224.7455767.137 1224.585786.8491224.4685826.8461224.529
5850.2031224.535 5908.141224.6335919.4981224.6845924.3531224.6395977.8711224.574
6006.5611224.5256013.9571224.576 6017.24 1224.976028.8461226.1226055.6531226.244
6077.4821226.1176100.7981226.1176101.5291226.1176102.7351226.1236102.8851226.122
6125.1491226.0986129.1221226.1116134.647 1226.05
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
2236.472     .0354979.102     .0855040.944     .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4979.1025040.944                281508.1319     549              .1        .3
Right Levee      Station=5521.604       Elevation=1222.917
```

CROSS SECTION OUTPUT Profile #PP#1

W.S. Elev (ft)	1222.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1222.85	Reach Len. (ft)	0.00	0.00	0.00
Crit W.S. (ft)	1222.54	Flow Area (sq ft)	520.70	72.36	265.39
E.G. Slope (ft/ft)	0.020723	Area (sq ft)	520.70	72.36	265.39
Q Total (cfs)	3720.00	Flow (cfs)	2277.17	201.89	1240.94
Top Width (ft)	1410.65	Top Width (ft)	953.47	61.84	395.34
Vel Total (ft/s)	4.33	Avg. Vel. (ft/s)	4.37	2.79	4.68
Max Chl Dpth (ft)	3.14	Hydr. Depth (ft)	0.55	1.17	0.67
Conv. Total (cfs)	25841.3	Conv. (cfs)	15818.5	1402.4	8620.3
Length Wtd. (ft)	0.00	Wetted Per. (ft)	954.53	61.99	396.62
Min Ch El (ft)	1220.28	Shear (lb/sq ft)	0.71	1.51	0.87
Alpha	1.03	Stream Power (lb/ft s)	3.09	4.21	4.05
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)			
C & E Loss (ft)	0.08	Cum SA (acres)			

Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: I-10 Reach RS: 16.8902

INPUT
Description: 16.8902
Station Elevation Data num= 365

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
1882.3181226.014 1896.221225.9861927.9451225.7671949.7911225.574    1951225.257
1954.2441224.7081959.7541225.4151961.507 1225.641965.1641225.6171988.8911225.566
1997.7081225.596 2010.141225.513 2014.991225.1332017.212 1225.02 2030.891225.301
2033.2321225.3542034.4361225.3572059.3881225.5112068.2961225.2062069.1521225.176
 2071.821225.1692154.0241224.8882157.617 1225.092159.541 1225.12 2164.031224.542
2168.319    12242169.7181224.1612177.3721224.769 2186.911224.711 2190.171224.687
2192.6641224.4562195.5911224.2492198.1981224.409 2202.611224.6042204.944 1224.76
2209.6481224.7052225.368 1224.49 2230.251223.9892231.1281223.8912232.393 1223.99
2240.0721224.6782263.7651224.3852270.2961224.3112272.7941224.1232280.693 1223.76
 2281.08  1223.82288.189 1224.512290.1381224.5492297.2281224.5372313.6441223.981
2316.4571223.8442317.625 1223.822359.2421224.1292399.8291224.562 2403.041224.499
2415.1121224.1322431.1351224.1642453.9911224.2252461.7611224.2322465.5191224.281
2512.4881223.7892518.6641223.7222526.8641222.5252530.661 1222.18 2540.881222.972
 2543.971223.2712558.4681223.4022571.1831223.678 2572.661223.7032578.5991223.591
2578.7041223.5922604.7331224.0512611.755 1224.172628.8221224.2232630.7961224.212
2631.9751224.2062670.2711223.9142674.9941223.9062676.6951223.8742690.0191223.392
2706.224 1222.792722.3081223.0322736.0421223.204 2763.671223.2322778.3381223.264
2783.9191223.3782821.4281223.6662828.2311223.7452831.4751223.7642840.7321223.851
2841.9471223.8432844.5121223.7872857.2541223.5792876.3361223.4732898.4551223.379
2899.2371223.3792899.7851223.3772935.6121223.3382939.4151223.315  2980.61223.635
 2987.621223.7352997.2721223.8483011.9151223.5773050.6151223.0243062.2811222.471
3062.6961222.4533063.4521222.4563116.3491222.5793119.4641222.7063124.6151222.819
3150.2341223.2453155.389 1223.213178.0031223.0973192.3741223.0173195.202 1223.03
3208.4281222.9813228.7741222.9573232.0181223.0063243.2721223.1583258.027  1223.2
3265.1431223.3383268.1261222.6663271.0711221.804 3280.011223.081 3281.031223.279
3288.8791223.2523322.3961223.0383325.2171223.0423346.1721223.064 3416.54 1223.18
 3450.391223.1513484.0381223.1613510.298 1222.993575.4121222.6043596.9691222.543
3633.4541222.4313643.2111222.3873644.8071222.3733645.828 1222.063651.1691220.742
3658.5791222.1053659.3311222.2443672.8831222.2393731.8111222.2293743.7241222.231
3815.494 1221.633825.5351221.5513832.7321221.5193881.9791221.3633904.4421221.234
 3925.951221.0113930.4441221.2163938.8581221.5823953.5781221.7353966.1251221.942
3968.4641221.9753969.5281221.9573976.6191221.2653977.7711221.1963981.7621221.065
3993.128 1221.11 4020.321220.9974036.0341220.8034047.774 1220.674051.5061220.284
4057.3891219.9114064.6891220.483 4067.99 1220.774069.4131220.6774075.8841220.422
4083.254 1220.23 4086.911220.0894098.6361219.669 4106.551220.1794106.8651220.196
4107.359  1220.24143.7651220.5074173.2321220.7224216.9741220.806 4245.271220.357
4259.0181220.3354267.9511220.4914288.9631220.3954306.684  1220.34328.3551220.369
4357.0251219.9064364.2971219.8274367.1671219.792 4378.071219.7634382.3321219.219
4386.5261218.7384391.8861219.4274395.6831219.9144405.5171219.8494407.8051219.841
4413.3451219.8764422.5931219.8634432.919 1219.344436.638 1219.164438.2371219.318
4445.2431220.063 4455.251220.1234459.3711220.1684464.1671219.6054467.8131219.063
4478.742 1219.464479.8132219.5174480.143  1219 54495.3021219.4224497.6251219.271
4502.424 1218.53 4505.881218.9924514.0121220.5264517.781 1220.434532.125 1219.92
4541.9051220.1264553.013 1220.374558.9631219.2284560.138 1219.024566.1521219.663
4569.3261220.0154571.5721219.9864580.2981219.8934584.7441219.8094590.2761219.639
4606.1631219.4444618.3871215.2654633.6741219.3564642.5731219.4314652.7461218.683
4654.1431218.5394655.7781218.7264662.9931219.4914675.7161219.4244678.3391219.431
4697.6051219.6364699.472 1219.664699.6651219.6574699.835 1219.664699.9541219.664
4703.0621219.6824761.3641220.038 4774.191220.0984789.1781220.1474813.6461220.181
4828.8221220.1184829.5991220.0894832.7411220.1334838.3681220.1394866.0061220.191
4893.4821220.1474909.3171220.1284911.8791219.8284919.5921219.128 4922.111219.342
4930.0481219.9814936.2421219.9274944.0751219.7764945.8571219.739 4948.381219.799
4958.3211219.8344961.1661219.8024964.5251219.4724969.0961218.908 4971.011219.191
4975.4541219.899 4985.221219.7054992.5861219.5514994.9851219.0284999.6991217.581
5001.8131218.0035009.406 1220.335013.0291220.0945013.5631220.0755013.8891220.074
5023.5221218.0735025.8471217.4695028.2651218.074 5034.731219.9225040.0211219.665
5040.9731219.6465043.9921219.6315047.3631219.6395060.0471219.766 5069.141219.872
5073.0081218.9685076.343 1218.465080.1451218.9495087.7921219.7935152.0841220.738
5153.2441220.762 5153.711220.7625192.1011220.4955226.622 1220.875229.1711220.898
5246.015 1221.035262.3981221.1515266.6061220.8925269.4711220.7445275.2671220.723
5314.4951220.578 5318.731220.6475328.2971220.7945331.1711220.8195347.5471221.068
5358.0461220.8825362.2271220.7525367.823 1219.795369.7181219.3215373.8241220.162
5378.6851220.9785395.7231220.9095411.1961221.017    54261221.0695435.4831220.847
 5454.771221.0585498.9681221.3795512.625  1221.35512.9451221.2995524.2671221.143
5560.0831221.5425598.3821221.7645609.1991221.7295626.4171221.7085677.6861221.898
5685.5351221.9335687.7931221.9445695.6991221.9645752.6621222.0995759.064    1222
5771.7291222.1425787.3531221.9085788.717 1221.885802.5531221.8615810.6111221.805
 5815.841221.5225818.3951221.3225826.0991221.4435829.0021221.5025829.8671221.506
 5847.621221.6855857.8841221.5675876.4381221.4695903.915 1221.565940.8231221.595
5972.4491221.7765982.8411221.8796013.9541220.822 6015.221220.8566027.6191221.372
 6035.36 1221.786063.8311222.0376075.5331222.0486079.5811222.0236095.9571221.989
6116.4981222.0796170.8631222.1656217.1271221.9346220.6111221.9496249.3891221.974
6282.0691222.391 6293.681222.5566314.9051222.7026367.2741222.8826379.271 1223.19
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
1882.318    .035 4985.22    .0855009.406    .035
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4985.22	5009.406	356	537.2477	602	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1222.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1222.50	Reach Len. (ft)	356.00	537.25	602.00
Crit W.S. (ft)	1220.79	Flow Area (sq ft)	2697.34	83.46	1496.60
E.G. Slope (ft/ft)	0.000390	Area (sq ft)	2697.34	83.46	1496.60
Q Total (cfs)	5000.00	Flow (cfs)	3543.89	64.58	1391.53
Top Width (ft)	2697.93	Top Width (ft)	1394.68	24.19	1279.06
Vel Total (ft/s)	1.17	Avg. Vel. (ft/s)	1.31	0.77	0.93
Max Chl Dpth (ft)	5.01	Hydr. Depth (ft)	1.93	3.45	1.17
Conv. Total (cfs)	253340.2	Conv. (cfs)	179561.9	3272.0	70506.3

Length Wtd. (ft)	438.44	Wetted Per. (ft)	1396.40	24.85	1280.31
Min Ch El (ft)	1217.58	Shear (lb/sq ft)	0.05	0.08	0.03
Alpha	1.08	Stream Power (lb/ft s)	0.06	0.06	0.03
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	137.73	22.67	71.33
C & E Loss (ft)	0.01	Cum SA (acres)	42.83	5.85	26.35

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Marquahala
REACH: I-10 Reach RS: 16.7885

INPUT
Description: 16.7885
Station Elevation Data num= 381

```
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1543.0751225.1781557.2341225.1911636.9581225.2861729.6781225.3731762.0821225.281
 1762.661225.2671773.0081225.0331777.4961225.3081786.2841226.568 1792.261226.583
 1792.971226.5871793.8791226.3591799.2441224.9871807.3081224.8421818.8841224.782
1824.4071224.8721841.3281224.852 1855.08 1224.981869.1071224.9451876.7251224.947
 1882.131223.721 1885.051223.3241891.2791224.2841894.9361224.846 1900.861224.815
1907.3111224.7481915.7591224.721 1940.991224.5321944.6781224.5161947.3911224.498
1973.7081224.4471990.0931224.1531997.2881223.994 2003.041223.9842009.0731224.232
2019.6961224.452 2045.781223.8962046.3281223.8892046.9721223.853 2058.261223.297
2059.9341223.2992111.1461223.4922137.2121223.4012182.4011223.2482217.669 1223.13
2236.2441223.0782290.2521222.9532324.1181222.7582331.2751222.7652334.3711222.887
2335.0931222.9142343.8191224.6212344.5071224.7292346.7061224.4492361.0041222.488
2385.5581222.5712403.0351222.6092430.6781222.556 2463.851222.3842468.4991222.366
2491.0881222.0682499.8091221.9762511.9721221.8652534.5291221.6172537.7571221.463
2543.6981221.1632547.5231221.4082550.409 1221.692559.6971221.702 2581.751221.802
2592.2371221.7452597.3651221.7162614.7651221.5442644.2481221.4982648.3851221.458
2652.8881221.5222667.9831221.4532681.5481220.8032686.9611220.5632699.3331220.756
2719.0361221.2072725.0571221.3072727.8891221.3642732.6881221.3552764.4421220.925
2788.5311220.8182790.0891220.8182801.6531220.5512809.4611220.3522810.5411220.385
2812.156 1220.422836.9481220.8442845.2921220.9932862.4411221.2292872.133 1221.13
2879.3581221.1982892.4831221.2482902.4781221.3182916.5581221.4372919.1551221.483
2920.3251221.4852936.9021221.1242937.667 1221.122945.0541221.3342949.8671221.463
2981.8421221.0892987.2141221.0182990.0561221.1272990.1621221.1292994.5981221.202
2998.8391220.9043032.4851221.182 3037.071221.2283039.095 1221.233054.7191221.191
 3062.621221.1543069.5881220.9383074.4981220.6953087.3971222.2083087.8661222.262
3088.1321222.2633097.6941222.366 3101.791221.8663109.0761221.0513116.6411221.305
3130.0881221.4583150.556 1221.353160.3881221.3073186.5761221.4713248.8031221.334
3258.7681221.3373274.2411221.2753282.734 1221.263285.7791220.7283290.3341219.692
3292.1421220.1423297.2961221.0553318.2521221.2233326.6581221.2173368.583 1220.84
3393.7441220.7683463.304 1220.363482.0131220.2253491.2691219.4353493.8131219.352
3501.711 1219.853532.7321219.6753516.2381219.6533536.7491219.987 3543.161220.063
3546.212 1219.96 3547.43 1219.98 3585.951219.8293613.1551219.7253618.5481219.696
 3630.731219.6383654.9121219.6063710.2911219.4943728.6181219.2863734.0121218.365
 3738.311217.6723743.3851218.5643747.333 1219.383759.8371219.3763772.3761219.296
3785.5061219.2983819.3231219.1383872.5931219.0393874.3451219.0323876.4721219.025
3883.6111219.0293930.1941219.0053941.7961219.0053949.3511218.895 3982.171218.761
4013.0961218.6394028.9951218.6364034.8871218.6874041.8281218.7554077.1791218.618
4083.0741218.6334084.7581218.6024090.5241218.5254112.2431218.2614116.0681217.844
4121.6671217.431 4128.711217.8094133.3651218.019 4158.791218.2514161.3871218.291
4163.8921218.2694180.6421218.0994187.182 1217.244188.3181217.104 4191.611217.767
4193.8631218.1074194.808 1218.274236.7361218.2014240.5961218.2214266.3891218.317
4266.7931218.3174268.1291218.3184326.9251218.3314349.9321218.322 4359.061218.326
4365.2651218.2994370.3141218.2464411.1991217.6734414.3131217.635 4415.911217.494
4425.8671216.607 4434.381217.0074437.043  1217.24462.9411217.4114467.542 1217.44
4472.3861217.3834487.2311217.2714493.8141217.337 4508.381217.3244510.5171217.305
4519.7671217.0064525.1091217.1174528.4561217.2154528.7771217.1994540.6491216.715
4544.9121216.4664553.0441217.4454553.7881217.6244555.6391217.6984562.0281217.888
4564.3711217.0224566.1851216.383 4570.291216.8664575.211 1217.364577.1821217.401
4578.6911217.4364581.1231217.2224591.7241216.723 4596.88 1217.164600.1471217.295
4612.9561217.3484615.9071217.3544618.2571217.3414620.6341217.0454625.187 1216.49
4628.3011216.6934640.1571217.3194660.1431217.7014672.7651217.8494687.3881217.707
 4692.71 1217.71 4703.65 1217.834706.5191217.9064710.2361217.6284716.0411216.851
4725.6131217.5344728.1381217.6494733.4271217.7614740.2261217.8394742.9781217.862
4750.4381217.9534753.9261217.4674757.4791216.6334759.6371216.8224766.8631217.640
4767.4871217.6494773.9931217.6174776.2731217.6144777.164  1217.64784.6781217.414
4791.0921217.6324803.136 1218.124811.6091218.1934819.216 1218.414829.291 1218.47
4837.8271218.2354842.1851218.2614844.0941218.1854848.0731216.9844850.3631216.303
 4853.521217.4264859.2721218.4284859.5971218.503 4859.751218.5014859.957 1218.49
4864.2021218.1764869.854 1217.264872.2921216.9014875.5331217.534 4883.051216.675
4886.565 1216.574889.0081216.8074903.4671218.5264920.0071218.939 4927.411219.101
4932.3551219.0034938.8231218.844 4968.461217.9684974.5631218.163 4978.061218.479
4981.376 1218.364987.4611217.6194999.6791216.3485005.0881216.1375011.5961215.959
 5018.491216.6155025.7381217.6285030.1621217.5565038.6341218.0725039.7721218.139
5040.3291218.1575047.5031218.103 5073.631218.3015094.532 1218.495102.6941218.492
5127.8871218.5385168.6721218.636 5217.491218.6465248.6021218.6625263.7141218.863
5305.4231219.0545306.497 1219.045318.5821219.006 5320.82    12195359.9991219.048
5389.6581218.9885407.9551219.1195427.0141219.2785451.1491219.4775498.5731219.637
5538.8671220.0335609.7611220.285 5652.021220.1815685.9191220.1165716.8281220.297
5733.8251220.341 5766.591219.8585789.6961219.6735795.8871219.727 5803.561219.274
5808.953 1219.045823.0861219.134 5842.571219.1695855.5541219.1875871.1991219.389
 5911.88  1219.35918.8861219.3235921.2191219.284 5923.591219.3225941.1951219.428
5962.3761219.2975998.029  1219.16015.7431218.9946018.4671218.8776022.9411218.727
6034.2081218.2916040.0681218.7876044.6911219.0776047.1251218.9516066.271 1218.48
6085.2651218.6586106.4221218.7196130.7141218.8756146.625 1218.916158.458 1218.88
6184.5541218.8966204.0951218.8856214.7081218.9636241.594 1219.046266.9811219.051
6280.8411219.0266300.3871218.8276301.7321218.931 6310.651219.8736342.1721222.276
6357.1361223.5616362.8751224.0616383.5021225.8876399.8161226.2716427.6751226.964
6448.2551225.891
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
1543.075    .035 4978.06    .0855040.329    .035
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

4978.065040.329 361339.3988 273 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1222.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1222.47	Reach Len. (ft)	361.00	339.40	273.00
Crit W.S. (ft)		Flow Area (sq ft)	7386.47	333.65	4176.12
E.G. Slope (ft/ft)	0.000023	Area (sq ft)	7386.47	333.65	4176.12
Q Total (cfs)	5000.00	Flow (cfs)	3068.11	85.40	1846.50
Top Width (ft)	3897.10	Top Width (ft)	2530.74	62.27	1304.10
Vel Total (ft/s)	0.42	Avg. Vel. (ft/s)	0.42	0.26	0.44
Max Chl Dpth (ft)	6.61	Hydr. Depth (ft)	2.92	5.36	3.20
Conv. Total (cfs)	1042897.7	Conv. (cfs)	639944.5	17811.9	385141.3
Length Wtd. (ft)	331.22	Wetted Per. (ft)	2533.78	62.52	1304.34
Min Ch El (ft)	1215.86	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	1.01	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	96.53	20.09	32.13
C & E Loss (ft)	0.00	Cum SA (acres)	26.79	5.32	8.50

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: I-10 Reach RS: 16.7242

INPUT
Description: 16.7242
Station Elevation Data num= 391

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1660.358	1222.58	1665.839	1222.582	1671.272	1222.602	1707.496	1222.485	1713.535	1222.5
1721.871	1222.51	1746.885	1222.581	799.391	1222.538	1782.532	1222.381	1791.488	1222.343
1811.251	222.307	1821.189	1222.296	1843.905	1222.118	1853.422	1222.447	1857.92	1222.423
1874.927	1222.549	1875.343	1222.548	1886.625	1222.569	1894.208	1222.577	1894.84	1222.605
1898.634	1222.507	1910.668	1222.294	1911.034	1222.292	1925.742	1222.998	1927.394	1222.024
1929.357	1222.002	1946.571	1221.749	1957.239	1226.37	1957.975	1226.62	1959.012	1226.621
1969.267	1226.55	1970.281	1226.226	1982.332	1221.774	1986.17	1221.77	1987.838	1221.75
1997.87	1221.585	2002.452	1221.562	2017.566	1221.619	2034.662	1221.585	2041.574	1221.581
2065.255	1221.698	2071.767	1221.727	2080.176	1221.998	2100.656	1222.274	2111.954	1222.409
2122.34	1222.378	2155.985	1222.506	2162.884	1222.587	2167.761	1222.623	2174.924	1222.605
2208.508	1222.383	2214.026	1222.268	2220.823	1222.177	2247.64	1222.053	2254.922	1222.035
2262.708	1222.054	2282.119	1221.859	2289.37	8 1221.85	2305.301	1221.891	2330.858	1221.715
2341.997	1221.772	2360.669	1221.648	2373.381	1221.617	2389.625	1221.616	2402.87	1221.557
2418.579	1221.474	2433.102	1221.372	2441.909	1221.626	2448.825	1221.235	2456.982	1221.147
2474.787	1220.879	2480.41	1220.977	2486.911	1220.952	2500.702	1220.944	2506.425	1220.629
2507.536	1220.857	2508.377	1221.065	2517.355	1224.134	2524.059	1224.219	2529.94	1224.238
2533.873	1222.162	2537.385	1220.367	2550.64	1220.262	2558.156	1220.233	2564.832	1220.201
2589.478	1219.997	2598.404	1219.98	2614.357	1220.063	2624.587	1220.032	2631.539	1220.016
2660.869	1219.959	2675.49	1219.957	2702.961	1219.828	2721.939	1219.619	2739.087	1219.472
2762.099	1219.312	2777.873	1219.381	2798.627	1219.197	2816.171	1218.94	2837.243	1218.88
2853.191	1218.887	2868.915	1218.802	2894.361	1218.658	2914.118	1218.589	2928.674	1218.511
2945.143	1218.512	2956.917	1218.424	2968.82	1218.331	2979.81	1218.267	2989.975	1218.291
2999.265	1218.373	3009.341	1218.611	3010.32	8 1218.658	3012.568	1218.582	3021.792	1218.468
3023.117	1218.489	3030.122	1218.784	3043.087	1218.611	3047.007	1218.559	3050.487	1218.628
3063.293	1218.523	3066.13	1218.487	3078.647	1222.207	3078.815	1222.252	3079.277	1222.252
3090.217	1222.233	3091.841	1222.141	3100.114	1219.665	3103.677	1218.501	3125.902	1218.557
3128.33	1218.63	3128.809	1218.623	3134.575	1218.589	3154.59	1218.668	3155.27	1218.677
3177.937	1218.645	3178.968	1218.638	3202.206	1218.827	3203.264	1218.82	3224.24	1218.865
3225.465	1218.862	3249.066	1219.028	3249.866	1219.028	3250.723	1219.023	3268.417	1218.777
3268.869	1218.779	3283.915	1218.883	3300.306	1218.861	3315.318	1218.785	3337.775	1218.833
3348.856	1218.772	3374.692	1218.768	3394.027	1218.833	3404.25	1218.875	3421.42	1218.812
3435.222	1218.708	3453.332	1218.703	3460.799	1218.812	3475.333	1218.941	3499.786	1218.833
3507.035	1218.783	522.594	1218.498	3527.758	1218.858	3536.298	1218.698	3542.797	1218.715
3559.121	1218.485	3564.45	1218.121	3570.881	1218.808	3571.673	1218.82	3573.49	1218.824
3577.783	1218.738	3579.61	1218.764	3606.517	1218.652	3606.833	1218.653	606.869	1218.65
3607.746	1218.658	3634.289	1218.883	635.012	1218.873	656.698	1218.575	3671.115	1217.863
3671.116	1217.863	3685.967	1217.974	3687.159	1217.963	704.232	1217.83	706.362	1217.776
3719.121	1217.737	3721.76	1217.664	3737.139	1217.559	3741.428	1217.565	3752.715	1217.187
3762.656	1217.078	3765.205	1217.083	776.172	1217.641	3777.149	1217.626	3788.947	1217.668
3790.768	1217.668	3790.915	1217.669	3812.257	1217.697	3819.298	1217.668	3842.107	1217.668
3853.985	1217.313	875.564	1217.336	3884.482	1217.207	3906.363	1217.113	3919.486	1217.072
3930.387	1217.061	3956.014	1216.978	3966.088	1217.058	3988.619	1216.929	4001.118	1216.766
4014.186	1216.679	4029.827	1216.688	4040.286	1216.558	4047.506	1216.495	4050.02	1216.976
4060.399	1217.137	4078.61	1216.878	4085.643	1216.908	4088.024	1216.993	4106.473	1217.136
4108.064	1217.176	4121.041	1217.511	4132.573	1217.524	4150.4	1217.82	4163.626	1217.226
4171.071	1217.108	4190.833	1216.514	4196.368	1216.326	4205.056	1216.551	4208.228	1216.589
4211.249	1216.627	4229.339	1216.999	4248.501	1217.158	4262.799	1217.244	4286.565	1217.272
4311.934	1217.518	4316.196	1217.513	4347.82	1217.314	4376.326	1217.354	4381.132	1217.289
4399.793	1216.842	4408.577	1216.598	4409.563	1216.572	4429.275	1215.595	4439.829	1215.724
4462.315	1216.218	4469.582	1216.227	4499.607	1215.934	4502.752	1215.874	514.452	1215.588
4521.089	1215.456	4521.545	1215.488	4546.883	1216.318	4548.383	1216.088	4555.076	1215.028
4564.611	1216.004	4568.176	1216.424	4570.751	1216.469	4587.132	1216.493	4589.91	1216.403
4606.065	1216.205	4608.159	1216.038	4614.108	1216	4618	552	1216.604	4624.462	1216.378
4628.021	1216.114	628.801	1216.026	4633.689	1215.249	4637.976	1214.427	4641.458	1214.461
4648.507	1214.593	4666.362	1214.939	4676.134	1215.093	4704.706	1215.271	4713.697	1215.592
4723.419	1215.768	4727.077	1215.811	4744.691	1216.068	4760.409	1216.344	4760.519	1216.404
4762.631	1216.378	4765.902	1216.298	4785.628	1216.34	819.122	1216.362	4855.298	1216.753
4886.563	1217.099	4905.493	1217.217	4922.41	1217.433	4923.183	1217.474	4925.173	1217.366
4934.983	1216.918	4948.769	1216.631	4957.251	1216.163	4961.646	1215.881	4977.072	1215.039
4981.051	1214.575	4991.471	1214.654	4999.852	1214.648	5002.294	1214.739	5007.479	1215.853
5012.849	1216.485	5013.687	1216.525	5014.636	1216.703	5018.744	1216.979	5037.644	1217.418
5049.661	1217.452	5071.619	1217.109	5090.905	1217.074	5108.309	1217.132	5122.961	1217.294
5148.104	1217.458	5169.912	1217.37	5205.531	1217.422	5228.221	1217.416	5261.943	1217.493
5278.516	1217.602	5285.751	1217.438	5305.454	1217.345	5314.399	1217.378	5338.382	1217.285
5359.667	1217.312	5370.251	1217.291	5370.829	1217.272	5382.832	1217.233	5383.515	1216.227
5397.835	1216.485	5411.716	1216.366	5422.152	1216.503	5434.174	1216.556	5451.934	1216.735
5466.713	1216.707	5481.857	1216.716	5488.662	1216.742	5491.652	1216.695	5497.124	1216.694
5504.238	1216.558	5511.501	1216.484	5524.753	1216.388	5538.649	1216.324	5545.5	1216.59
5562.911	1216.359	5569.911	1216.501	5571.752	1216.539	5572.571	1216.418	5590.646	1216.968
5610.285	1217.013	5613.51	1216.995	5639.781	1217.176	5648.63	1217.165	674.799	1217.643

```
5677.0741217.6675681.5741217.6275700.5751217.9265716.8411217.9545728.7911218.133
5741.3051217.9575750.2261217.942.5765.361217.4925776.6541217.7465814.5731218.253
5820.1411218.2795823.6051218.2785850.8891218.5575865.2821218.9845866.869 1218.98
5885.1481219.0615910.196  1216.95932.0311218.7425958.4411218.8245958.8081218.822
5985.889 1219.97 6010.841221.2766029.9381221.7526038.0871221.9536067.7981222.748
6099.2741223.615 6123.331224.538  6135.41224.2626159.8681223.2316184.5281223.026
 6166.541222.9536200.6761220.6446215.6161219.8516248.126 1217.786250.9841217.825
6251.217 1217.836254.2771217.8996275.8981218.5786295.7821218.9036302.3311219.001
6306.2931219.039

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
1660.358    .0354923.183     .0855037.644     039

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4923.1835037.644                70 81.5688      71              .1        .3
Left Levee       Station= 2529.94       Elevation=1224.238
Right Levee      Station= 6123.33       Elevation=1224.538

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1222.47   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.00   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)            1222.47   Reach Len. (ft)             70.00      81.57      71.00
  Crit W.S. (ft)            1217.28   Flow Area (sq ft)        11037.17     729.70    4782.95
  E.G. Slope (ft/ft)       0.000007   Area (sq ft)             11037.17     729.70    4782.95
  Q Total (cfs)             5000.00   Flow (cfs)                3397.15     114.54    1488.31
  Top Width (ft)            3524.00   Top Width (ft)            2389.89     114.46    1019.65
  Vel Total (ft/s)             0.30   Avg. Vel. (ft/s)             0.31       0.16       0.31
  Max Chl Dpth (ft)            8.04   Hydr. Depth (ft)             4.62       6.38       4.69
  Conv. Total (cfs)        1911362.1   Conv. (cfs)            1298635.9   43787.2   568939.0
  Length Wtd. (ft)            75.22   Wetted Per. (ft)          2392.23     114.74    1019.84
  Min Ch El (ft)            1214.57   Shear (lb/sq ft)             0.00       0.00       0.00
  Alpha                        1.03   Stream Power (lb/ft s)       0.00       0.00       0.00
  Frctn Loss (ft)              0.00   Cum Volume (acre-ft)        20.19      15.95       4.06
  C & E Loss (ft)              0.02   Cum SA (acres)               6.40       4.63       1.22


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
REACH: I-10 Reach           RS: 16.7087

INPUT
Description: 16.7087
Station Elevation Data     num=      224
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
1728.3581226.306 1772.321226.2341811.5171226.1581843.7011226.292 1871.551226.345
1886.8691226.4221941.2351226.4491951.1311226.5051965.4941226.6861970.2771226.318
 1974 521226.3051981.6191226.1561989.5961226.0772056.1461225.835 2064.581225.819
2070.8191225.7512078.8431225.6952088.2011225.6382163.7521225.3172176.1913225.237
2189.2011225.2872268.8291225.2342280.8241225.1542291.7161225.1232359.0771224.952
2366.6821225.0162374.2821225.0762381.6391225.0992388.5891225.0672479.7881225.465
2480.4521225.4632480.7531225.4452481.0391225.4842481.4441225.5362483.0991225.536
2489.0781225.5782536.9891225.596 2553.841225.0682575.7861224.8042602.0341224.641
2648.193 1224.392670.6041224.3092723.2451224.1832765.4051224.1592806.733 1224.09
2849.2821224.0562886.7811224.0242910.7271224.1872962.5761224.0712988.8631224.052
3008.5751224.3151014.1481224.5263068.1821224.5143078.6081224.5133082.069 1224.58
3088.5471224.0033092.1231223.9943098.3251223.8363104.5351223.7513201.388 1223.37
3212.7851223.362 3224.371223.2693234.6361223.2083329.9471222.8073350.625 1222.79
 3364.081222.7523449.1411222.5813465.788 1222.55 3475.921222.5143486.6011222.539
3597.0821222.3043608.0921222.3373618.3871222.2563629.8121222.2683721.5191222.172
3733.1831222.1553745.6961222.0373756.7241221.9763861.1721221.5013872.6851221.486
3884.3621221.4433983.9161221.1513997.5651221.1254010.3961221.1224020.2191221.141
4087.625 1220.94 4097.031220.8554099.2511221.0694123.867 1221.084134.6481221.114
4138.7281221.8664142.6871221.9744150.6451222.0344152.042 1222.034198.0391222.206
4207.1711222.2344232.2651222.5234234.7431222.5144297.7471221.8834304.9821221.822
4319.3571221.6884373.216  1221.8 4382.551221.616 4383.131221.463 4385.231221.522
4388.878 1215.24 4390.26  1214.34402.892  1214.34422.369  1214.34423.335  1214.3
4424.217  1214.34425.1541214.8094431.0421221.587 4431.671221.6564440.0671221.878
4513.9431221.9674537.3181221.9674562.8341221.8314631.7921221.8414656.8761221.568
 4667.291221.6784668.1171221.479 4670.221215.3294670.4151214.9064670.804  1214.3
4672.466  1214.3 4674.65  1214.34683.769  1214.34689.745  1214.34695.307  1214.3
4706.465  1214.34707.4021214.9434714.505 1221.534720.493 1221.344726.1391221.681
4736.5741221.8364804.6391221.7994822.9081221.8524839.0721221.8664907.0331221.821
4920.3261221.6534946.7541222.142  4950.91221.7224951.2821221.7674953.1281215.773
4954.645  1214.34968.879  1214.34972.058  1214.34974.295  1214.34988.979  1214.3
4993.946  1214.3 4995.081221.1654996.8981221.9165029.7541221.6945032.4631221.551
5035.2961221.3815051.9761221.563 5057.291221.6845073.9951221.6065094.9061221.707
5113.714 1221.825157.5741221.882 5181.991222.0085228.1541222.3225253.3561222.495
5295.332 1222.895320.5541222.8785335.7921222.8975402.8181223.1495438.8861223.029
5476.024 1223.055529.1171223.0435582.7821223.0445611.3831223.0065656.7591223.072
5671.7191223.0185739.8921223.3015745.1611223.2785792.5791223.4445793.3041223.462
5798.7051223.4615802.5191223.4695812.7691223.4835816.2991223.4715836.7411223.271
5853.5921223.2995879.652  1223.15898.6881223.1345913.9971222.9845940.5121222.517
5970.5091222.5125998.2461222.517  6021.41222.6426036.6061222.6816053.3891222.563
6094.0391222.6616117.7261222.5766135.0671222.3196143.879 1222.096150.7881222.109
6218.6251222.2886229.0261222.2616238.9431222.3966246.8331222.5166255.8731222.511
6332.6461222.8096337.6821222.9386349.0051222.7716358.8881222.6586365.4421222.577
6441.9881222.7926456.6741223.0276473.6291222.9516487.1411222.9426578.8371223.226
 6588.86 1223.266601.1391223.2546612.975 1223.21 6676.041223.1946686.7091223.362
6694.4431223.2686705.127 1223.196796.565 1223.316808.0631223.365

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
1728.358    .0354373.216     .034996.898     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4373.2164996.898                62 73.6675      62              .1        .3
Right Levee      Station=5813.769       Elevation=1223.483
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1222.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.035	0.030	0.035
E.G. Elev (ft)	1222.45	Reach Len. (ft)	62.00	73.67	62.00
Crit W.S. (ft)	1218.18	Flow Area (sq ft)	434.68	1218.20	103.40
E.G. Slope (ft/ft)	0.002152	Area (sq ft)	434.68	1218.20	103.40
Q Total (cfs)	5000.00	Flow (cfs)	622.92	4256.07	121.01
Top Width (ft)	1561.62	Top Width (ft)	712.24	623.68	225.69
Vel Total (ft/s)	2.85	Avg. Vel. (ft/s)	1.43	3.49	1.17
Max Chl Dpth (ft)	7.98	Hydr. Depth (ft)	0.61	1.95	0.46
Conv. Total (cfs)	107786.5	Conv. (cfs)	13428.5	91749.4	2608.7
Length Wtd. (ft)	73.67	Wetted Per. (ft)	712.33	649.69	225.71
Min Ch El (ft)	1214.30	Shear (lb/sq ft)	0.08	0.25	0.06
Alpha	1.32	Stream Power (lb/ft s)	0.12	0.88	0.07
Frctn Loss (ft)		Cum Volume (acre-ft)	10.97	14.13	0.08
C & E Loss (ft)		Cum SA (acres)	3.91	3.94	0.21

CULVERT RIVER: Harquahala
REACH: I-10 Reach RS: 16.7017

INPUT
Description:
Distance from Upstream XS = 15
Deck/Roadway Width = 38
Weir Coefficient = 2.6
Bridge Deck/Roadway Skew =
Upstream Deck/Roadway Coordinates
num= 89

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
1296.297	1229.196	1221.31301.055	1229.176	1221.31375.853	1228.884
1221.3					
1486.411	1228.427	1221.31493.063	1228.381	1221.31499.802	1228.351
1221.3					
1683.063	1227.887	1221.31690.115	1227.878	1221.31697.147	1227.852
1221.3					
1921.169	1227.19	1221.31926.619	1227.182	1221.31930.609	1227.169
1221.3					
2195.184	1226.76	1221.32202.584	1226.755	1221.3 2209.96	1226.743
1221.3					
2408.108	1226.396	1221.3 2414.44	1226.392	1221.32419.996	1226.375
1221.3					
2599.61	1226.154	1221.32600.603	1226.151	1221.32640.225	1226.115
1221.3					
2644.619	1226.106	1221.32835.465	1225.701	1221.32837.083	1225.7
1221.3					
2839.198	1225.696	1221.33037.354	1225.397	1221.33037.868	1225.396
1221.3					
3038.296	1225.396	1221.33247.583	1224.877	1221.33250.245	1224.868
1221.3					
3252.948	1224.861	1221.33431.374	1224.376	1221.33434.193	1224.368
1221.3					
3437.399	1224.361	1221.33591.757	1223.908	1221.33594.326	1223.898
1221.3					
3690.897	1223.721	1221.33805.605	1223.497	1221.33807.725	1223.494
1221.3					
3810.035	1223.484	1221.33964.441	1222.907	1221.3 4327.12	1223.633
1221.3					
4425.828	1223.565	1221.34431.928	1223.569	1221.34483.966	1223.69
1221.3					
4621.519	1223.671	1221.34628.254	1223.674	1221.34708.729	1223.514
1221.3					
4750.152	1223.765	1221.34756.188	1223.761	1221.34872.122	1223.663
1221.3					
4876.713	1223.662	1221.34987.169	1223.408	1221.34991.546	1223.704
1221.3					
4993.581	1223.705	1221.35121.704	1223.639	1221.35113.193	1223.639
1221.3					
5195.443	1223.617	1221.35238.479	1223.694	1221.35293.181	1223.75
1221.3					
5354.773	1223.836	1221.35418.001	1223.919	1221.35484.076	1223.925
1221.3					
5536.495	1223.956	1221.35577.421	1223.956	1221.35647.251	1224.009
1221.3					
5669.838	1224.074	1221.35681.121	1224.177	1221.35733.694	1224.243
1221.3					
5799.296	1224.281	1221.35800.618	1224.278	1221.35866.916	1224.396
1221.3					
5922.134	1224.479	1221.3 5980.11	1224.587	1221.36038.044	1224.6
1221.3					
6095.772	1224.566	1221.36153.401	1224.671	1221.36208.742	1224.756
1221.3					
6280.545	1224.911	1221.36333.052	1224.997	1221.36408.717	1224.918
1221.3					
6463.199	1225.078	1221.36540.933	1225.331	1221.36597.812	1225.401
1221.3					
6660.926	1225.428	1221.36699.906	1225.316	1221.36761.097	1225.29
1221.3					
6813.479	1225.379	1221.36831.019	1225.414	1221.3	

Upstream Bridge Cross Section Data
Station Elevation Data num= 224

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1728.358	1226.308	1772.32	1226.234	1811.517	1226.158	1843.701	1226.292	1871.55	1226.345
1886.869	1226.422	1941.235	1226.449	1951.131	1226.505	1965.494	1226.686	1970.277	1226.318
1974.52	1226.305	1981.619	1226.156	1989.596	1226.077	2056.146	1225.835	2064.58	1225.819
2070.819	1225.751	2078.843	1225.695	2088.201	1225.638	2163.752	1225.317	2176.191	1225.237
2189.201	1225.287	2268.829	1225.234	2280.824	1225.154	2291.716	1225.123	2359.077	1224.952
2368.682	1225.016	2374.282	1225.076	2381.639	1225.099	2388.589	1225.067	2479.788	1225.465
2480.452	1225.463	2480.753	1225.445	2481.039	1225.484	2481.444	1225.536	2483.099	1225.536
2489.078	1225.578	2536.989	1225.596	2553.84	1225.068	2575.786	1224.804	2602.034	1224.641
2648.193	1224.392	2670.604	1224.309	2723.245	1224.183	2765.405	1224.159	2806.723	1224.09
2849.282	1224.056	2886.781	1224.024	2910.727	1224.187	2962.576	1224.071	2988.863	1224.052
3008.575	1224.315	3014.148	1224.526	3068.182	1224.514	3078.608	1224.513	3082.069	1224.58
3088.547	1224.003	3092.123	1223.994	3098.325	1223.816	3104.535	1223.751	3201.388	1223.37
3212.785	1223.362	3224.37	1223.269	3234.636	1223.208	3329.947	1222.807	3350.625	1222.79
3364.08	1222.752	3449.141	1222.581	3465.788	1222.55	3475.92	1222.514	3486.601	1222.538
3597.082	1222.304	3608.092	1222.337	3618.387	1222.256	3629.812	1222.268	3721.519	1222.172
3733.183	1222.155	3745.696	1222.037	3756.724	1221.976	3861.172	1221.501	3872.685	1221.486
3884.362	1221.443	3983.916	1221.151	3997.565	1221.125	4010.396	1221.122	4020.219	1221.141
4087.625	1220.94	4097.03	1220.855	4099.251	1221.069	4123.867	1221.08	4134.648	1221.114
4138.728	1221.866	4142.687	1221.974	4150.645	1222.034	4152.042	1222.03	4198.039	1222.206
4207.171	1222.234	4232.265	1222.523	4234.743	1222.514	4297.747	1221.883	4304.982	1221.822
4319.357	1221.688	4373.216	1221.8	4382.55	1221.616	4383.13	1221.463	4385.23	1221.522
4388.678	1215.24	4390.26	1214.34	4402.892	1214.34	4422.369	1214.34	4423.335	1214.3
4424.217	1214.34	4425.154	1214.809	4431.042	1221.587	4431.67	1221.656	4440.067	1221.878
4513.943	1221.967	4537.318	1221.967	4562.834	1221.831	4631.792	1221.841	4656.676	1221.568
4667.291	1221.678	4668.117	1221.479	4670.22	1215.329	4670.415	1214.906	4670.804	1214.3
4672.466	1214.3	4674.65	1214.34	4683.769	1214.34	4689.745	1214.34	4695.307	1214.3
4706.465	1214.34	4707.402	1214.943	4714.505	1221.534	4720.493	1221.344	4726.139	1221.681
4736.574	1221.836	4804.639	1221.799	4822.908	1221.852	4839.072	1221.866	4907.033	1221.821
4920.326	1221.653	4946.754	1222.142	4950.91	1221.722	4951.282	1221.767	4953.128	1215.773
4954.645	1214.34	4968.879	1214.34	4972.058	1214.34	4974.295	1214.34	4988.979	1214.3
4993.946	1214.3	4995.08	1221.165	4996.898	1221.916	5029.754	1221.694	5032.463	1221.551
5035.296	1221.381	5051.976	1221.563	5057.291	1221.684	5073.995	1221.606	5094.906	1221.707
5113.714	1221.825	5157.574	1221.882	5181.99	1222.008	5228.154	1222.322	5253.356	1222.495
5295.332	1222.895	5320.554	1222.878	5335.792	1222.897	5402.818	1223.149	5438.886	1223.029
5476.024	1223.055	5529.117	1223.043	5582.782	1223.044	5611.383	1223.006	5656.759	1223.072

```
5671.7191223.0185739.8921223.3015745.1611221.2785791.5791223.4445793.3041223.462
5798.7051223.4615802.5191223.4695815.7691223.4835816.2991223.4715836.7411223.271
5853.5921223.2995879.652  1223.15898.6861223.1345913.9971222.9845940.5121222.517
5970.5091222.5125998.2461222.537  6021.41222.6426036.6081222.6816053.3891222.563
6094.0391222.6616117.7261222.5766135.0671222.3196143.879 1222.096150.7881222.109
6218.6251222.2886229.0261222.2616238.9421222.3966246.8331222.5166255.8731222.511
6332.6461222.8096337.6821222.9386349.0051222.7716358.8881222.6586365.4421222.577
6441.9881222.7926456.6741223.0276475.6291222.9516487.1411222.9426578.8371223.226
 6588.86 1223.266601.1391223.2546612.975 1223.21 6676.041223.1946686.7091223.362
6694.4431223.2686705.127 1223.196796.565 1223.316808.0631223.365

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
1728.358     .0354373.216      .034996.898     .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
      4373.2164996.898            .1        .3
Right Levee      Station=5813.769       Elevation=1223.483

Downstream  Deck/Roadway Coordinates
    num=        89
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
1296.2971229.196 1221.071301.0551229.178 1221.071375.8531228.884 1221.07
1486.4111228.427 1221.071493.0631228.381 1221.071499.8021228.351 1221.07
1683.0631227.887 1221.071690.3151227.878 1221.071697.1471227.852 1221.07
1921.169 1227.19 1221.071926.6191227.182 1221.071930.6051227.169 1221.07
2195.184 1226.76 1221.072202.5841226.755 1221.07 2209.961226.743  1221.07
2408.1091226.296 1221.07 2414.441226.392 1221.072419.9961226.375 1221.07
  2599.61226.154 1221.072600.6031226.151 1221.072640.2251226.115 1221.07
2644.6191226.106 1221.072835.4651225.701 1221.072837.083  1225.7 1221.07
2839.1981225.696 1221.073037.3541225.397 1221.073037.8681225.396 1221.07
3038.2961225.396 1221.073247.5831224.877 1221.073250.2451224.868 1221.07
3252.9481224.861 1221.073431.3741224.376 1221.073434.1931224.368 1221.07
3437.3991224.361 1221.073591.7571223.908 1221.073594.3261223.898 1221.07
3690.8971223.721 1221.073805.6051223.497 1221.073807.7251223.494 1221.07
3810.0351223.484 1221.073964.4411222.907 1221.07 4327.121223.633 1221.07
4425.8281223.565 1221.074431.9281223.569 1221.074483.966 1223.69 1221.07
4621.5191223.671 1221.074628.2541223.674 1221.074708.7291223.614 1221.07
4750.1521223.765 1221.074756.1881223.761 1221.074872.1221223.663 1221.07
4876.7131223.662 1221.074987.1691223.408 1221.074991.5461223.704 1221.07
4993.5811223.705 1221.075111.7041223.639 1221.075113.1931223.639 1221.07
5195.4431223.617 1221.075238.4791223.694 1221.075293.181 1223.75 1221.07
5354.7731223.836 1221.075418.0011223.919 1221.075484.0761223.925 1221.07
5536.4951223.956 1221.075577.4211223.956 1221.075647.2511224.009 1221.07
5669.8381224.074 1221.075681.1211224.177 1221.075733.6941224.243 1221.07
5799.2961224.281 1221.075800.6181224.278 1221.075866.9161224.396 1221.07
5922.1341224.479 1221.07  5980.11224.587 1221.076038.044  1224.6 1221.07
6095.7721224.566 1221.076153.4011224.671 1221.076208.7421224.756 1221.07
6280.5451224.911 1221.076333.0521224.997 1221.076408.7171224.918 1221.07
6463.1991225.078 1221.076540.9331225.331 1221.076597.8121225.401 1221.07
6660.9261225.418 1221.076699.9061225.316 1221.076761.007 1225.29 1221.07
6813.4791225.379 1221.076831.0191225.414 1221.07

Downstream Bridge Cross Section Data
Station Elevation Data     num=      210
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1734.5761226.1421774.4281225.9121791.2031225.8531831.5041225.9481864.4451226.167
1896.2871226.1521917.6321226.2821941.7821226.3041964.5091226.3541967.8851226.363
1991.0461226.5131993.0831226.5051993.5751226.4522014.637 1226.132016.6011226.001
2018.2381225.9842031.6471225.9112031.8661225.9192032.1961225.9172050.6571226.168
2063.3081225.6982074.4121225.6922111.1931225.3092147.3541225.3132189.018  1225.1
 2243.871225.0812275.5171224.9842335.884 1224.972367.0181224.9712409.0541224.836
 2437.81 1225.182466.7271225.4952484.7051225.4392508.5381225.494 2516.251225.627
2558.3991225.8072563.784 1225.792603.9791225.5862642.6451224.9112677.4311224.865
2700.508 1224.832700.633 1224.832700.7981224.8282731.1621224.0462752.676 1224.13
2796.8821224.1072827.0931224.0412841.1791223.9392898.3431223.7892925.4051223.789
2948.6261223.7682967.7771224.0913023.4291223.9983041.9151224.1633059.7111224.352
3066.7941224.5283071.0511224.7143111.1871224.7183128.3391224.6873145.1151224.256
3152.9231223.9153164.5961223.611 3200.011223.4763221.4441223.2323237.5371223.157
3262.2641223.1333317.4941222.967 3338.941222.7883348.5861222.8583358.673 1222.91
 3366.031222.9013437.257 1222.653446.4011222.5673453.624 1222.663460.6971222.689
3466.993 1222.61 3547.681222.4613555.0611222.5363563.0381222.3043570.2371222.206
3577.819 1222.253682.0181221.9473691.1981221.8653700.7811221.816 3709.811221.875
3717.4751221.9213725.0051221.8823832.5191221.6373842.6371221.5553853.7381221.518
3862.9571221.4653926.8371221.342 3935.051221.4443943.8431221.4023951.8621221.359
4014.428 1221.114023.5831221.122 4031.891221.0854040.656 1221.074117.6241221.148
4128.4241221.1974139.2531221.1484178.9041221.0844190.7931221.4844196.8831221.768
4259.546 1221.914266.8531221.9074273.538 1221.954326.213 1222.064350.5831221.662
4390.6671221.8114393.5141221.8224398.8261219.5994401.256 1214.074405.641 1214.07
4434.999 1214.074436.656 1214.074438.9351215.469 4441.891221.441 4443.331221.703
4491.8341221.6834524.502 1221.914541.4451221.9834607.6211221.9974621.2821221.854
4634.6871221.3424644.6841220.5494677.2551220.7224678.5361220.6014681.1541215.917
 4684.27 1214.074690.676 1214.074698.358 1214.074721.182 1214.074722.7171215.649
4724.9911221.389 4725.981221.7084727.099 1221.894728.7441221.9374805.3581221.957
4810.7441221.9844816.073 1222.074895.305 1222.134901.1061222.2044903.8441222.137
4907.146 1221.854918.8521221.5344961.4311221.6454963.248 1221.434968.951 1214.07
 4969.98 1214.074974.042 1214.07  5004.3 1214.075006.0571214.7815010.9361222.052
5016.2531222.0515020.7791222.0755023.4951221.9855045.3261222.441 5064.041221.955
5071.2921222.1715085.6091222.1625136.4081222.1165199.3131222.1665218.102 1222.19
5291.262 1222.415339.6971222.6445366.168 1222.695417.8041222.4535479.854 1222.69
5489.1851222.6925558.9831222.7055588.3631222.746 5625.571222.7875626.1241222.792
5652.7551222.8375692.2361222.8935710.2441222.9295732.477 1222.965733.7891222.929
5741.894 1222.925764.9931222.7985765.1051222.7995848.0991222.9925864.7071223.034
5940.5391223.1696021.9821223.2256026.9391223.2366124.5511223.3756138.3711223.388
6211.4581223.3186222.4941223.2996222.7891223.2966223.1071223.2966317.5911223.195
6318.8111223.1956319.215  1223.26320.0071223.1956410.1931223.2296411.854 1223.24
6413.3821223.2616478.567 1223.486519.1311223.6036526.9671223.616 6592.311223.838
6649.5141223.684 6661.041223.7016678.3751223.659 6737.691224.1656763.0591224.122
6777.3791224.0956809.1021224.1716859.3461224.218

Manning's n Values          num=        3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
1734.576    .0354393.514     .035010.936    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
      4393.5145010.936              .1       .3

Upstream Embankment side slope                =       0 horiz. to 1.0 vertical
Downstream Embankment side slope              =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =      .95
Elevation at which weir flow begins           =
Energy head used in spillway design           =
Spillway height used in design                =
Weir crest shape                              = Broad Crested

Number of Culverts =  1

Culvert Name      Shape       Rise     Span
Culvert #1          Box          7       16
FHWA Chart # 58- Rectangular concrete
FHWA Scale # 2 - Side tapered; More favorable edges
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                  7      62       .014                   .3                1
Number of Barrels =  9
Upstream   Elevation =  1214.3
Centerline Stations
    Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.
    4396     4407     4418     4678     4689     4700     4964     4975     4986
Downstream Elevation =  1214.07
Centerline Stations
    Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.
    4406     4417     4428     4691     4702     4713   4975.5   4986.5   4997.5

CROSS SECTION           RIVER: Harquahala
REACH: I-10 Reach          RS: 16.6948

INPUT
Description: 16.6948
Station Elevation Data     num=      213
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
1734.5761226.1421774.4281225.9121791.2031225.8531831.5041225.9481864.4451226.167
1896.2871226.1521917.6321226.2821941.7821226.3041964.5091226.3541967.8851226.363
1991.0461226.5131993.0831226.5051993.5751226.4522014.637 1226.132016.6011226.001
2018.2381225.9842031.6471225.9112031.8661225.9192032.1961225.9172050.6571226.168
2063.3081225.6982074.4121225.6922111.1931225.3092147.3541225.3132189.018  1225.1
 2243.871225.0812275.5171224.9842335.884 1224.972367.0381224.9712409.0541224.836
 2437.81 1225.182466.7271225.4952484.7051225.4392508.5381225.494 2516.251225.627
2558.3991225.8072563.784 1225.792603.9791225.5862642.6451224.9112677.4311224.865
2700.508 1224.832700.633 1224.832700.7981224.8282731.1621224.0462752.676 1224.13
2796.8821224.1072817.0931224.0412841.1791223.9392898.3431223.7892925.4051223.789
2948.6261223.7682967.7771224.0913023.4291223.9983041.9151224.1633059.7111224.352
3066.7941224.5283071.0511224.7143111.1871224.7183128.3391224.6873145.1151224.256
3152.9231223.9153164.5961223.611 3200.011223.4763221.4441223.2323237.5371223.157
3262.2641223.1333317.4941222.967 3338.941222.7883348.5861222.8583358.673 1222.91
 3366.031222.9013437.257 1222.653446.4011222.5673453.624 1222.663460.6971222.689
3466.993 1222.61 3547.681222.4613555.0611222.5363563.0181222.3043570.2371222.206
3577.819 1222.253682.9181221.9473691.1981221.8653700.7811221.816 3709.811221.875
3717.4751221.9213725.0051221.8823832.5191221.6373842.6371221.5553853.7381221.518
3862.9571221.4653926.8371221.342 3935.051221.4443943.8431221.4023951.8621221.359
4014.428 1221.114023.5831221.122 4031.891221.0854040.656 1221.074117.6241221.148
4128.4241221.1974139.2531221.1484178.9041221.0844190.7931221.4844196.8831221.768
4259.546 1221.914266.8531221.9074273.538 1221.954326.213 1222.064350 5831221.662
4390.6671221.8114393.5141221.8224398.8261219.5994401.256 1214.074405.641 1214.07
4434.999 1214.074436.656 1214.074438.9351215.469 4441.891221.441 4443.331221.703
4491.8341221.6834524.502 1221.924541.4451221.9834607.6211221.9974621.2821221.854
4634.6871221.3424644.6841220.5494677.2551220.7224678.5361220.6014681.1541215.917
 4684.27 1214.074690.676 1214.074698.358 1214.074721.182 1214.074722.7171215.649
4724.9911221.389 4725.981221.7084727.099 1221.894728.7441221.9374805.3581221.957
4810.7441221.9844816.073 1222.074895.305 1222.134901.1061222.2044903.8441222.137
4907.146 1221.854918.8521221.5344961.4311221.6454963.248 1221.434968.951 1214.07
 4969.98 1214.074974.042 1214.07  5004.3 1214.075006.0571214.7815010.9361222.052
5016.2531222.0515020.7791222.0755023.4951221.9855045.3261222.441 5064.041221.955
5071.2921222.1715085.6091222.1625136.4081222.1165199.3131222.1665218.102 1222.19
5291.262 1222.415339.6971222.6445366.168 1222.695417.8041222.4535479.854 1222.69
5489.1851222.6925558.9831222.7055588.3631222.746 5625.571222.7875626.1241222.792
5652.7551222.8375692.2361222.8935710.2441222.9295732.477 1222.965733.7891222.929
5741.894 1222.925764.9931222.7985765.1051222.7995848.0991222.9925864.7071223.034
5940.5391223.1696021.9821223.2256026.9391223.2366124.5511223.3756136.3711223.388
6211.4581223.3186222.4941223.2996222.7891223.2966223.1071223.2966317.5911223.195
6318.8111223.1956319.215  1223.26320.0071223.1956410.1931223.2296411.854 1223.24
6413.3821223.2616478.567 1223.486519.1311223.6036526.9671223.616 6592.311223.838
6649.5141223.684 6661.041223.7016678.3751223.659 6737.691224.1656763.0591224.122
6777.3791224.0956809.1021224.1716859.3461224.218

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
1734.576    .0354393.514     .035010.936    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4393.5145010.936                88101.2588      86              .1       .3

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1221.02   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.50   Wt. n-Val.                            0.030
  E.G. Elev (ft)          1221.52   Reach Len. (ft)              88.00    101.26     86.00
  Crit W.S. (ft)                    Flow Area (sq ft)                     882.24
  E.G. Slope (ft/ft)     0.001825   Area (sq ft)                          882.24
  Q Total (cfs)          5000.00    Flow (cfs)                           5000.00
  Top Width (ft)          179.09    Top Width (ft)                        179.09
  Vel Total (ft/s)          5.67    Avg. Vel. (ft/s)                        5.67
```

Max Chl Dpth (ft)	6.95	Hydr. Depth (ft)		4.93		
Conv. Total (cfs)	117026.7	Conv. (cfs)		117026.7		
Length Wtd. (ft)	97.53	Wetted Per. (ft)		201.30		
Min Ch El (ft)	1214.07	Shear (lb/sq ft)		0.50		
Alpha	1.00	Stream Power (lb/ft s)		2.83		
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	10.66	12.35	0.00	
C & E Loss (ft)	0.15	Cum SA (acres)	3.41	3.26	0.05	

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: I-10 Reach RS: 16.6789

INPUT
Description: 16.6789
Station Elevation Data num= 409

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
1791.091 1220.765 1793.265 1220.777 1795.276 1220.773 1850.062 1220.661 1852.483 1220.682
1894.968 1220.991 1897.72 1221.008 1899.916 1221.012 1902.628 1220.977 1950.401 1221.063
1954.017 1221.004 1958.627 1220.993 1961.838 1220.965 2000.623 1220.878 2005.542 1220.836
2009.262 1220.772 2009.922 1220.584 2011.924  1219.82 2019.138  1219.82 2044.695  1219.8
2052.567 1220.833 2055.513  1221.12 2078.825 1223.772 2084.378 1224.486 2084.848 1224.517
  2092.81 1224.818 2094.525 1224.776 2104.834 1224.446 2112.378 1223.372 2115.156 1223.033
2128.527 1221.813 2145.219 1220.269 2148.538 1220.236 2160.996 1220.288 2174.503 1220.304
2179.218 1220.299 2182.636 1220.326 2234.737 1220.628 2238.576 1220.628 2240.777  1220.6
2243.966 1220.829 2287.038 1220.602 2292.465 1220.602 2297.079 1220.625 2345.427 1220.621
2349.067 1220.589 2352.203 1220.552 2387.279 1220.137 2390.617 1220.111 2393.521 1220.106
2395.583 1220.105 2432.506 1219.944 2436.826 1219.903 2458.976 1219.828 2465.045 1219.796
2473.574 1219.777 2498.316 1219.702 2505.947 1219.732 2530.632 1220.031 2535.869 1219.988
2538.537 1220.059 2563.93 1220.242 2564.057 1220.238 2568.383 1219.896 2570.603 1219.891
2602.499 1219.973 2607.708 1219.983 2608.014 1219.982 2608.143 1219.998 2635.834 1223.476
2642.456 1223.621 2646.896 1223.706 2650.667 1223.581  2660.11 1223.368 2678.637 1221.745
2691.403 1220.581 2703.101 1220.471 2705.955 1220.417 2719.063 1219.712 2722.212 1219.609
 2755.24 1219.451 2756.69 1219.44 2758.61 1219.418 2799.96 1219.267 2803.376 1219.252
2840.392 1218.757 2843.804 1218.731 2881.568 1218.475 2885.26 1218.435 2890.727 1218.412
 2929.19 1218.103 2934.677 1218.075 2973.779 1218.076 2979.016 1218.046 3016.154 1217.915
3020.045 1217.909 3023.374 1217.906 3049.135 1217.685 3052.328 1217.655 3077.329 1217.422
3079.159 1217.418 3081.13  1217.43 3106.665 1217.358 3108.111 1217.385 3110.163 1217.345
3121.039 1217.198 3140.949 1217.221 3163.785 1217.303 3167.67 1217.726 3175.552 1218.834
3177.565 1219.127 3178.488 1219.278 3192.649 1221.748 3202.929 1222.01 3204.96 1222.054
3207.307 1222.127 3209.812 1222.002 3222.633 1221.498 3240.99 1218.48 3245.143 1217.695
3259.528 1217.573 3270.709 1217.456 3274.614 1217.44 3316.87 1217.277 3322.996 1217.301
3346.828 1217.325 3352.703 1217.365 3376.24 1217.214 3383.139 1217.206 3389.26 1217.168
3417.656 1217.406 3423.985 1217.412 3463.42 1217.202 3471.997 1217.202 3512.175 1217.176
 3518.26 1217.194 3526.425 1217.164 3560.044 1217.191 2566.12 1217.153 3603.496 1217.059
3608.534 1217.021 3612.552 1217.039 3654.854 1216.839 3658.572 1216.824 3693.37 1216.923
3697.983 1216.938 3719.686 1216.693 3726.008 1216.653 3765.532 1216.586 3770.955 1216.587
3818.623 1216.373 3823.921 1216.344 3828.673 1216.325 3872.238 1216.007 3876.263 1215.987
3903.356 1215.841 3906.516 1215.868 3954.84 1215.983 3958.37 1215.983 3964.529 1215.888
4020.124 1215.714 4024.286 1215.714 4028.74 1215.714 4088.30 1215.654 4092.26 1215.64
4129.854 1215.527 4134.044 1215.53 4182.45 1215.537 4185.74 1215.535 4187.595 1215.525
4227.967 1215.543 4228.669 1215.601 4237.66 1216.174 4239.569 1216.171 4258.104 1216.053
4259.551 1216.064 4283.863 1216.064 4284.407 1216.08 4296.55 1216.407 4302.816 1216.606
4317.838 1216.729 4318.284 1216.734 4321.354 1216.743 4336.306 1216.94 4339.81 1217.081
4346.405 1217.669 4359.126 1218.924 4374.872 1219.237 4380.963 1219.404 4383.031 1219.437
 4392.21 1216.929 4400.012 1217.731 4428.736 1214.33 4433.45 1214.377 4444.909 1216.538
 4445.53 1216.701 4447.406 1216.668 4472.271 1216.129 4496.653 1215.998 4511.734 1215.846
4593.158 1215.435 4594.15 1215.444 4594.729 1215.437 4595.092 1215.436 4602.255 1215.453
4665.287 1215.626 4667.80 1215.64 4670.947 1215.55 4674.91 1215.374 4687.475 1214.606
4691.387 1214.368 4699.073 1214.303 4718.392 1214.313 4722.826 1214.782 4728.98 1215.45
4735.161 1215.425 4739.733 1215.409 4799.596 1215.56 4804.84 1215.578 4809.797 1215.597
4859.135 1215.791 4880.985 1215.869 4882.836 1215.874 4885.399 1215.88 4945.96 1215.967
4951.264 1215.968 4954.984 1215.968 4958.28 1215.51 4966.656 1214.256 4970.34 1214.23
5001.77 1214.28 5013.155 1218.336 5022.414 1221.608 5042.423 1221.375 5048.097 1221.252
5065.075 1219.538 5097.867 1216.425 5099.036 1216.489 5111.571 1216.662 5119.37 1216.62
5134.166 1216.661 5148.185 1216.763 5177.404 1216.223 5181.574 1216.281 5186.838 1216.376
5203.021 1216.186 5209.011 1216.119 5247.755 1216.349 5248.919 1216.338 5249.292 1216.334
5277.715 1216.437 5302.56 1216.545 5303.307 1216.53 5312.86 1216.559 5362.133 1216.828
5372.448 1216.984 5390.146 1216.948 5415.54 1216.85 5416.228 1216.851 5417.393 1216.884
5418.281 1216.853 5420.45 1216.885 5452.042 1216.692 5453.65 1216.72 5457.375 1216.575
5458.739 1216.624 5461.643 1216.604 5465.129 1215.916 5468.33 1215.54 5470.793 1215.691
5477.995 1216.359 5480.979 1216.19 5480.99 1216.196 5481.503 1216.198 5503.927 1215.978
5508.504 1215.838 5525.879 1215.65 5529.97 1215.732 5537.083 1216.153 5539.312 1216.052
5548.116 1216.194 5553.907 1216.125 5559.15 1215.622 5564.734 1215.585 5575.035 1215.185
5578.982 1215.332 5579.977 1215.28 5590.59 1215.05 5591.08 1215.027 5594.111 1215.055
5597.062 1215.404 5601.408 1215.765 5602.784 1215.623 5608.621 1215.713 5622.386 1216.057
 5627.49 1216.027 5629.238 1215.983 5635.378 1216.543 5638.104 1216.422 5640.253 1216.695
5644.002 1216.802 5651.125 1216.744 5661.118 1216.754 5677.033 1216.602 5679.227 1216.607
5682.127 1216.582 5686.507 1216.451 5689.104 1216.419 5690.829 1216.379 5697.659 1216.219
5713.297 1216.283 5715.228 1216.267 5736.834 1216.396 5739.337 1216.419 5739.744 1216.427
5752.993 1216.522 5762.211 1216.667 5774.716 1216.917 5788.088 1217.439 5794.614 1217.48
5811.592 1217.629 5820.658 1217.554 5838.931 1217.679 5845.489 1217.642 5849.395 1217.626
 5865.83 1217.628 5875.425 1217.548 5889.73 1217.515 5906.758 1217.595 5917.849 1217.742
 5935.28 1217.732 5953.633 1217.779 5962.45 1217.867 5964.692 1217.877 5982.77 1218.085
 5993.61 1218.241 6004.679 1218.225 6016.021 1218.171 6047.388 1218.22 6058.55 1218.347
6071.132 1218.508 6086.559 1218.533 6107.708 1218.573 6133.533 1218.42 6126.03 1218.114
6127.216 1218.087 6130.647 1218.016 6138.159 1217.793 6139.491 1217.765 6149.487 1217.448
 6156.29 1217.241  6160.11 1217.284 6174.672 1217.444 6179.724 1217.279 6181.035 1217.268
6181.236 1217.246 6198.455 1216.632 6208.122 1216.187 6211.727 1216.142 6219.258 1216.061
6231.211 1216.411 6236.862 1216.462 6268.212 1216.305 6281.60 1216.266 6304.917 1216.634
6319.689 1216.779 6342.798 1217.033 6357.021 1217.286 6361.851 1217.521 6376.268 1217.853
6377.417 1217.849 6377.772 1217.848 6388.996 1217.802 6391.883 1217.734 6415.107 1217.785
 6421.95 1217.676 6425.339 1217.699 6444.647 1217.989 6447.148 1218.025 6449.352 1218.071
6467.853 1218.309 6486.834 1218.299 6491.963 1218.273 6522.402 1218.027 6527.54 1217.987
6568.084 1218.035 6579.375 1218.078 6611.029 1218.191 6622.725 1218.182 6638.07 1218.218
6657.283 1218.285 6658.251 1218.245 6659.536 1218.213 6670.773 1217.977 6681.094 1217.575
 6688.61 1217.755 6698.561 1218.114 6708.11 1218.214 6713.826 1218.282 6752.62 1219.039
6755.167 1219.094 6756.36 1219.119 6757.637 1219.137 6789.232 1219.355 6799.579 1219.442
```

6838.1191219.4656855.2791219.4756892.7461219.6166939.4131219.674

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1791.091	.035	4383.031	.035	5022.414	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4383.0	5022.414	67	77.7151	68	.1	.3

Left Levee Station=3207.307 Elevation=1222.127
Right Levee Station=5022.414 Elevation=1221.608

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1221.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.035	0.035	
E.G. Elev (ft)	1221.37	Reach Len. (ft)	67.00	77.72	68.00
Crit W.S. (ft)	1216.47	Flow Area (sq ft)	5465.71	3713.32	
E.G. Slope (ft/ft)	0.000019	Area (sq ft)	5465.71	3713.32	
Q Total (cfs)	5000.00	Flow (cfs)	2809.88	2190.12	
Top Width (ft)	1798.27	Top Width (ft)	1159.58	638.69	
Vel Total (ft/s)	0.54	Avg. Vel. (ft/s)	0.51	0.59	
Max Chl Dpth (ft)	7.63	Hydr. Depth (ft)	4.71	5.81	
Conv. Total (cfs)	1160490.5	Conv. (cfs)	652168.7	508321.9	
Length Wtd. (ft)	73.91	Wetted Per. (ft)	1160.02	641.34	
Min Ch El (ft)	1213.73	Shear (lb/sq ft)	0.01	0.01	
Alpha	1.01	Stream Power (lb/ft s)	0.00	0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	5.14	7.01	0.00
C & E Loss (ft)	0.01	Cum SA (acres)	2.23	2.31	0.05

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: I-10 Reach RS: 16.6642

INPUT
Description: 16.6642
Station Elevation Data num= 206

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1758.569	1225.445	1814.828	1225.357	1840.739	1225.437	1867.282	1225.699	1922.442	1225.593
1932.181	1225.575	1978.282	1225.377	2010.024	1225.541	2044.108	1225.427	2065.928	1225.474
2080.799	1225.521	2092.115	1225.492	2111.517	1225.406	2125.092	1225.321	2141.224	1224.87
2180.009	1224.783	2209.336	1224.606	2240.508	1224.334	2271.153	1224.308	2309.594	1224.25
2343.641	1224.193	2374.518	1224.408	2405.944	1224.453	2436.513	1224.336	2469.566	1224.366
2506.613	1224.291	2531.277	1224.561	2550.047	1224.647	2560.418	1224.785	2600.923	1224.608
2605.436	1224.712	2615.09	1224.862	2621.785	1224.963	2642.223	1224.926	5.104	1224.73
2671.748	1224.587	2697.103	1224.593	2717.15	1224.136	2737.912	1223.727	79.046	1223.708
2810.97	1223.608	2860.868	1223.504	2902.407	1223.38	2970.59	1223.183	3015.564	1223.358
3066.42	1223.303	3096.022	1223.495	3111.566	1223.501	3125.69	1223.657	3134.989	1223.823
3138.574	1223.995	3184.266	1223.888	3208.845	1223.863	3213.514	1223.799	3223.904	1223.583
3227.877	1223.592	3245.593	1223.235	3269.979	1222.957	3294.256	1222.883	3333.125	1222.392
3362.18	1222.28	3395.956	1222.173	3446.949	1222.006	3472.036	1221.583	481.419	1221.604
3492.626	1221.583	502.478	1221.569	3609.938	1221.362	3622.61	1221.333	3631.719	1221.296
3639.647	1221.184	3646.151	1221.213	724.974	1221.104	3734.812	1221.138	3742.101	1221.147
3752.885	1221.062	3764.459	1220.962	3859.664	1220.644	3875.431	1220.641	3887.849	1220.636
3897.815	1220.546	3976.647	1220.423	985.399	1220.506	3992.461	1220.497	4004.872	1220.316
4078.069	1219.86	4090.6	1219.924	102.604	1219.946	4111.977	1219.935	4168.04	1219.794
4179.633	1219.675	4194.558	1219.715	4256.399	1219.557	4268.379	1220.279	4270.346	1220.301
4275.422	1220.837	4308.89	1220.776	4354.642	1220.841	4382.43	1221.433	4392.47	1220.895
4394.359	1220.954	395.736	1215.135	4399.76	1213.24	416.896	1213.24	422.955	1213.2
4431.597	1213.24	435.434	1213.24	436.562	1217.529	4440.757	1220.561	4442.296	1220.561
4473.212	1220.387	4521.474	1220.875	4584.825	1220.642	4625.863	1220.622	4658.056	1220.582
4675.597	1220.867	4678.54	1220.887	4678.649	1220.291	4680.245	1213.24	682.76	1213.2
4709.335	1213.24	712.382	1213.24	718.512	1213.2	4718.64	1213.24	721.373	1217.663
4725.174	1220.454	4727.054	1220.251	4754.341	1220.275	4767.363	1219.949	4776.577	1220.439
4787.182	1220.654	4802.647	1220.622	4873.181	1220.438	4890.424	1220.413	4905.467	1220.537
4954.138	1220.472	4960.177	1220.654	960.598	1220.796	4963.356	1217.288	4966.083	1213.2
4968.543	1213.25	000.868	1213.25	003.189	1213.25	007.079	1213.25	013.921	1221.432
5016.761	1221.554	5024.659	1221.592	5035.29	1221.715	5042.493	1221.621	5050.497	1221.337
5080.533	1221.433	5098.426	1221.462	5141.017	1221.393	5163.719	1221.478	5213.548	1221.475
5224.957	1221.417	5276.386	1221.198	5281.439	1221.167	5281.708	1221.167	5281.993	1221.163
5304.465	1221.257	5362.334	1221.475	5367.092	1221.469	5427.164	1221.509	5501.745	1221.44
5502.227	1221.44	5571.48	1221.642	5581.761	1221.653	5629.594	1221.861	5643.122	1221.874
5699.334	1221.975	5747.731	1222.089	5766.051	1222.098	5815.703	1221.812	5830.058	1221.703
5837.552	1221.722	5924.289	1221.952	5924.735	1221.953	5924.845	1221.953	5924.896	1221.954
5924.974	1221.953	5934.662	1221.939	5994.479	1221.824	6001.896	1221.843	6073.986	1221.887
6085.756	1221.903	6149.424	1221.992	6223.008	1221.965	6235.445	1221.956	6301.607	1222.128
6319.35	1222.176	6387.035	1222.292	6405.972	1222.273	6488.868	1222.265	6511.173	1222.35
6571.706	1222.622	6595.632	1222.575	6654.768	1222.554	6715.703	1222.738	6743.396	1222.833
6810.526	1222.863	6818.966	1222.875	6879.179	1223.076	6893.163	1223.076	6952.06	1222.836
6999.42	1222.672								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1758.569	.035	4382.43	.035	5013.921	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4382.43	5013.921	76	90.3017	79	.1	.3

Right Levee Station=5013.921 Elevation=1221.432

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1221.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.035	0.030	
E.G. Elev (ft)	1221.35	Reach Len. (ft)	76.00	90.30	79.00
Crit W.S. (ft)	1216.96	Flow Area (sq ft)	547.22	1355.98	
E.G. Slope (ft/ft)	0.001519	Area (sq ft)	547.22	1355.98	
Q Total (cfs)	5000.00	Flow (cfs)	743.80	4256.20	
Top Width (ft)	1362.12	Top Width (ft)	734.86	627.26	
Vel Total (ft/s)	2.63	Avg. Vel. (ft/s)	1.36	3.14	

Max Chl Dpth (ft)	8.02	Hydr. Depth (ft)	0.74	2.16	
Conv. Total (cfs)	128298.3	Conv. (cfs)	19085.7	109212.6	
Length Wtd. (ft)	90.30	Wetted Per. (ft)	734.92	653.94	
Min Ch El (ft)	1213.20	Shear (lb/sq ft)	0.07	0.20	
Alpha	1.25	Stream Power (lb/ft s)	0.10	0.62	
Frctn Loss (ft)		Cum Volume (acre-ft)	0.51	2.49	0.00
C & E Loss (ft)		Cum SA (acres)	0.78	1.18	0.05

CULVERT RIVER: Harquahala
REACH: I-10 Reach RS: 16.6556

INPUT
Description:
Distance from Upstream XS = 15
Deck/Roadway Width = 38
Weir Coefficient = 2.6
Bridge Deck/Roadway Skew =
Upstream Deck/Roadway Coordinates
num= 97

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
1816.1391226.294	1220.21927.866	1226.11	1220.21971.5141225.991		1220.2
2039.3371225.901	1220.2	2096.981225.792	1220.22187.1661225.656		1220.2
2252.6751225.541	1220.2	2310.941225.464	1220.22432.5551225.355		1220.2
2514.0481225.272	1220.22566.9391225.155		1220.22623.9691225.155		1220.2
2751.1471224.887	1220.22795.311	1224.76	1220.2	2854.451224.661	1220.2
2965.1971224.436	1220.23021.4311224.332		1220.23077.4681224.149		1220.2
3135.1121224.076	1220.23239.9531223.861		1220.23287.9811223.847		1220.2
3333.9251223.663	1220.23420.4381223.446		1220.2	3471.011223.226	1220.2
3524.2331223.134	1220.23647.1141222.801		1220.23690.7041222.628		1220.2
3734.3541222.506	1220.23777.9761222.451		1220.23874.4141222.257		1220.2
3923.729 1222.21	1220.23969.3031222.141		1220.24317.6661222.284		1220.2
4323.5381222.338	1220.2	4326.881222.343	1220.24365.1061222.407		1220.2
4398.141222.448	1220.24417.066	1222.57	1220.24420.7541222.569		1220.2
4465.4241222.526	1220.24568.2411222.496		1220.24585.4851222.488		1220.2
4671.0441222.363	1220.24681.7321222.346		1220.24692.5661222.344		1220.2
4789.7371222.331	1220.24796.3421222.323		1220.24860.1141222.256		1220.2
4906.5561222.199	1220.24910.8131222.199		1220.24913.8381222.185		1220.2
4987.2421222.227	1220.24989.9931222.234		1220.25030.3181222.212		1220.2
5031.7121222.215	1220.2	5125.191222.324	1220.25139.5911222.374		1220.2
5153.0241222.361	1220.25267.4171222.349		1220.2	5277.631222.366	1220.2
5293.2921222.396	1220.25372.4671222.587		1220.25391.7371222.599		1220.2
5459.1321222.709	1220.25509.6051222.646		1220.2	5537.561222.648	1220.2
5594.546 1222.85	1220.25614.3171222.859		1220.25649.1011223.088		1220.2
5665.2031223.109	1220.25714.2681223.244		1220.2	5760.271223.224	1220.2
5789.061223.256	1220.25845.3191223.227		1220.25874.501	1223.23	1220.2
5939.6611223.122	1220.26015.2961223.286		1220.26052.573	1223.35	1220.2
6087.2291223.451	1220.26147.4331223.534		1220.26174.8731223.497		1220.2
6201.4981223.501	1220.26290.7261223.536		1220.26315.6671223.599		1220.2
6384.8651223.581	1220.26420.0911223.588		1220.26501.379	1223.83	1220.2
6524.9391223.888	1220.26601.5771223.895		1220.26627.6981223.865		1220.2
6700.941224.114	1220.26733.5011224.207		1220.26831.1781224.122		1220.2
6854.1481224.171	1220.2	6957.93	1224.36	1220.26983.2711224.363	1220.2
7010.3921224.401	1220.2				

Upstream Bridge Cross Section Data
Station Elevation Data num= 206

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1758.5691225.4451814.8281225.3571840.7391225.4371867.2821225.6991922.4421225.593									
1932.1811225.5751878.2821225.3772010.0241225.5412044.1081225.4272065.9281225.474									
2080.7971225.5212092.1151225.4922111.5171225.4062125.0921225.3212141.224 1224.87									
2180.0091224.7832209.3361224.6062240.5081224.3342271.1531224.3082309.594 1224.25									
2343.6411224.1932374.5181224.4082405.9441224.4532436.5131224.3362469.5661224.366									
2506.6131224.2912531.2771224.5612550.0471224.6472560.4181224.7852600.9231224.608									
2605.4361224.712 2615.091224.8622621.7851224.9632642.223 1224.92651.104 1224.73									
2671.7481224.5872697.1031224.593 2717.151224.1362737.912 1223.72779.0461223.708									
2810.971223.6082860.8681223.5042902.407 1223.38 2970.591223.1833015.5641223.358									
3066.421223.3033096.0221223.4953111.5661223.501 3125.691223.6573134.9891223.823									
3138.5741223.9953184.2661223.8883208.8451223.8633213.5141223.7993223.9041223.583									
3227.8771223.5923245.5931223.2353269.9791222.9573294.256 1222.883333.1251222.392									
3362.181 1222.283395.956 1222.173446.9491222.0063472.036 1221.583481.4191221.604									
3492.626 1221.583502.4781221.5693609.9381221.362 3622.61221.3333631.7191221.296									
3639.6471221.1843646.151 1221.213724.9741221.1043734.8121221.1383742.1011221.147									
3752.8851221.0623764.4591220.9623859.6641220.6443875.4311220.6413887.8491220.636									
3897.8151220.5463976.647 1220.423985.3991220.5063992.4611220.4974004.8721220.316									
4078.069 1219.86 4090.6 1219.924102.6041219.9464111.9771219.935 4168.041219.794									
4179.6331219.6754194.5581219.7154256.3991219.5574268.3791220.2794270.3461220.301									
4275.4221220.837 4308.891220.7764354.6421220.841 4382.431221.433 4392.471220.895									
4394.359 1220.954395.7361215.1354399.761 1213.24416.896 1213.24422.955 1213.2									
4431.597 1213.24435.434 1213.24436.5621217.5294440.7571220.5614442.2961220.561									
4473.2121220.3874521.4741220.8754584.8251220.8424625.8631220.6224658.0561220.582									
4675.5971220.867 4678.541220.8874678.6491220.2914680.245 1213.24682.761 1213.2									
4709.335 1213.24712.382 1213.24718.512 1213.2 4718.64 1213.24721.3731217.663									
4725.1741220.4544727.0541220.2514754.3411220.2754767.3631219.9494776.5771220.439									
4787.1821220.6544802.6471220.622 4873.181220.4384890.4241220.4134905.4671220.537									
4954.1381220.4724960.177 1220.654960.5981220.7964963.3561217.2884966.083 1213.2									
4968.543 1213.25000.868 1213.25003.189 1213.25007.079 1213.25013.9211221.432									
5016.7611221.5545024.6591221.592 5035.291221.7155042.4931221.6215050.4971221.337									
5080.5331221.4335098.4261221.4625141.0171221.3935163.7191221.4785213.5481221.475									
5224.9571221.4175276.3861221.1985281.4391221.1675281.7081221.1675281.9931221.163									
5304.4651221.2575362.3341221.4755367.0921221.4695427.1641221.5095501.745 1221.44									
5502.227 1221.44 5571.481221.642 5581.761221.6535629.5941221.8615643.1221221.874									
5699.3341221.9755747.7311222.0895766.0511222.0985815.7031221.8125830.0581221.703									
5837.5521221.7225924.2891221.9525924.7351221.9535924.8451221.9535924.8961221.954									
5924.9741221.9535934.6621221.9395994.4791221.8246001.8961221.8436073.9861221.887									
6085.7561221.9036149.4241221.9926223.0081221.9656235.4451221.9566301.6071222.128									
6318.351222.1766387.0351222.2926405.9721222.2736488.8681222.2656511.173 1222.35									
6571.7061222.6226595.6321222.5756654.7681222.5546715.7031222.7386743.3961222.833									
6810.5261222.8636818.9661222.8756879.1791223.0766893.1631223.076 6952.061222.836									
6999.421222.672									

```
Manning's n Values          num=       3
     Sta   n Val     Sta    n Val     Sta   n Val
1758.569     .035 4382.43      .035013.921     .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
       4382.435013.921            .1        .3
Right Levee      Station=5013.921       Elevation=1221.432

Downstream  Deck/Roadway Coordinates
    num=       92
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
1816.1391226.294 1219.971927.866 1226.11 1219.971971.5141225.991 1219.97
2039.3371225.901 1219.97 2096.981225.792 1219.972187.1661225.656 1219.97
2252.6751225.541 1219.97 2310.941225.464 1219.972432.5951225.355 1219.97
2514.0481225.272 1219.972566.9391225.155 1219.972623.9691225.155 1219.97
2751.1471224.887 1219.972795.311 1224.76 1219.97 2854.451224.661 1219.97
2965.1971224.436 1219.973021.4311224.332 1219.973077.4681224.149 1219.97
3135.1121224.076 1219.973239.9531223.861 1219.973287.9811223.847 1219.97
3333.9251223.663 1219.973420.4381223.446 1219.97 3471.011223.226 1219.97
3524.2331223.104 1219.973647.1141222.801 1219.973690.7041222.628 1219.97
3734.3541222.506 1219.973777.9761222.451 1219.973874.4141222.257 1219.97
3923.729 1222.21 1219.973969.3031222.141 1219.974317.6661222.284 1219.97
4323.5381222.338 1219.97 4326.881222.343 1219.974365.1061222.407 1219.97
 4398.141222.448 1219.974417.066 1222.57 1219.974420.7541222.569 1219.97
4465.4241222.526 1219.974568.2411222.496 1219.974585.4851222.488 1219.97
4671.0441222.363 1219.974681.7321222.346 1219.974692.5661222.344 1219.97
4789.7371222.331 1219.974796.3421222.323 1219.974860.1141222.256 1219.97
4906.5561222.199 1219.974910.8131222.199 1219.974913.8381222.185 1219.97
4987.2421222.227 1219.974989.9931222.234 1219.975030.3181222.212 1219.97
5031.7121222.215 1219.97 5125.191222.324 1219.975139.5911222.374 1219.97
5155.0241222.361 1219.975267.4171222.349 1219.97 5277.631222.366 1219.97
5293.2921222.396 1219.975372.4671222.587 1219.975391.7371222.599 1219.97
5459.1321222.709 1219.975509.6051222.646 1219.97 5537.561222.648 1219.97
5594.546 1222.85 1219.975614.3171222.859 1219.975649.1011223.088 1219.97
5665.2031223.109 1219.975714.2681223.244 1219.97 5760.271223.224 1219.97
 5789.061223.256 1219.975845.3191223.227 1219.975874.501 1223.23 1219.97
5939.6611223.122 1219.976015.2961223.286 1219.976052.573 1223.35 1219.97
6087.2291223.451 1219.976147.4331223.534 1219.976174.8731223.497 1219.97
6201.4981223.501 1219.976290.7261223.536 1219.976315.6671223.599 1219.97
6384.8651223.581 1219.976420.0911223.588 1219.976501.379 1223.83 1219.97
6524.9391223.888 1219.976601.5771223.895 1219.976627.6981223.865 1219.97
 6700.941224.114 1219.976733.5011224.207 1219.976831.1781224.122 1219.97
6854.1481224.171 1219.97 6957.93 1224.36 1219.976983.2711224.363 1219.97
7010.3921224.401 1219.97

Downstream Bridge Cross Section Data
Station Elevation Data     num=      291
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1812.7541222.4941818.7221222.5371822.4691222.6621827.5941222.6821832.3571222.576
1865.1091222.4581869.9411222.5091876.1521222.4841884.7511222.4261916.1031222.411
1925.2391222.3811931.9011222.247 1940.291222.318 1978.811222.3871987.3861222.218
1995.6851222.2042001.1341222.214 2025.161222.3122032.8161222.4762037.9211222.663
2053.646 1222.812057.6511222.9522060.9521223.0912073.2461223.0392093.2521223.594
2093.7631223.3552097.8341219.1392100.9141219.1312114.7871219.1982116.326  1219.2
2128.6461219.1882136.5971223.9432136.9561224.2272137.0561224.2242137.1471224.222
2143.2331223.5072145.5871223.6532151.9581223.2832167.7041223.0372175.8881223.027
2193.5791223.0482223.2381222.5322260.2851221.9572260.4981221.958 2270.031221.915
  2278.71222.0932314.166 1221.992324.4471221.8482336.5621221.6082349.8021221.749
2385.1331221.8152394.0451221.6282405.427 1221.872413.6041221.886 2441.661221.819
 2449.561221.8792458.5421221.8452487.8221221.6952504.0541221.6522527.8731221.742
2546.575 1222.042571.3651222.278 2587.161222.5522607.988 1222.732627.8491222.992
2635.7711223.048 2641.24 1223.112651.8791223.4652653.6511223.2772655.7011219.576
2656.843  1218.42660.1831218.3712685.8411218.3712689.519  1218.42690.7581220.133
2693.6371223.4752697.3261223.4332712.8881222.3852723.9051222.3622746.574  1222.1
2771.2211222.0082795.7681221.4932816.4771221.0172865.8621220.9372872.8381220.931
2923.8021220.9512966.7281220.8282973.0471220.8053015.3861220.7533046.2651220.805
3057.6811220.772 3090.921220.9213113.8561221.2343129.1851221.3063148.7881221.426
3190.3181222.0893200.1091222.2883205.2491222.3393205.6991222.2883209.7141217.687
3210.259  1217.23215.132  1217.23242.117  1217.23243.4191218.7563245.1461222.324
3246.7711222.5183262.1651222.0843317.9651221.4093385.8991220.3313394.0421220.282
3435.1891220.174 3470.651219.9273484.1981219.8983487.1981219.9443489.8881219.918
3537.5721219.7043541.8261219.681 3548.091219.5453554.3251219.4923607.8721219.392
 3611.191219.2623618.9341219.3823626.356 1219.243677.4171219.1423684.7541219.135
3690.621 1219.123698.0591219.2143744.1371219.1733752.3541219.1073762.6531219.235
 3808.361219.2993815.3721219.3233822.0681219.1783829.3961219.1993874.4771219.135
3880.3511219.0993890.8321219.0013924.7751218.8523931.6461218.921 3940.051218.893
 3976.961218.7973985.5951218.7273992.0731218.7344046.3511218.7774052.6741218.732
4059.7461218.771 4067.811218.7614083.3161217.877 4103.34 1217.614121.4381217.973
4216.1541217.7584230.8061217.7534244.5511217.6754258.093 1217.684270.3611217.601
4287.6361217.8664313.8211218.0284325.6541218.1294327.6811218.6464334.3931218.716
4347.0121219.0124351.5271219.1094355.6711218.9584358.5311218.657 4360.851218.659
4365.0691218.7974386.3721218.865 4386.881218.8724388.4411217.8294395.8521213.595
4396.4251213.5914398.347 1212.974419.578 1212.974436.118 1212.974442.6531214.026
4447.3741218.8554449.8351219.0314450.4811219.0464451.4331219.0464469.3011219.048
 4556.531219.1354577.2911219.2154645.2361219.4314672.5551219.6384676.8641219.445
4679.1871216.7644681.529 1212.974698.618 1212.974709.594 1212.974722.639 1212.97
4726.573  1216.24728.2181219.9464730.4641220.0824768.1161219.7464783.1611219.832
 4819.851220.1954841.3021220.2224901.5631220.3254934.2811220.4964959.8451220.576
4961.147 1220.564962.1831220.1594964.1181216.0954966.869 1212.974974.563 1212.97
4982.114 1212.975004.814 1212.975005.9241215.0515009.8031220.7565017.5421220.942
5023.8511220.553 5063.381220.3225111.8811220.7335170.5851220.7585188.2271220.924
5195.0061221.003 5211.161221.009 5280.161220.9715287.6131220.7635300.9411220.867
5316.7861220.9245393.6521221.0965403.9631221.0675420.9651221.0415492.1561220.976
5503.1661220.9745552.0121220.9535554.1581220.9255556.7421220.9625568.3961221.143
5596.573 1221.355608.9811221.4395640.9171221.4825656.9711221.4175675.5891221.577
5718.4091221.6495722.6321221.6775731.3531221.7445759.8741221.2245776.1791221.022
5796.2181220.3215808.7861220.061 5828.751219.3935832.3371219.3215860.4021219.443
5879.7211219.1435890.1251218.7165902.2591218.7255924.1651218.714  5944.61218.585
5964.3371218.9345991.497 1219.116030.7481219.2256069.4611219.303 6101.541219.294
6145.1781219.3326176.4061219.3296191.5551219.3236218.1881219.3936233.0031219.029
 6241.791218.8976285.6171218.9266308.7811219.4816335.0021219.4166362.5851219.504
```

```
6402.0651219.4766417.2681219.4996433.467 1219.71  6449.11219.5136494.6531219.586
6515.1661219.486 6533.721219.4316563.2371219.3986596.9271219.3896614.5331219.686
6635.7211219.3366674.298 1219.366703.6381219.487 6735.051219.5486773.9631219.617
6809.4761219.5836844.7091219.9556884.8811219.9226907.4381219.8176933.9371220.082
6943.7221220.1136965.3441219.9996985.9461220.1437008.4291220.2717030.1011220.603
7054.6581220.654

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
1812.754    .035 4386.88     .035009.803    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
       4386.885009.803              .1        .3
Left Levee       Station=3246.771       Elevation=1222.518

Upstream Embankment side slope                =        0 horiz. to 1.0 vertical
Downstream Embankment side slope              =        0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =      .95
Elevation at which weir flow begins           =
Energy head used in spillway design           =
Spillway height used in design                =
Weir crest shape                              = Broad Crested

Number of Culverts =  1

Culvert Name      Shape       Rise     Span
Culvert #1          Box        7       10
FHWA Chart # 58- Rectangular concrete
FHWA Scale # 2 - Side tapered; More favorable edges
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                 14      82       .014                   .3                1
Number of Barrels =  9
Upstream   Elevation =  1213.2
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
    4405    4416    4427    4689    4700    4711    4975    4986    4997
Downstream Elevation =  1212.97
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
    4405    4416    4427    4690    4701    4712    4974    4985    4996

CROSS SECTION          RIVER: Harquahala
REACH: I-10 Reach         RS: 16.6470

INPUT
Description: 16.6470
Station Elevation Data     num=      291
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
1812.7541222.4941818.7221222.5371822.4691222.6621827.5941222.6821832.3571222.576
1865.1091222.4581869.9411222.5091876.1521222.4841884.7511222.4261916.1031222.411
1925.2391222.3811931.9011222.247 1940.291222.318 1978.811222.3871987.3861222.218
1995.6851222.2042001.1341222.214 2025.161222.3122032.8161222.4762037.9211222.663
2053.646 1222.812057.6511222.9522060.9521223.0912073.2461223.0392093.2521223.594
2093.7631223.3552097.8341219.1392100.9141219.1312114.7871219.1982116.326  1219.2
2128.6461219.1882136.5971223.9432136.9561224.2272137.0561224.2242137.1471224.222
2143.2331223.5072145.5871223.6532151.9581223.2832167.7041223.0372175.8881223.027
2193.5791223.0482223.2381222.5322260.2851221.9572260.4981221.958 2270.031221.915
  2278.71222.0932314.166 1221.992324.4471221.8482336.5621221.6082349.8011221.749
2385.1331221.8152394.0451221.6282405.427 1221.872413.6041221.886 2441.661221.819
 2449.561221.8792458.5421221.8452487.8221221.6952504.0541221.6522527.8731221.742
2546.575 1222.042571.3651222.278 2587.161222.5522607.988 1222.732627.8491222.392
2635.7711223.048 2641.24 1223.112651.8791223.4652653.6511223.2772655.7011219.576
2656.843  1218.42660.1831218.3712685.8411218.3712689.519  1218.42690.7581220.133
2693.6371223.4752697.3261223.4332712.8881222.3852723.9051222.3622746.574  1222.1
2771.2211222.0082795.7681221.4932816.4771221.0172865.8621220.9372872.8381220.931
2923.8021220.9512966.7281220.8282973.0471220.8053015.3861220.7533046.2651220.805
3057.6811220.772 3090.921220.9213113.8561221.2343129.1851221.3063148.7881221.426
3190.3181222.0893200.1091222.2883205.2491222.3393205.6991222.2883209.7141217.687
3210.259  1217.23215.132  1217.23242.117  1217.23243.4191218.7563245.1461222.324
3246.7711222.5183262.1651222.0843317.9651221.4093385.8991220.3313394.0421220.282
3435.1891220.174 3470.651219.9273484.1981219.8983487.1981219.9443489.8881219.918
3537.5721219.7043541.8261219.681 3548.091219.5453554.3251219.4323607.8721219.392
 3611.191219.2623618.9341219.3823626.356 1219.243677.4171219.1423684.7541219.135
3690.621 1219.123698.0591219.2143744.1371219.1733752.3541219.1073762.6531219.235
 3808.361219.2993815.3721219.3233822.0681219.1783829.3961219.1993874.4771219.135
3880.3511219.0993890.8321219.0013924.7751218.8523931.6461218.921 3940.051218.893
 3976.961218.7973985.5951218.7273992.0731218.7344046.3511218.7774052.6741218.732
4059.7461218.771 4067.811218.7614083.3161217.877 4103.34 1217.614121.4381217.973
4216.1541217.7584230.8061217.7534244.5511217.6754258.093 1217.684270.3611217.601
4287.6361217.8664313.8211218.0284325.6541218.1294327.6811218.6464334.3931218.716
4347.0121219.0124351.5271219.1094355.6711218.9584358.5311218.657 4360.851218.659
4365.0691218.7974386.3721218.865 4386.881218.8724388.4411217.8294395.8521213.595
4396.4251213.5914398.347 1212.974419.578 1212.974436.118 1212.974442.6531214.026
4447.3741218.8554449.8351219.0314450.4811219.0464451.4331219.0464469.3011219.048
 4556.531219.1354577.2911219.2154645.2361219.4314672.5551219.6384676.8641219.445
4679.1871216.7644681.529 1212.974698.618 1212.974709.594 1212.974722.639 1212.97
4726.573  1216.24728.2181219.9464730.4641220.0824768.1161219.7464783.1611219.632
 4819.851220.1954841.3021220.2224901.5631220.3254934.2811220.4964959.8451220.576
4961.147 1220.564962.1831220.1594964.1181216.0954966.869 1212.974974.563 1212.97
4982.114 1212.975004.814 1212.975005.9241215.0515009.8031220.7565017.5421220.942
5023.8511220.553 5063.381220.3225111.8811220.7335170.5851220.7585188.2271220.924
5195.0061221.003 5211.161221.009 5280.161220.9715287.6131220.7635300.9411220.867
5316.7861220.9245393.6521221.0965403.9631221.0675420.9651221.0415492.1561220.976
5503.1661220.9745552.0121220.9535554.1581220.9255556.7421220.9625568.3961221.143
5596.573 1221.355608.9811221.4395640.9171221.4825656.9711221.4175675.5891221.577
5718.4091221.6495722.6321221.6775731.3531221.7445759.8741221.2245776.1791221.022
5796.2181220.3215808.7861220.061 5828.751219.3935832.3371219.3215860.4021219.443
5879.7211219.1435890.1251218.7165902.2591218.7255924.1651218.714  5944.61218.585
5964.3371218.9345991.497 1219.116030.7481219.2256069.4611219.303 6101.541219.294
6145.1781219.3326176.4061219.3296191.5551219.3236218.1881219.3936233.0031219.029
```

```
 6241.791218.8976285.6171218.9266308.7811219.4816335.0021219.4166362.5851219.504
6402.0651219.4766417.2681219.4996433.467 1219.71  6449.11219.5136494.6531219.588
6515.1661219.486 6533.721219.4216563.2371219.3986596.9231219.3896614.5331219.686
6635.7211219.3366674.298 1219.366703.6381219.467 6735.051219.5486773.9631219.617
6809.4761219.5836844.7091219.9586884.8811219.9226907.4381219.8176923.9371220.082
6943.7221220.1136965.3441219.9996985.9461220.1437008.4291220.2717030.1011220.603
7054.6581220.654

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
1812.754    .035 4386.88     .035009.803    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       4386.885009.803                38  57.874      52            .1       .3
Left Levee       Station=3246.771       Elevation=1222.518

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1216.59   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              1.66   Wt. n-Val.                            0.030
  E.G. Elev (ft)          1218.25   Reach Len. (ft)             38.00     57.87      52.00
  Crit W.S. (ft)          1216.59   Flow Area (sq ft)                    483.13
  E.G. Slope (ft/ft)     0.009534   Area (sq ft)                         483.13
  Q Total (cfs)           5000.00   Flow (cfs)                          5000.00
  Top Width (ft)           145.07   Top Width (ft)                       145.07
  Vel Total (ft/s)          10.35   Avg. Vel. (ft/s)                      10.35
  Max Chl Dpth (ft)          3.62   Hydr. Depth (ft)                       3.33
  Conv. Total (cfs)       51207.9   Conv. (cfs)                         51207.9
  Length Wtd. (ft)          57.03   Wetted Per. (ft)                     154.34
  Min Ch El (ft)          1212.97   Shear (lb/sq ft)                       1.86
  Alpha                      1.00   Stream Power (lb/ft s)                19.28
  Frctn Loss (ft)            0.65   Cum Volume (acre-ft)        0.04       0.58       0.00
  C & E Loss (ft)            0.38   Cum SA (acres)              0.14       0.38       0.05


Warning - The energy equation could not be balanced within the specified number of iterations.  The
          program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
          additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
          depth, the calculated water surface came back below critical depth.  This indicates that there is
          not a valid subcritical answer.  The program defaulted to critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
          energy was used.

CROSS SECTION          RIVER: Harquahala
REACH: I-10 Reach         RS: 16.6361

INPUT
Description: 16.6361
Station Elevation Data     num=      357
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1837.5861219.1691856.3921219.201 1862.291219.231  1864.41219.2731874.6481219.499
1889.2421219.6441895.437 1219.75 1907.751219.9641927.1141220.1651937.2021220.359
1965.6491220.3841978.0751220.3611995.561 1220.332016.0371220.2952028.8581220.176
 2046.761219.8712057.8811219.5092067.3781219.558 2076.25 1219.522094.9871219.383
2105.2021219.2622110.6521219.3782111.8371219.2072132.0441219.0372145.2161218.826
2156.022  1218.92167.2631218.8392169.555 1218.892177.1721218.8492182.659 1218.99
2198.0651219.2412207.2811219.2592229.436 1219.442241.5671219.3512256.0521219.328
 2266.171219.3312275.8331219.3662300.7721219.417 2310.441219.531  2319.51219.448
2330.4071219.407 2354.241219.4512364.885 1219.42 2376.091219.4592403.8831219.405
 2411.931219.2632422.2211219.2252451.483 1219.242459.8011219.1062469.4351219.135
 2480.581219.1062510.523 1219.032519.9371218.9842534.3031218.9932564.7711218.927
2573.7791218.7742583.6761218.6742600.5341218.7432611.6141218.7242624.7881218.551
2643.5021218.4362646.8521218.4342667.403 1218.652678.2491218.4652701.0911218.254
2702.3621218.2372702.9471218.2312703.9121218.2192731.5321218.3822739.2331217.969
2747.4581217.9122760.3011218.1972773.9771218.0792787.6051217.9252801.1811217.763
2814.6711217.6932819.5241217.5862826.5771217.7262836.4171217.6332845.7731217.743
2856.3861217.7312863.6761217.7242879.1581217.7512889.3541217.8982908.7091217.861
2917.8541217.783 2927.241217.5932948.0711217.516 2957.471217.397 2973.481217.345
2981.8211217.3182988.1661217.3313004.2951217.2773009.3131217.3923015.7591217.503
3023.8411217.592 3030.891217.5143049.466 1217.453058.4391217.4273078.1011217.345
3084.6541217.366 3090.731217.3513118.1951217.3193121.0121217.1783129.9741217.069
3140.1521216.9993145.7931217.0893149.7341216.8393152.0861216.3273154.3221215.725
 3156.651215.8983162.5881216.075  3164.3 1216.253168.2631216.1513178.7581216.346
3189.8671216.5343194.986  1216.63205.8531216.626  3208.41216.673 3211.741216.701
3221.7641216.5623224.6451216.761 3239.741216.7643274.358    12173282.9361216.999
3291.4141215.8973298.3631215.9273314.3851215.8053314.9061215.7853335.4331215.547
3343.1321215.5023346.5931215.4083355.471 1215.423368.9231215.4083377.4151215.451
3383.5731215.519 3387.251215.5263392.368 1215.573396.753 1215.633400.4751215.621
3421.2931215.8583438.2971215.8393449.5831215.866 3467.81 1215.843480.6011215.907
 3493.66 1216.033508.4431216.2163520.5371216.1853532.7141216.2363546.2371216.321
  3558.1 1216.273584.5111215.8233593.685 1215.753596.9811215.4763602.6211214.876
3603.0611214.8413603.5061214.8863611.5851215.6393613.0611215.6433617.1881215.665
3629.0751215.6733637.3631215.736 3658.031215.6663672.2621215.5213685.8821215.406
3712.6581215.379 3723.981215.3783738.1451215.5353759.2841215.7113774.6521215.708
 3793.66 1215.783815.5421215.8163828.2981215.6783851.0241215.6053865.032  1215.6
3878.7721215.5663897.499 1215.553908.6091215.4393927.3871215.4163943.6291215.351
3955.4641215.4163972.2431215.4163985.6581215.4764003.2731215.479 4018.381215.209
4032.1291214.939 4042.83 1214.814046.8621214.6344056.191 1214.254057.1771214.213
4057.9791214.2454071.8081214.4484081.5711214.6984108.8691214.8624125.702 1214.94
4147.5081214.6554171.9131214.6024194.1071214.7544212.282  1214.84229.8021214.862
4246.0921214.8594271.0991214.9264285.0151214.8534298.2891214.8354314.704 1214.85
4328.3511214.8684335.4841215.0644349.4961215.6854357.1041215.5434387.279 1214.74
4389.5331214.7724390.4381214.7624390.9681214.7184392.6161214.5964406.803  1212.7
4408.943  1212.74421.626  1212.74430.169  1212.74447.2741215.5614449.7351215.835
 4450.091215.8474450.1941215.8514451.0471215.8344456.8361215.891 4467.84  1215.6
4474.374 1215.444475.2661215.4274484.7991215.0564486.9381214.9814488.4731214.984
```

```
4511.7891215.1394517.2251215.0594539.7041215.2394544.0731215.261 4558.031215.109
4565.5831215.0164565.9641215.0354589.5781214.9424589.6311214.9434589.6811214.942
4596.3151214.9564613.7821214.9934614.4281214.9974643.6991215.3474647.9971215.225
4656.8871215.1654661.4461215.0194684.767  1212.74686.413  1212.74686.583  1212.7
 4687.54  1212.74697.552  1212.74701.972  1212.74718.092  1212.74724.7051213.801
4731.9161214.594 4739.881214.4754753.6911214.5124759.9731214.7244762.4211214.589
4766.6561214.5684776.883 1214.614780.6511214.7044796.0371214.7184814.2971214.718
4825.9221214.6684847.3691214.7194858.5711214.8054884.8031214.9214893.9931215.034
4910.5891215.243 4923.421215.2054943.5351215.0564946.5011215.0454946.8831215.028
4955.1921214.6364960.175  1212.74962.385  1212.74966.986  1212.74968.355  1212.7
    5001  1212.75005.404  1212.7 5015.691218.247 5020.571220.2615038.4671220.286
5038.8871220.2765039.9461220.0925059.7821216.6845069.638 1215.995075.0371215.614
5099.6691215.4045103.8611215.3255109.4531215.3715115.0511215.279 5139.291215.593
5146.004 1216.525151.0221217.1635157.6911217.1045165.0851217.0225170.4871215.351
5177.1141214.9685182.159 1215.425186.865 1215.495195.3861215.5845215.0911215.859
5221.9571215.4365231.2091215.3265247.7771215.143 5251.461215.1565304.997 1214.93
5312.2621214.9975353.1061214.9965353.2671214.9965391.7841215.5035396.6291215.465
5405.9221215.6845413.8161215.6575425.2321215.8875442.2741216.1885454.2751216.292
5455.9771216.3255471.2381217.379 5479.571218.0565494.1771219.2895503.4371220.022
5518.4171221.0415533.2771219.2585551.7991217.4295558.8721216.7425560.138 1216.47
5575.306 1216.075591.5321216.1665607.394 1216.195616.8691216.1815647.2921216.249
5649.7321216.2545661.2171216.2585692.2311216.5925698.3111216.6525734.4241216.974
5740.7051217.082 5771.041217.3785783.9021217.747 5805.541218.223 5832.421219.003
5836.5721219.1535857.4331219.9825862.6211220.018 5865.141220.0585875.7921220.223
5922.2381220.9495930.7561220.9965959.6871221.624  5975.71220.9385979.5941220.833
5982.7531220.7575984.3761220.682
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
1837.586    .0354349.496    .035 5020.57    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4349.496 5020.57                 0       0       0              .1       .3
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1215.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.96	Wt. n-Val.	0.035	0.035	0.035
E.G. Elev (ft)	1217.00	Reach Len. (ft)			
Crit W.S. (ft)	1215.56	Flow Area (sq ft)	82.42	392.28	3.60
E.G. Slope (ft/ft)	0.085271	Area (sq ft)	82.42	392.28	3.60
Q Total (cfs)	5000.00	Flow (cfs)	422.60	4571.68	5.72
Top Width (ft)	818.41	Top Width (ft)	311.26	428.83	78.31
Vel Total (ft/s)	10.45	Avg. Vel. (ft/s)	5.13	11.65	1.59
Max Chl Dpth (ft)	2.34	Hydr. Depth (ft)	0.26	0.91	0.05
Conv. Total (cfs)	17122.5	Conv. (cfs)	1447.2	15655.8	19.6
Length Wtd. (ft)		Wetted Per. (ft)	311.31	430.39	78.32
Min Ch El (ft)	1212.70	Shear (lb/sq ft)	1.41	4.85	0.24
Alpha	1.16	Stream Power (lb/ft s)	7.23	56.55	0.39
Frctn Loss (ft)	1.23	Cum Volume (acre-ft)			
C & E Loss (ft)	0.03	Cum SA (acres)			

```
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.
```

SUMMARY OF MANNING'S N VALUES

River:Harquahala

Reach	River Sta.	n1	n2	n3
Upper Reach A	20.0000	.03	.03	.03
Upper Reach A	19.9735	.03	.031	.03
Upper Reach A	19.9458	.035	.085	.035
Upper Reach A	19.9052	.035	.085	.035
Upper Reach A	19.8187	.035	.085	.035
Upper Reach A	19.8173	.035	.085	.035
Upper Reach B	19.7349	.035	.085	.035
Upper Reach B	19.6465	.035	.085	.035
Upper Reach B	19.5602	.035	.085	.035
Upper Reach B	19.4887	.035	.085	.035
Upper Reach B	19.3761	.035	.085	.035
Upper Reach B	19.2665	.035	.085	.035
Upper Reach B	19.1607	.035	.085	.035
Upper Reach B	19.0557	.035	.085	.035
Split1	19.6872	.035	.055	.035
Split1	19.6513	.035	.065	.035
Split1	19.5997	.035	.065	.035
Split1	19.5616	.035	.065	.035
Split1	19.5223	.035	.065	.035
Split1	19.4869	.035	.065	.035
Split1	19.3980	.035	.065	.035
Split 1A	19.3216	.035	.065	.035
Split 1A	19.2398	.035	.065	.035
Split 1A	19.1676	.035	.065	.035
Split 1A	19.0811	.035	.065	.035
Split 1A	18.9967	.035	.065	.035
Split 1A	18.9165	.035	.065	.035
Split 1B	19.3158	.035	.065	.035
Split 1B	19.2400	.035	.065	.035
Split 1B	19.1631	.035	.065	.035
Split 1B	19.0836	.035	.065	.035
Split 1B	19.0153	.035	.065	.035
Split 1B	18.9337	.035	.065	.035
Split 1B	18.8560	.035	.065	.035

Split 1B	18.7744	.035	.065	.035
Split 1B	18.7184	.035	.065	.035
Split 1B	18.6384	.035	.065	.035
Split 1B	18.5485	.035	.065	.035
Upper Mid Reach	18.9676	.035	.085	.035
Upper Mid Reach	18.8526	.035	.085	.035
Upper Mid Reach	18.7424	.035	.085	.035
Upper Mid Reach	18.6296	.035	.085	.035
Lower Mid Reach	18.5237	.035	.085	.035
Lower Mid Reach	18.3861	.035	.085	.035
Lower Mid Reach	18.2834	.035	.085	.035
Lower Mid Reach	18.1956	.035	.085	.035
Lower Mid Reach	18.0888	.035	.085	.035
Lower Mid Reach	17.9877	.035	.085	.035
Lower Mid Reach	17.8771	.035	.085	.035
Lower Mid Reach	17.7710	.035	.085	.035
Lower Mid Reach	17.6702	.035	.085	.035
Split2	17.5883	.035	.075	.035
Split2	17.4913	.035	.075	.035
Split2	17.3965	.035	.075	.035
Split2	17.1420	.035	.075	.035
Split2	16.9865	.035	.075	.035
Split2	16.8902	.035	.075	.035
Lower Reach	17.5767	.035	.085	.035
Lower Reach	17.4734	.035	.085	.035
Lower Reach	17.3602	.035	.085	.035
Lower Reach	17.2691	.035	.085	.035
Lower Reach	17.1738	.035	.085	.035
Lower Reach	17.0788	.035	.085	.035
Lower Reach	16.9865	.035	.085	.035
I-10 Reach	16.8902	.035	.085	.035
I-10 Reach	16.7885	.035	.085	.035
I-10 Reach	16.7242	.035	.085	.035
I-10 Reach	16.7087	.035	.03	.035
I-10 Reach	16.7017	Culvert		
I-10 Reach	16.6948	.035	.03	.035
I-10 Reach	16.6789	.035	.035	.035
I-10 Reach	16.6642	.035	.03	.035
I-10 Reach	16.6556	Culvert		
I-10 Reach	16.6470	.035	.03	.035
I-10 Reach	16.6361	.035	.035	.035

SUMMARY OF REACH LENGTHS

River: Harquahala

Reach	River Sta.	Left	Channel	Right
Upper Reach A	20.0000	140	140	140
Upper Reach A	19.9735	139	146.2242	139
Upper Reach A	19.9458	149	214.1756	183
Upper Reach A	19.9052	305	352.3504	259
Upper Reach A	19.8387	100	113.028	166
Upper Reach A	19.8173	347	435.1131	500
Upper Reach B	19.7349	398	466.6451	399
Upper Reach B	19.6465	522	455.3716	397
Upper Reach B	19.5602	375	377.9404	331
Upper Reach B	19.4887	570	594.3238	517
Upper Reach B	19.3761	578	578.96	500
Upper Reach B	19.2665	534	558.4567	540
Upper Reach B	19.1607	422	554.2729	519
Upper Reach B	19.0557	446	465.0548	437
Split1	19.6872	167	189.4667	230
Split1	19.6513	194	272.8115	298
Split1	19.5997	166	200.6815	260
Split1	19.5616	175	207.8089	272
Split1	19.5223	178	186.7914	295
Split1	19.4869	459	469.5331	543
Split1	19.3980	399	433.8286	377
Split 1A	19.3216	338	431.8443	325
Split 1A	19.2398	377	381.3855	359
Split 1A	19.1676	441	456.6185	438
Split 1A	19.0811	421	445.8344	442
Split 1A	18.9967	407	423.507	419
Split 1A	18.9165	354	346.1658	218
Split 1B	19.3158	371	400.1655	350
Split 1B	19.2400	384	406.012	396
Split 1B	19.1631	390	419.9715	385
Split 1B	19.0836	337	360.4106	372
Split 1B	19.0153	395	431.1926	422
Split 1B	18.9337	391	410.0502	393
Split 1B	18.8560	365	431.1373	427
Split 1B	18.7744	292	295.6265	292
Split 1B	18.7184	378	422.3776	347
Split 1B	18.6384	452	474.4267	303
Split 1B	18.5485	660	632.2013	440
Upper Mid Reach	18.9676	559	607.2768	521
Upper Mid Reach	18.8526	533	581.9578	508
Upper Mid Reach	18.7424	586	595.6793	540
Upper Mid Reach	18.6296	501	559.1249	525
Lower Mid Reach	18.5237	690	726.5636	654
Lower Mid Reach	18.3861	520	542.3258	497
Lower Mid Reach	18.2834	460	463.5521	404
Lower Mid Reach	18.1956	511	563.677	427
Lower Mid Reach	18.0888	557	533.7156	426
Lower Mid Reach	17.9877	523	584.0225	526
Lower Mid Reach	17.8771	446	560.1197	525
Lower Mid Reach	17.7710	400	532.6463	445

Lower Mid Reach	17.6702	559	493.6868	475
Split2	17.5883	439	512.2301	523
Split2	17.4913	434	500.395	490
Split2	17.3965	993	1343.966	1000
Split2	17.1420	490	262.0117	645
Split2	16.9865	130	84.41	190
Split2	16.8902	280	300	320
Lower Reach	17.5767	340	545.0853	555
Lower Reach	17.4734	491	598.031	608
Lower Reach	17.3602	401	480.8423	450
Lower Reach	17.2691	423	503.3689	495
Lower Reach	17.1738	380	501.3424	530
Lower Reach	17.0788	348	487.5188	495
Lower Reach	16.9865	281	508.1319	548
I-10 Reach	16.8902	356	537.2477	602
I-10 Reach	16.7885	361	339.3988	273
I-10 Reach	16.7242	70	81.5688	71
I-10 Reach	16.7087	62	73.6675	62
I-10 Reach	16.7017	Culvert		
I-10 Reach	16.6948	88	101.2588	86
I-10 Reach	16.6789	67	77.7151	68
I-10 Reach	16.6642	76	90.3017	79
I-10 Reach	16.6556	Culvert		
I-10 Reach	16.6470	38	57.874	52
I-10 Reach	16.6361	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Harquahala

Reach	River Sta.	Contr.	Expan.
Upper Reach A	20.0000	.1	.3
Upper Reach A	19.9735	.1	.3
Upper Reach A	19.9458	.1	.3
Upper Reach A	19.9052	.1	.3
Upper Reach A	19.8387	.1	.3
Upper Reach A	19.8173	.1	.3
Upper Reach B	19.7349	.1	.3
Upper Reach B	19.6465	.1	.3
Upper Reach B	19.5602	.1	.3
Upper Reach B	19.4887	.1	.3
Upper Reach B	19.3761	.1	.3
Upper Reach B	19.2665	.1	.3
Upper Reach B	19.1607	.1	.3
Upper Reach B	19.0557	.1	.3
Split1	19.6872	.1	.3
Split1	19.6513	.1	.3
Split1	19.5997	.1	.3
Split1	19.5616	.1	.3
Split1	19.5223	.1	.3
Split1	19.4869	.1	.3
Split1	19.3980	.1	.3
Split 1A	19.3216	.1	.3
Split 1A	19.2398	.1	.3
Split 1A	19.1676	.1	.3
Split 1A	19.0811	.1	.3
Split 1A	18.9967	.1	.3
Split 1A	18.9165	.1	.3
Split 1B	19.3158	.1	.3
Split 1B	19.2400	.1	.3
Split 1B	19.1631	.1	.3
Split 1B	19.0836	.1	.3
Split 1B	19.0153	.1	.3
Split 1B	18.9337	.1	.3
Split 1B	18.8560	.1	.3
Split 1B	18.7744	.1	.3
Split 1B	18.7184	.1	.3
Split 1B	18.6384	.1	.3
Split 1B	18.5485	.1	.3
Upper Mid Reach	18.9676	.1	.3
Upper Mid Reach	18.8526	.1	.3
Upper Mid Reach	18.7424	.1	.3
Upper Mid Reach	18.6296	.1	.3
Lower Mid Reach	18.5237	.1	.3
Lower Mid Reach	18.3861	.1	.3
Lower Mid Reach	18.2834	.1	.3
Lower Mid Reach	18.1956	.1	.3
Lower Mid Reach	18.0888	.1	.3
Lower Mid Reach	17.9877	.1	.3
Lower Mid Reach	17.8771	.1	.3
Lower Mid Reach	17.7710	.1	.3
Lower Mid Reach	17.6702	.1	.3
Split2	17.5883	.1	.3
Split2	17.4913	.1	.3
Split2	17.3965	.1	.3
Split2	17.1420	.1	.3
Split2	16.9865	.1	.3
Split2	16.8902	.1	.3
Lower Reach	17.5767	.1	.3
Lower Reach	17.4734	.1	.3
Lower Reach	17.3602	.1	.3
Lower Reach	17.2691	.1	.3
Lower Reach	17.1738	.1	.3
Lower Reach	17.0788	.1	.3
Lower Reach	16.9865	.1	.3
I-10 Reach	16.8902	.1	.3
I-10 Reach	16.7885	.1	.3

I-10 Reach	16.7242		.1	.3
I-10 Reach	16.7087		.1	.3
I-10 Reach	16.7017	Culvert		
I-10 Reach	16.6948		.1	.3
I-10 Reach	16.6789		.1	.3
I-10 Reach	16.6642		.1	.3
I-10 Reach	16.6556	Culvert		
I-10 Reach	16.6470		.1	.3
I-10 Reach	16.6361		.1	.3

Profile Output Table - Standard Table 1

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)	
Upper Reach A	20.0000	5000.00	1410.36	1413.63	1413.63	1415.27	0.009394	10.29	485.81		149.15
Upper Reach A	19.9735	5000.00	1390.09	1391.25	1393.37	1409.20	0.555560	34.00	147.06		1.00
Upper Reach A	19.9458	5000.00	1389.05	1393.86	1394.10	1395.05	0.023086	6.21	597.29		158.37
Upper Reach A	19.9052	5000.00	1379.10	1388.80	1388.99	1389.86	0.031005	8.91	623.84		6.22
Upper Reach A	19.8387	5000.00	1374.30	1382.00	1381.99	1382.58	0.023401	6.52	826.41		289.55
Upper Reach A	19.8173	5000.00	1372.55	1378.30	1378.27	1378.97	0.026920	4.79	787.13		0.58
Upper Reach B	19.7349	4850.00	1366.33	1371.06	1370.60	1371.78	0.012743	5.00	745.46		371.68
Upper Reach B	19.6465	4850.00	1359.85	1364.84	1364.84	1365.63	0.017245	5.65	710.18		0.69
Upper Reach B	19.5602	4850.00	1353.58	1356.78	1356.81	1357.68	0.014575	3.85	696.12		647.74
Upper Reach B	19.4887	4850.00	1347.87	1350.93	1350.95	1351.72	0.017485	4.24	691.91		0.59
Upper Reach B	19.3761	4850.00	1340.81	1342.31	1342.40	1342.96	0.016946	2.24	769.42		662.21
Upper Reach B	19.2665	4850.00	1331.06	1333.91	1333.85	1334.32	0.014639	2.40	976.94		0.57
Upper Reach B	19.1607	4850.00	1324.61	1325.53	1325.53	1326.02	0.016491	1.35	868.55		315.61
Upper Reach B	19.0557	4850.00	1315.79	1317.85	1317.72	1318.26	0.010867	1.90	985.29		0.44
Split1	19.6872	150.00	1372.00	1374.06	1373.41	1374.12	0.010143	2.01	74.60	117.29	392.47
Split1	19.6513	150.00	1369.17	1370.94	1370.67	1371.08	0.029411	2.97	50.58	76.75	0.51
Split1	19.5997	150.00	1365.14	1367.25	1366.46	1367.31	0.007914	1.95	76.99	81.69	400.44
Split1	19.5616	150.00	1363.27	1365.42	1364.78	1365.52	0.010149	2.56	58.69	49.96	0.43
Split1	19.5223	150.00	1360.68	1363.05		1363.10	0.013275	1.82	82.48	143.40	467.06
Split1	19.4869	150.00	1357.30	1360.08	1359.33	1360.18	0.018059	2.58	58.15	75.02	0.47
Split1	19.3980	150.00	1352.11	1353.55	1353.12	1353.61	0.011054	1.96	76.48	103.29	715.07
Split 1A	19.3216	30.00	1346.76	1347.47	1347.16	1347.49	0.007725	1.31	22.82	43.04	0.40
Split 1A	19.2398	30.00	1341.01	1341.99	1341.77	1342.06	0.022332	2.13	14.05	28.36	991.64
Split 1A	19.1676	30.00	1336.01	1336.95	1336.61	1336.98	0.008836	1.31	22.84	47.75	0.38
Split 1A	19.0811	30.00	1327.96	1328.86	1328.77	1328.99	0.049080	2.92	10.27	23.31	0.32
Split 1A	18.9967	30.00	1321.21	1322.52	1322.14	1322.55	0.006787	1.33	23.48	57.00	879.77
Split 1A	18.9165	30.00	1314.34	1315.38	1315.38	1315.55	0.086150	3.30	9.08	26.09	0.15
Split 1B	19.3158	120.00	1346.28	1347.60	1347.60	1347.67	0.018996	2.12	57.15	114.91	1016.72
Split 1B	19.2400	120.00	1339.34	1341.69	1340.88	1341.70	0.001765	1.14	121.50	248.02	0.32
Split 1B	19.1631	120.00	1334.12	1335.76	1335.76	1336.15	0.066915	5.02	23.88	30.32	0.50
Split 1B	19.0836	120.00	1324.91	1327.17	1327.17	1327.75	0.062116	6.12	19.62	17.04	0.18
Split 1B	19.0153	120.00	1320.41	1321.78	1321.47	1321.92	0.006469	1.48	43.46	51.35	1.00
Split 1B	18.9337	120.00	1314.24	1316.16	1316.16	1316.41	0.035459	4.19	30.98	60.91	0.33
Split 1B	18.8560	120.00	1309.33	1311.73	1311.54	1312.12	0.039703	5.04	23.83	19.93	0.30
Split 1B	18.7744	120.00	1304.12	1306.29	1306.06	1306.34	0.006517	1.79	66.78	131.58	1.00
Split 1B	18.7184	120.00	1300.43	1302.33	1302.33	1302.53	0.033480	3.74	34.90	77.71	0.75
Split 1B	18.6384	120.00	1295.32	1297.39	1297.39	1297.83	0.066201	5.27	22.75	26.41	0.81
Split 1B	18.5485	120.00	1290.17	1291.83	1291.83	1292.10	0.074096	4.20	28.57	51.33	1.00
Upper Mid Reach	18.9676	4880.00	1309.70	1311.65	1311.65	1312.24	0.015271	2.12	817.02		0.99
Upper Mid Reach	18.8526	4880.00	1302.10	1304.87	1304.70	1305.10	0.010586	1.92	1292.27		722.89
Upper Mid Reach	18.7424	4880.00	1294.41	1297.69	1297.65	1298.02	0.018340	3.60	1054.18		1598.00
Upper Mid Reach	18.6296	4880.00	1287.21	1290.68	1290.47	1290.99	0.009573	2.79	1115.60		1454.68
											1124.14

Lower Mid Reach	18.5237	5000.00	1282.22	1285.14	1284.95	1285.48	0.010145	2.19	1117.79	966.98	0.33
Lower Mid Reach	18.3861	5000.00	1277.51	1278.70	1278.52	1278.98	0.009510	1.31	1212.04	1338.42	0.28
Lower Mid Reach	18.2834	5000.00	1272.75	1273.54	1273.40	1273.84	0.011169	1.00	1135.42	1328.71	0.28
Lower Mid Reach	18.1956	5000.00	1267.06	1269.43	1269.21	1269.68	0.009176	1.62	1258.97	1390.24	0.29
Lower Mid Reach	18.0888	5000.00	1262.50	1265.24	1265.01	1265.48	0.009292	2.64	1287.61	1481.26	0.33
Lower Mid Reach	17.9877	5000.00	1256.92	1260.77	1260.55	1260.99	0.008290	2.78	1363.26	1624.57	0.32
Lower Mid Reach	17.8771	5000.00	1252.57	1255.95	1255.90	1256.20	0.010197	2.45	1270.90	1501.14	0.33
Lower Mid Reach	17.7710	5000.00	1249.90	1251.21	1251.18	1251.48	0.010357	1.38	1231.71	1786.50	0.29
Lower Mid Reach	17.6702	5000.00	1243.94	1247.66	1247.30	1247.83	0.007446	2.24	1541.48	1875.00	0.29
Split2	17.5883	1280.00	1239.27	1243.25	1242.83	1243.44	0.009103	2.58	383.93	335.91	0.36
Split2	17.4913	1280.00	1233.18	1239.12	1238.68	1239.27	0.008685	2.47	428.99	419.14	0.34
Split2	17.3965	1280.00	1225.15	1233.44	1232.55	1234.02	0.015061	5.57	211.10	93.58	0.49
Split2	17.1420	1280.00	1224.41	1226.89		1226.91	0.002851	1.31	980.46	715.06	0.20
Split2	16.9865	1280.00	1224.39	1225.34	1225.04	1225.40	0.004225	0.92	631.49	1016.77	0.21
Split2	16.8902	1280.00	1222.79	1223.70	1223.70	1223.98	0.021222	2.19	310.40	603.23	0.47
Lower Reach	17.5767	3720.00	1239.92	1243.00	1242.91	1243.19	0.013109	2.63	1068.05	1761.23	0.38
Lower Reach	17.4734	3720.00	1236.37	1239.69	1239.39	1239.79	0.005251	1.56	1460.86	1983.73	0.23
Lower Reach	17.3602	3720.00	1233.27	1235.40	1235.31	1235.60	0.012525	2.10	1048.71	1698.12	0.35
Lower Reach	17.2691	3720.00	1230.19	1232.45	1232.16	1232.53	0.004667	1.18	1647.35	2365.26	0.21
Lower Reach	17.1738	3720.00	1226.04	1228.80	1228.76	1229.01	0.016481	2.31	1006.04	1887.04	0.40
Lower Reach	17.0788	3720.00	1223.69	1225.76	1225.36	1225.86	0.003969	1.17	1453.25	1681.87	0.20
Lower Reach	16.9865	3720.00	1220.28	1222.54	1222.54	1222.85	0.020723	2.79	858.46	1410.65	0.48
I-10 Reach	16.8902	5000.00	1217.58	1222.48	1220.79	1222.50	0.000390	0.77	4277.41	2697.93	0.07
I-10 Reach	16.7885	5000.00	1215.86	1222.47		1222.47	0.000023	0.26	11896.24	3897.10	0.02
I-10 Reach	16.7242	5000.00	1214.57	1222.47	1217.28	1222.47	0.000007	0.16	16549.82	3524.00	0.01
I-10 Reach	16.7087	5000.00	1214.30	1222.28	1218.18	1222.45	0.002152	3.49	1756.27	1561.62	0.44
I-10 Reach	16.7017	Culvert									
I-10 Reach	16.6948	5000.00	1214.07	1221.02		1221.52	0.001825	5.67	882.24	179.09	0.45
I-10 Reach	16.6789	5000.00	1213.73	1221.36	1216.47	1221.37	0.000019	0.59	9179.03	1798.27	0.04
I-10 Reach	16.6642	5000.00	1213.20	1221.22	1216.96	1221.35	0.001519	3.14	1903.20	1362.12	0.38
I-10 Reach	16.6556	Culvert									
I-10 Reach	16.6470	5000.00	1212.97	1216.59	1216.59	1218.25	0.009534	10.35	483.13	145.07	1.00
I-10 Reach	16.6361	5000.00	1212.70	1215.04	1215.56	1217.00	0.085271	11.65	478.29	816.41	2.15

Profile Output Table - Standard Table 1

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)	
Upper Reach A	20.0000	5000.00	1410.36	1413.63	1413.63	1415.27	0.009394	10.29	485.81	149.15	1.00
Upper Reach A	19.9735	5000.00	1390.09	1391.25	1393.37	1409.20	0.555560	34.00	147.06	158.37	6.22
Upper Reach A	19.9458	5000.00	1389.05	1393.86	1394.10	1395.05	0.023086	6.21	597.29	289.55	0.58
Upper Reach A	19.9052	5000.00	1379.10	1388.80	1388.99	1389.86	0.031005	8.91	623.84	371.68	0.69
Upper Reach A	19.8387	5000.00	1374.30	1382.00	1381.99	1382.58	0.023401	6.52	826.41	647.74	0.59
Upper Reach A	19.8173	5000.00	1372.55	1378.30	1378.27	1378.97	0.026920	4.79	787.13	662.21	0.57
Upper Reach B	19.7349	4850.00	1366.33	1371.06	1370.60	1371.78	0.012743	5.00	745.46	315.61	0.44
Upper Reach B	19.6465	4850.00	1359.85	1364.84	1364.84	1365.63	0.017245	5.65	710.18	392.47	0.51
Upper Reach B	19.5602	4850.00	1353.58	1356.78	1356.81	1357.68	0.014575	3.85	696.12	400.44	0.43
Upper Reach B	19.4887	4850.00	1347.87	1350.93	1350.95	1351.72	0.017485	4.24	691.91	467.06	0.47
Upper Reach B	19.3761	4850.00	1340.81	1342.31	1342.40	1342.96	0.016946	2.24	769.42	715.07	0.40
Upper Reach B	19.2665	4850.00	1331.06	1333.91	1333.85	1334.32	0.014639	2.40	976.94	991.64	0.38
Upper Reach B	19.1607	4850.00	1324.61	1325.53	1325.53	1326.02	0.016491	1.35	868.55	879.77	0.35
Upper Reach B	19.0557	4850.00	1315.79	1317.85	1317.72	1318.26	0.010867	1.90	985.29	1016.72	0.32
Split1	19.6872	150.00	1372.00	1374.06	1373.41	1374.12	0.010143	2.01	74.60	117.29	

0.44											
Split1	19.6513	150.00	1369.17	1370.94	1370.67	1371.08	0.029411	2.97	50.58	76.75	
0.64											
Split1	19.5997	150.00	1365.14	1367.25	1366.46	1367.31	0.007914	1.95	76.99	81.69	
0.35											
Split1	19.5616	150.00	1363.27	1365.42	1364.78	1365.52	0.010149	2.56	58.69	49.96	
0.42											
Split1	19.5223	150.00	1360.68	1363.05		1363.10	0.013275	1.82	82.48	143.40	
0.42											
Split1	19.4869	150.00	1357.30	1360.08	1359.33	1360.18	0.018059	2.58	58.15	75.02	
0.52											
Split1	19.3980	150.00	1352.11	1353.55	1353.12	1353.61	0.011054	1.96	76.48	103.29	
0.40											
Split 1A	19.3216	30.00	1346.76	1347.47	1347.16	1347.49	0.007725	1.31	22.82	43.04	
0.32											
Split 1A	19.2398	30.00	1341.01	1341.99	1341.77	1342.06	0.022332	2.13	14.05	28.36	
0.53											
Split 1A	19.1676	30.00	1336.01	1336.95	1336.61	1336.98	0.008836	1.31	22.84	47.75	
0.33											
Split 1A	19.0811	30.00	1327.96	1328.86	1328.77	1328.99	0.049080	2.92	10.27	23.31	
0.78											
Split 1A	18.9967	30.00	1321.21	1322.52	1322.14	1322.55	0.006787	1.33	23.48	57.00	
0.30											
Split 1A	18.9165	30.00	1314.34	1315.38	1315.38	1315.55	0.086150	3.30	9.08	26.09	
0.99											
Split 1B	19.3158	120.00	1346.28	1347.60	1347.60	1347.67	0.018996	2.12	57.15	114.91	
0.50											
Split 1B	19.2400	120.00	1339.34	1341.69	1340.88	1341.70	0.001765	1.14	121.50	248.02	
0.18											
Split 1B	19.1631	120.00	1334.12	1335.76	1335.76	1336.15	0.066915	5.02	23.88	30.32	
1.00											
Split 1B	19.0836	120.00	1324.91	1327.17	1327.17	1327.75	0.062116	6.12	19.62	17.04	
1.00											
Split 1B	19.0153	120.00	1320.41	1321.78	1321.47	1321.92	0.006469	1.48	43.46	51.35	
0.30											
Split 1B	18.9337	120.00	1314.24	1316.16	1316.16	1316.41	0.035459	4.19	30.98	60.91	
0.75											
Split 1B	18.8560	120.00	1309.33	1311.73	1311.54	1312.12	0.039703	5.04	23.83	19.93	
0.81											
Split 1B	18.7744	120.00	1304.12	1306.29	1306.06	1306.34	0.006517	1.79	66.78	131.58	
0.32											
Split 1B	18.7184	120.00	1300.43	1302.33	1302.33	1302.53	0.033480	3.74	34.90	77.71	
0.71											
Split 1B	18.6384	120.00	1295.32	1297.39	1297.39	1297.83	0.066201	5.27	22.75	26.41	
1.00											
Split 1B	18.5485	120.00	1290.17	1291.83	1291.83	1292.10	0.074096	4.20	28.57	51.33	
0.99											
Upper Mid Reach	18.9676	4880.00	1309.70	1311.65	1311.65	1312.24	0.015271	2.12	817.02		
722.89	0.38										
Upper Mid Reach	18.8526	4880.00	1302.10	1304.87	1304.70	1305.10	0.010586	1.92	1292.27		
1598.00	0.32										
Upper Mid Reach	18.7424	4880.00	1294.41	1297.69	1297.65	1298.02	0.018340	3.60	1054.18		
1454.68	0.46										
Upper Mid Reach	18.6296	4880.00	1287.21	1290.68	1290.47	1290.99	0.009573	2.79	1115.60		
1124.14	0.34										
Lower Mid Reach	18.5237	5000.00	1282.22	1285.14	1284.95	1285.48	0.010145	2.19	1117.79		
966.98	0.33										
Lower Mid Reach	18.3861	5000.00	1277.51	1278.70	1278.52	1278.98	0.009510	1.31	1212.04		
1338.42	0.28										
Lower Mid Reach	18.2834	5000.00	1272.75	1273.54	1273.40	1273.84	0.011169	1.00	1135.42		
1328.71	0.28										
Lower Mid Reach	18.1956	5000.00	1267.06	1269.43	1269.21	1269.68	0.009176	1.62	1258.97		
1390.24	0.29										
Lower Mid Reach	18.0888	5000.00	1262.50	1265.24	1265.01	1265.48	0.009292	2.64	1287.61		
1481.26	0.33										
Lower Mid Reach	17.9877	5000.00	1256.92	1260.77	1260.55	1260.99	0.008290	2.78	1363.26		
1624.57	0.32										
Lower Mid Reach	17.8771	5000.00	1252.57	1255.95	1255.90	1256.20	0.010197	2.45	1270.90		
1501.14	0.33										
Lower Mid Reach	17.7710	5000.00	1249.90	1251.21	1251.18	1251.48	0.010357	1.38	1231.71		
1786.50	0.29										
Lower Mid Reach	17.6702	5000.00	1243.94	1247.66	1247.30	1247.83	0.007446	2.24	1541.48		
1875.00	0.29										
Split2	17.5883	1280.00	1239.27	1243.25	1242.83	1243.44	0.009103	2.58	383.93	335.81	
0.36											
Split2	17.4913	1280.00	1233.18	1239.12	1238.68	1239.27	0.008685	2.47	428.99	419.14	
0.34											
Split2	17.3965	1280.00	1225.15	1233.44	1232.55	1234.02	0.015061	5.57	211.10	93.58	
0.49											
Split2	17.1420	1280.00	1224.41	1226.89		1226.91	0.002851	1.31	980.46	715.06	
0.20											
Split2	16.9865	1280.00	1224.39	1225.34	1225.04	1225.40	0.004225	0.92	631.49	1016.77	
0.21											
Split2	16.8902	1280.00	1222.79	1223.70	1223.70	1223.98	0.021222	2.19	310.40	603.23	
0.47											
Lower Reach	17.5767	3720.00	1239.92	1243.00	1242.91	1243.19	0.013109	2.63	1068.05	1761.23	
0.38											
Lower Reach	17.4734	3720.00	1236.37	1239.69	1239.39	1239.79	0.005251	1.56	1460.86	1983.73	
0.23											
Lower Reach	17.3602	3720.00	1233.27	1235.40	1235.31	1235.60	0.012525	2.10	1048.71	1698.12	
0.35											
Lower Reach	17.2691	3720.00	1230.19	1232.45	1232.16	1232.53	0.004667	1.18	1647.35	2365.26	
0.21											
Lower Reach	17.1738	3720.00	1226.04	1228.80	1228.76	1229.01	0.016481	2.31	1006.04	1887.04	
0.40											
Lower Reach	17.0788	3720.00	1223.69	1225.76	1225.36	1225.86	0.003969	1.17	1453.25	1681.87	
0.20											
Lower Reach	16.9865	3720.00	1220.28	1222.54	1222.54	1222.85	0.020723	2.79	858.46	1410.65	
0.45											
1-10 Reach	16.8902	5000.00	1217.58	1222.48	1220.79	1222.50	0.000390	0.77	4277.41	2697.93	
0.07											

I-10 Reach	16.7885	5000.00	1215.86	1222.47		1222.47	0.000023	0.26	11896.24	3897.10	0.02
I-10 Reach	16.7242	5000.00	1214.57	1222.47	1217.28	1222.47	0.000007	0.16	16549.82	3524.00	0.01
I-10 Reach	16.7087	5000.00	1214.30	1222.28	1218.18	1222.45	0.002152	3.49	1756.27	1561.62	0.44
I-10 Reach	16.7017	Culvert									
I-10 Reach	16.6948	5000.00	1214.07	1221.02		1221.52	0.001829	5.67	882.24	179.09	0.45
I-10 Reach	16.6789	5000.00	1213.73	1221.36	1216.47	1221.37	0.000019	0.59	9179.03	1798.27	0.04
I-10 Reach	16.6642	5000.00	1213.20	1221.22	1216.96	1221.35	0.001519	3.14	1903.20	1362.12	0.38
I-10 Reach	16.6556	Culvert									
I-10 Reach	16.6470	5000.00	1212.97	1216.59	1216.59	1218.25	0.009534	10.35	483.13	145.07	1.00
I-10 Reach	16.6361	5000.00	1212.70	1216.04	1215.56	1217.00	0.085271	11.65	478.29	818.41	2.15

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Q=5000

River: Harquahala Reach: Upper Reach A RS: 20.0000 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Harquahala Reach: Upper Reach A RS: 19.9735 Profile: PF#1
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Upper Reach A RS: 19.9458 Profile: PF#1
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Upper Reach A RS: 19.9052 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Upper Reach A RS: 19.8387 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Harquahala Reach: Upper Reach A RS: 19.8173 Profile: PF#1
Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Upper Reach B RS: 19.7349 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Upper Reach B RS: 19.6465 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Upper Reach B RS: 19.5602 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section

slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note - Program found supercritical flow starting at this cross section.
River: Harquahala Reach: Upper Reach B RS: 19.4887 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Upper Reach B RS: 19.3761 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Upper Reach B RS: 19.2665 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Harquahala Reach: Upper Reach B RS: 19.1607 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Upper Reach B RS: 19.0557 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split1 RS: 19.6872 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.6513 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.5997 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.5616 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.5223 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.4869 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.3980 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.3216 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.2398 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

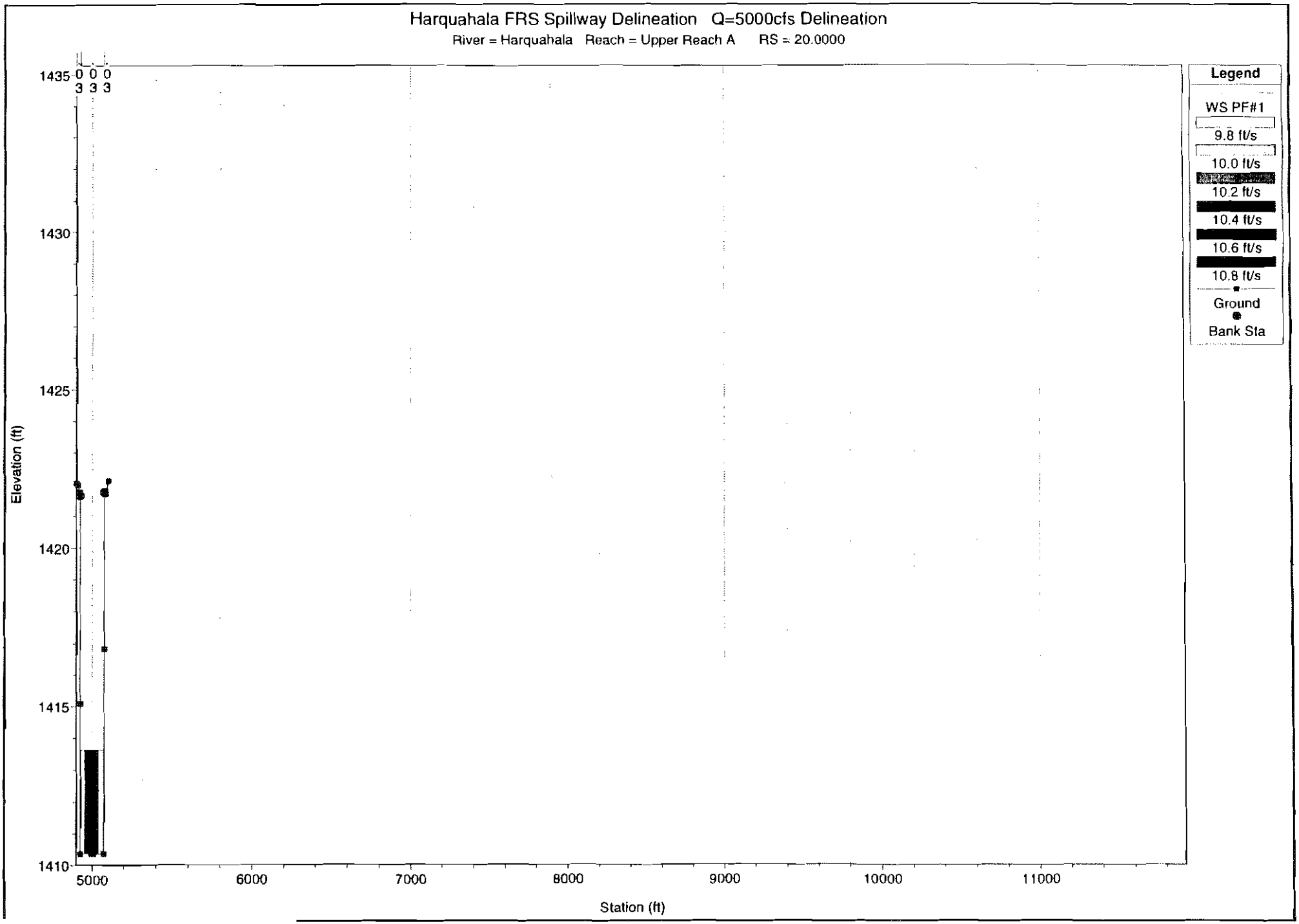
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.1676 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.0811 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 18.9967 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1A RS: 18.9165 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1B RS: 19.3158 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: Harquahala Reach: Split 1B RS: 19.2400 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Harquahala Reach: Split 1B RS: 19.1631 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid water surface was
used.
River: Harquahala Reach: Split 1B RS: 19.0836 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the
water surface that had the least amount of error between computed and assumed values.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1B RS: 19.0153 Profile: PF#1
Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Harquahala Reach: Split 1B RS: 18.9337 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split 1B RS: 18.8560 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split 1B RS: 18.7744 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split 1B RS: 18.7184 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split 1B RS: 18.6384 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may iodicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split 1B RS: 18.5485 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Upper Mid Reach RS: 18.9676 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the

calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Upper Mid Reach RS: 18.8526 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Harquahala Reach: Upper Mid Reach RS: 18.7424 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Upper Mid Reach RS: 18.6296 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.5237 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.3861 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.2834 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.1956 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.0888 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 17.9877 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 17.8771 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Lower Mid Reach RS: 17.7710 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 17.6702 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split2 RS: 17.5883 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split2 RS: 17.4913 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split2 RS: 17.3965 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split2 RS: 17.1420 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate

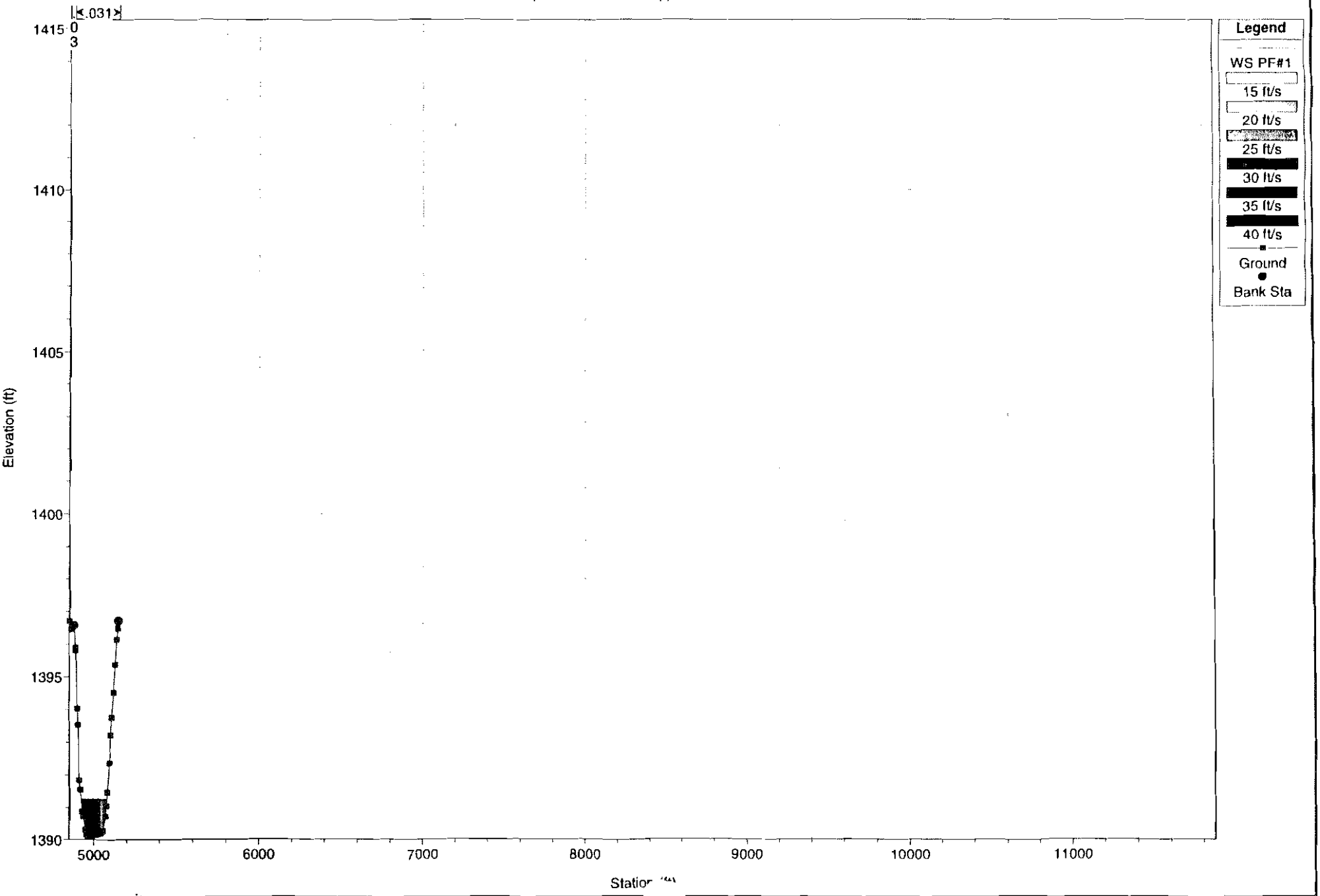
the need for additional cross sections.
River: Harquahala Reach: Split2 RS: 16.9665 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split2 RS: 16.8902 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Harquahala Reach: Lower Reach RS: 17.5767 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.4734 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.3602 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Lower Reach RS: 17.2691 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.1738 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Lower Reach RS: 17.0788 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 16.9865 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: I-10 Reach RS: 16.8902 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.7885 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.7242 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.6948 Profile: PF#1

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.6789 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.6470 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Harquahala Reach: I-10 Reach RS: 16.6361 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

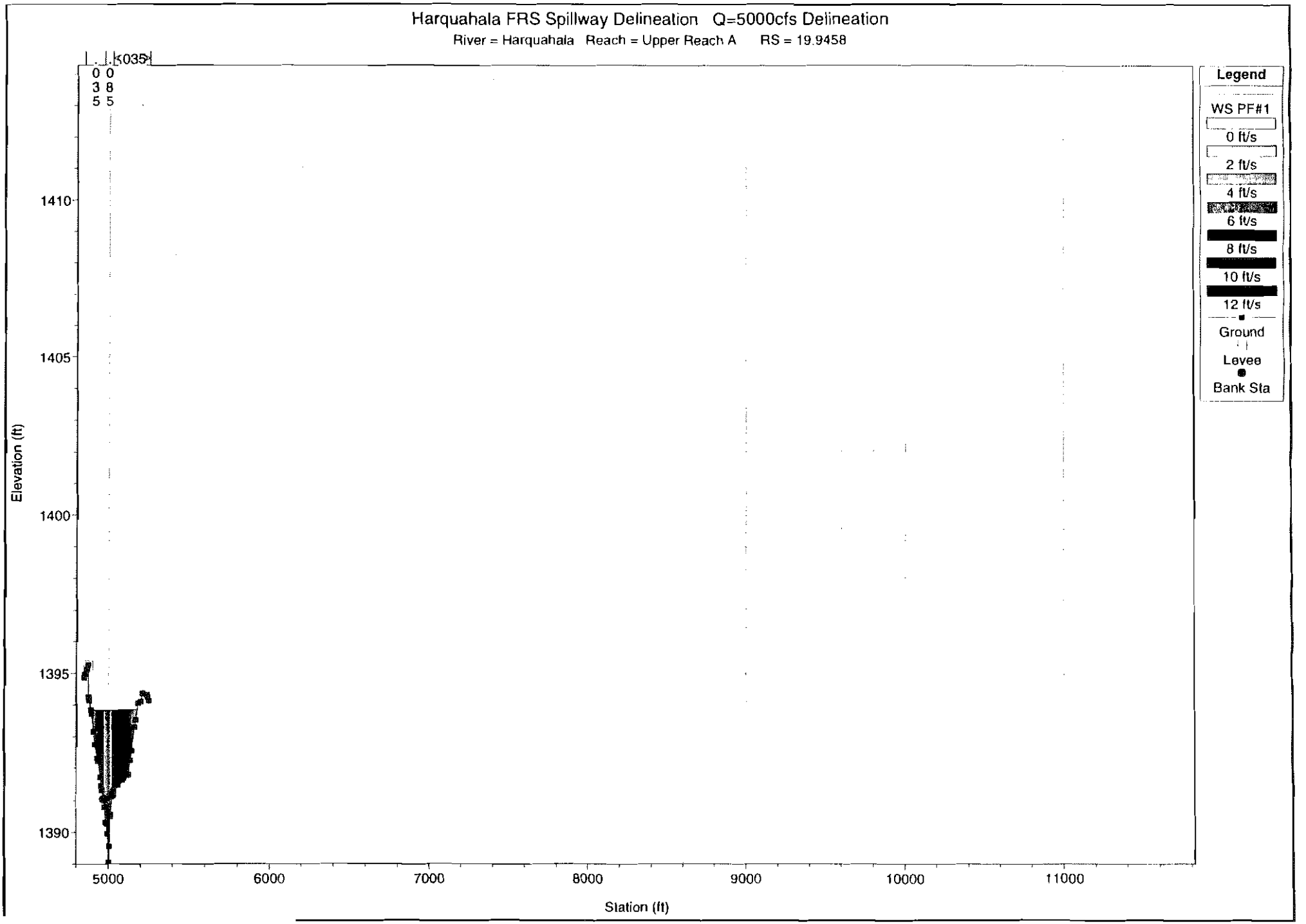

Harquahala FRS Spillway Delineation Q=5000cfs Delineation
River = Harquahala Reach = Upper Reach A RS = 20.0000
Elevation (ft)
1435
1430
1425
1420
1415
1410
0 0 0
3 3 3
5000
6000
7000
8000
9000
10000
11000
Station (ft)
Legend
WS PF#1
9.8 ft/s
10.0 ft/s
10.2 ft/s
10.4 ft/s
10.6 ft/s
10.8 ft/s
Ground
Bank Sta

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

River = Harquahala Reach = Upper Reach A RS = 19.9735

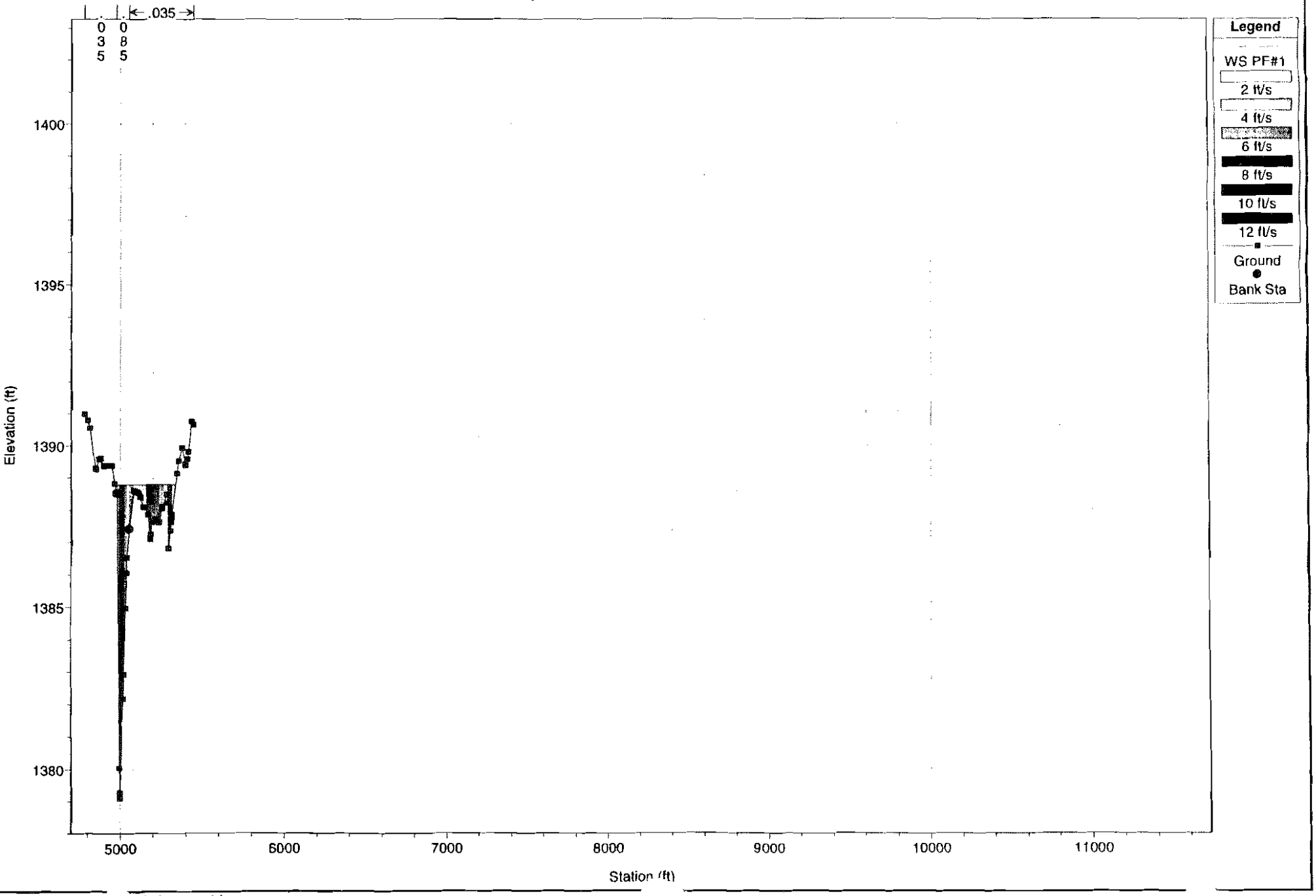


in Horiz. = 800 Vert. = 4 ft

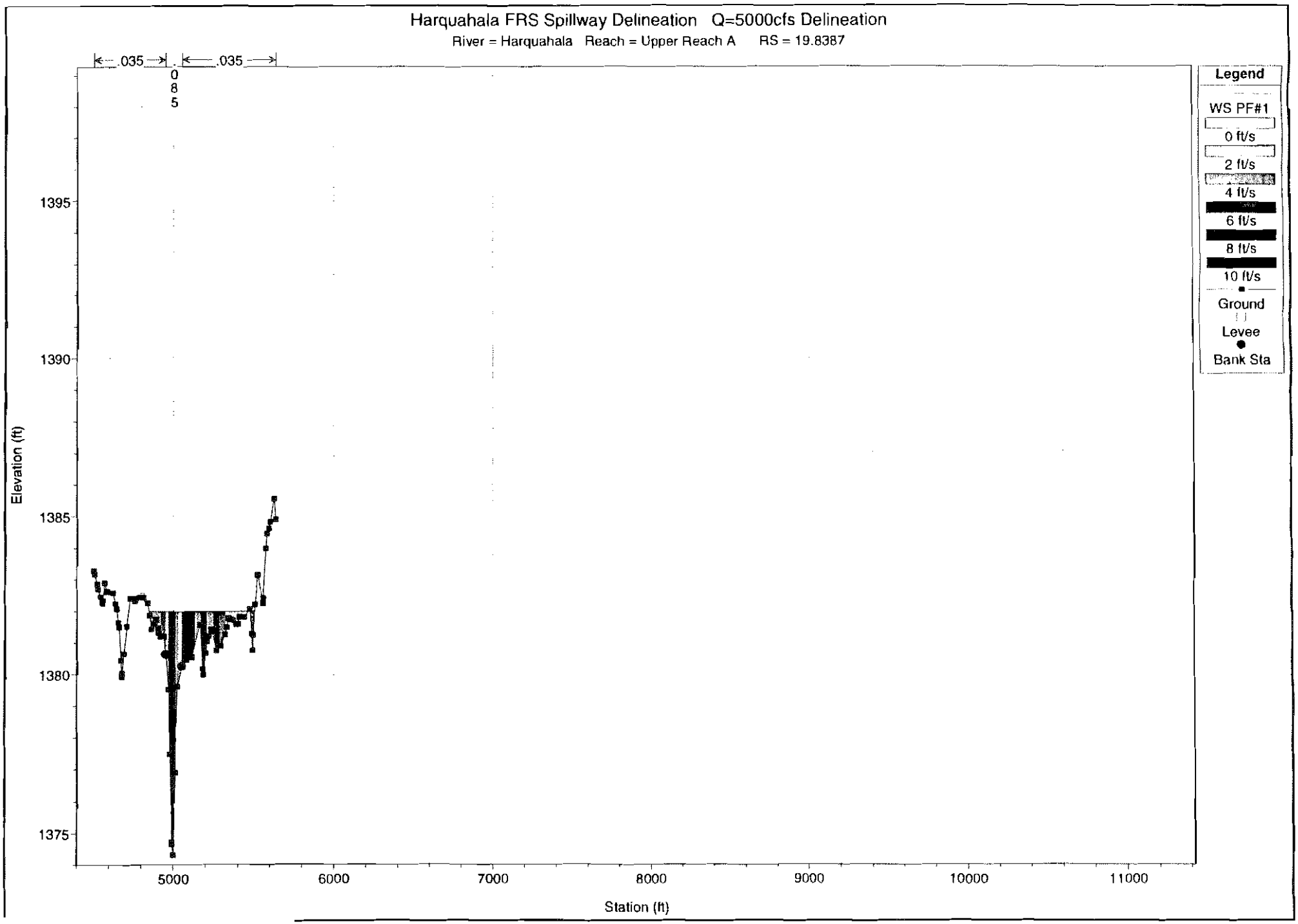

Harquahala FRS Spillway Delineation Q=5000cfs Delineation
River = Harquahala Reach = Upper Reach A RS = 19.9458
0 0
3 8
5 5
Elevation (ft)
1410
1405
1400
1395
1390
5000
6000
7000
8000
9000
10000
11000
Station (ft)
Legend
WS PF#1
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Levee
Bank Sta

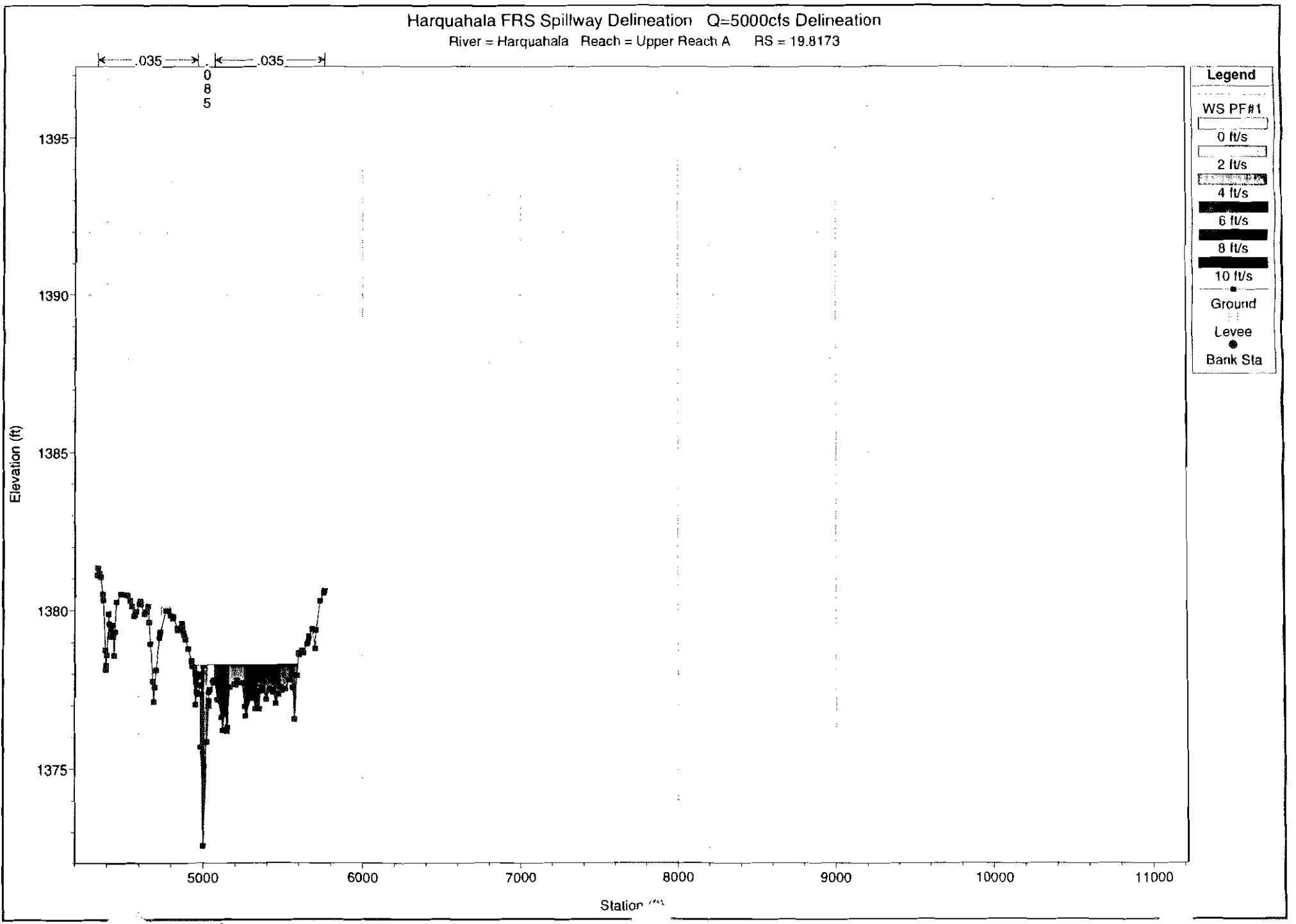
Harquahala FRS Spillway Delineation Q=5000cfs Delineation

River = Harquahala Reach = Upper Reach A RS = 19.9052

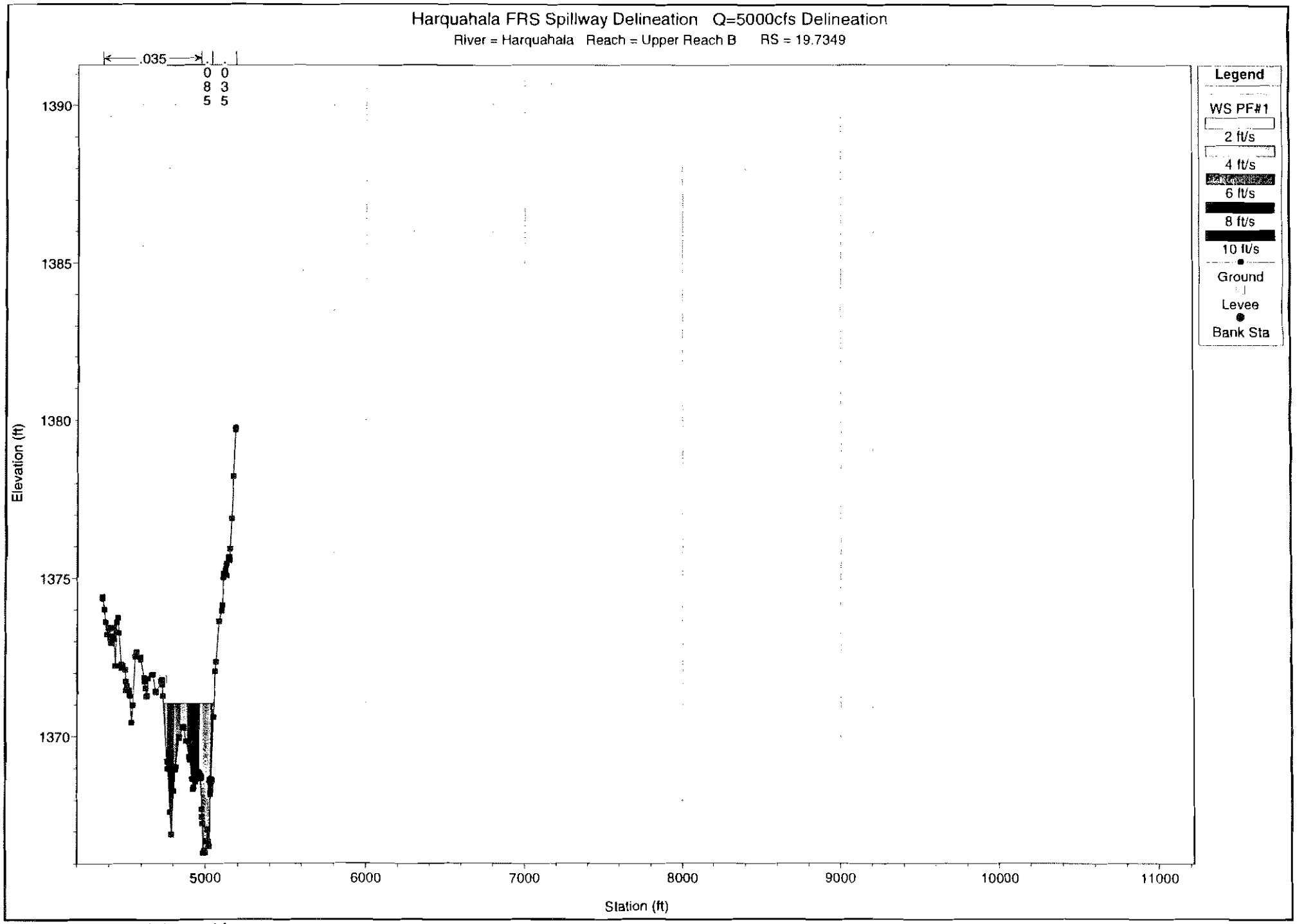


1 in Horiz. = 800 Vert. = 4 ft

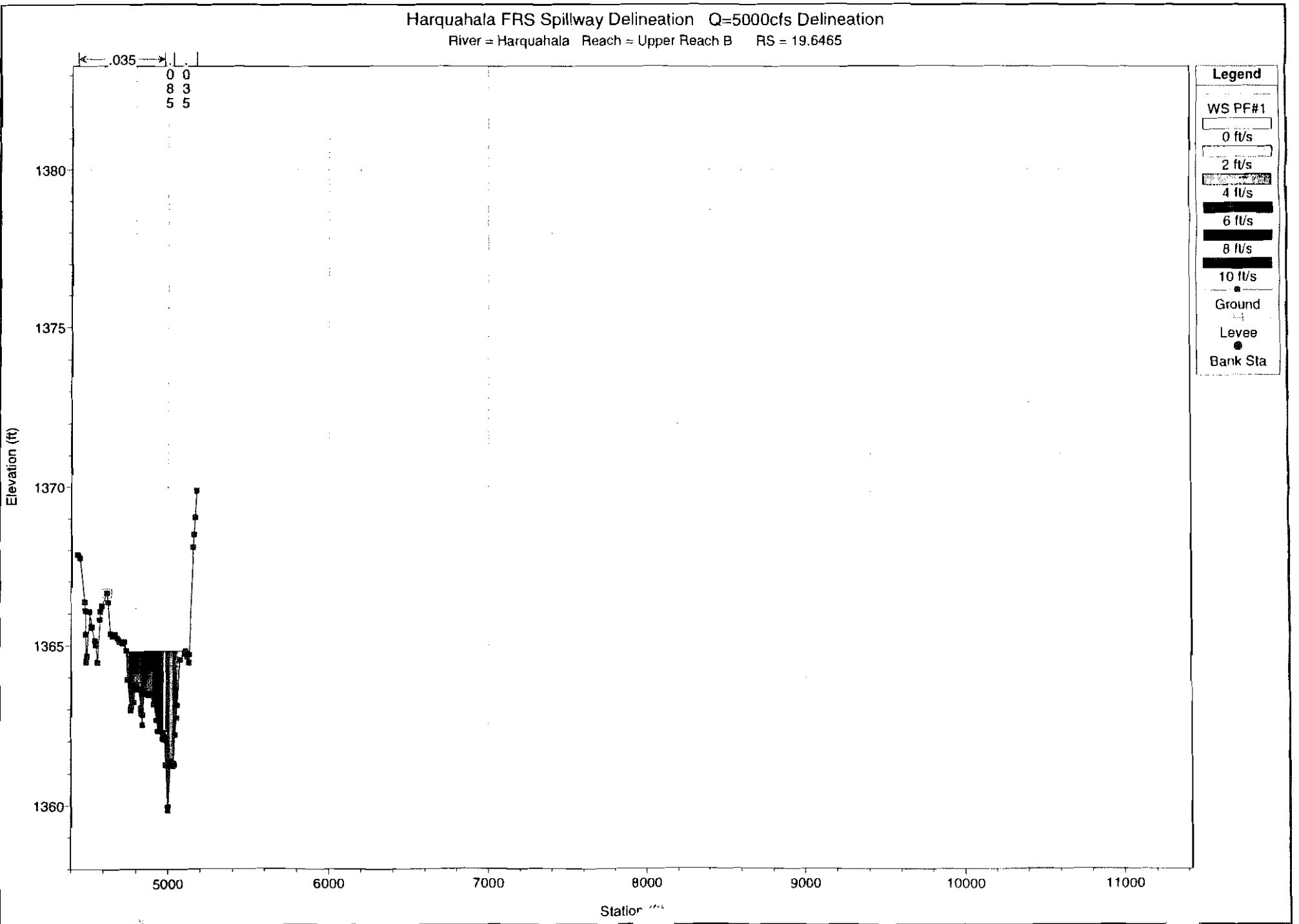

Harquahala FRS Spillway Delineation Q=5000cfs Delineation
River = Harquahala Reach = Upper Reach A RS = 19.8387
.035
.085
.035
Elevation (ft)
1395
1390
1385
1380
1375
5000
6000
7000
8000
9000
10000
11000
Station (ft)
Legend
WS PF#1
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Levee
Bank Sta



1 in Horiz. = 800 n Vert. = 4 ft



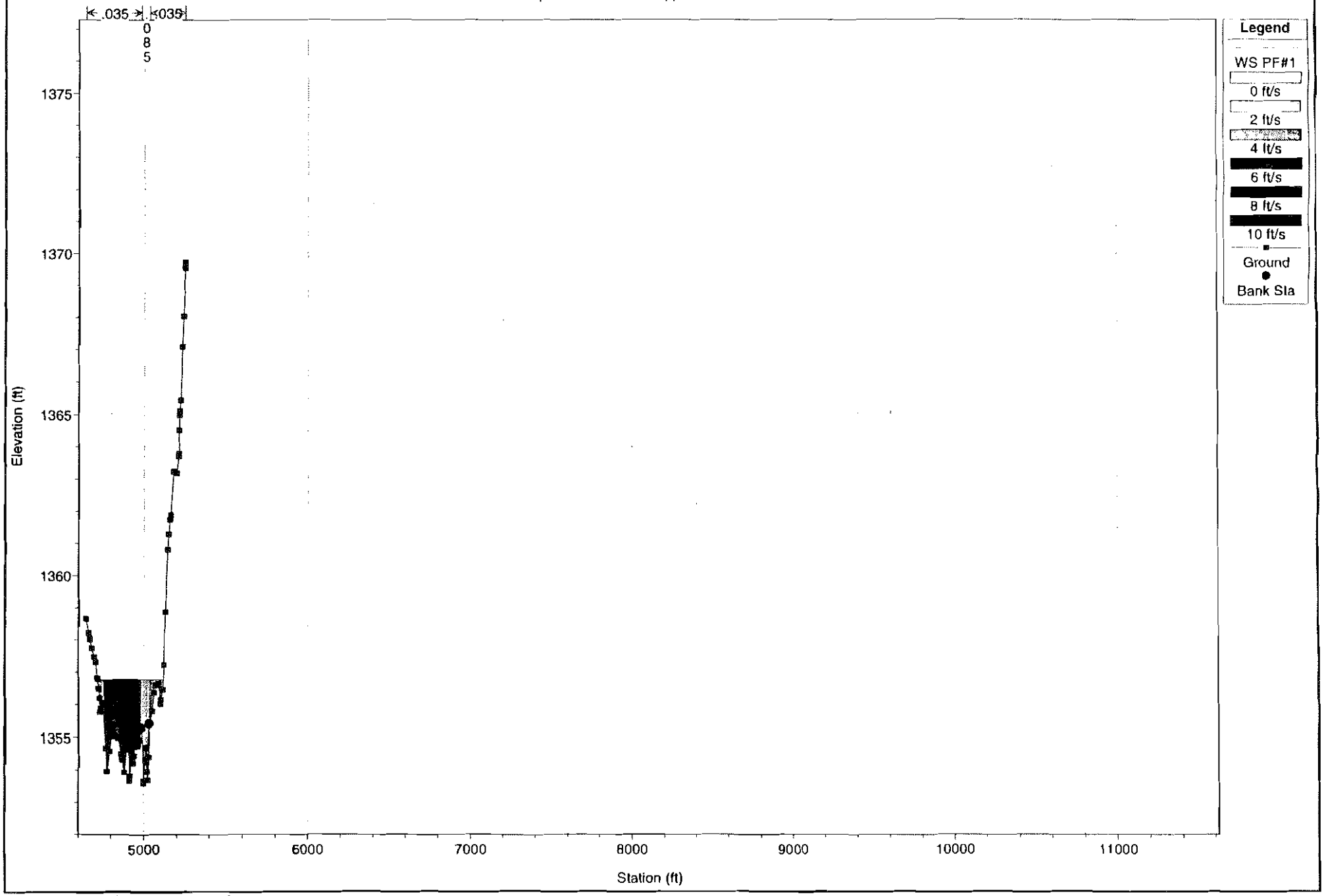
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



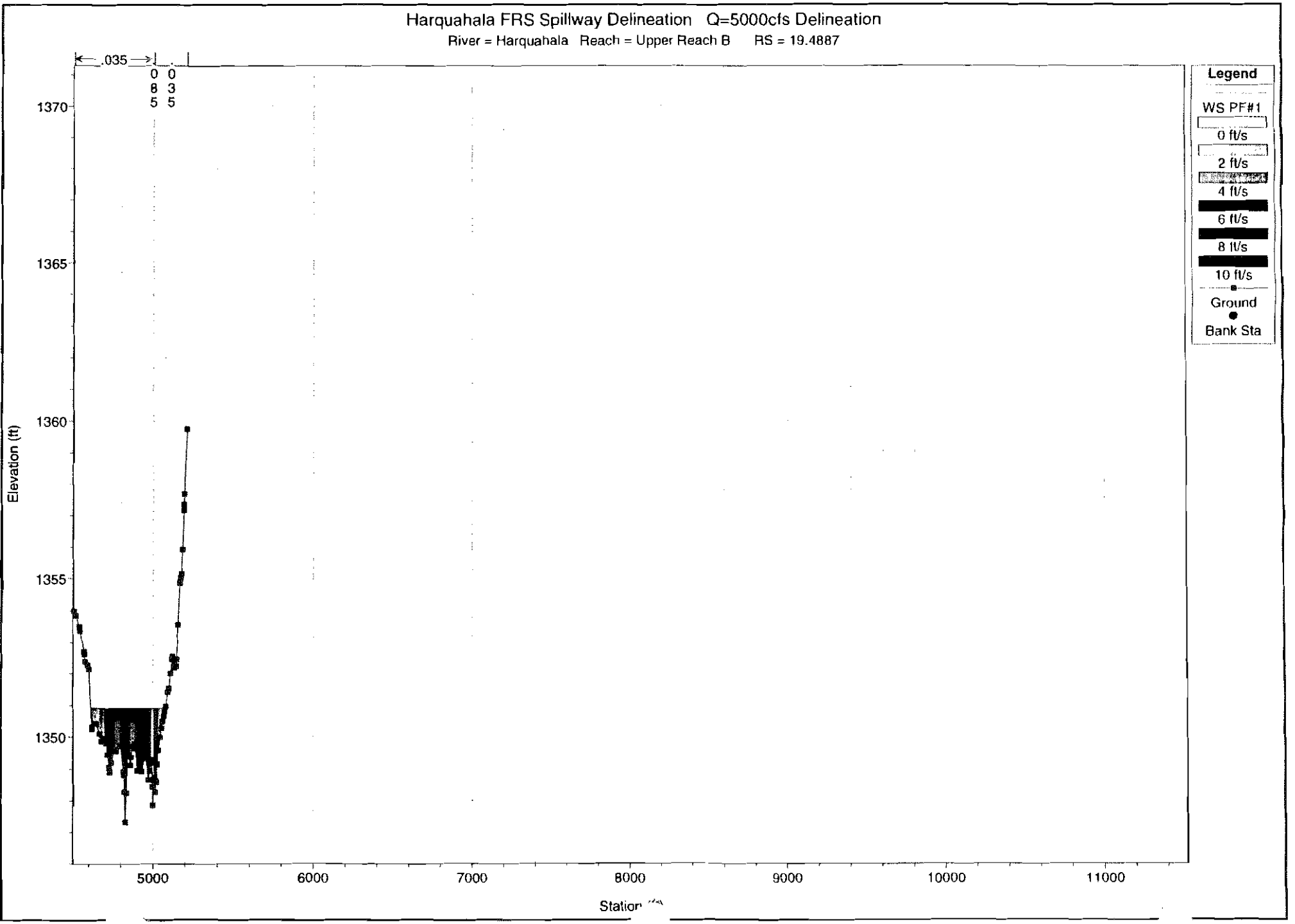
1 in Horiz. = 800 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

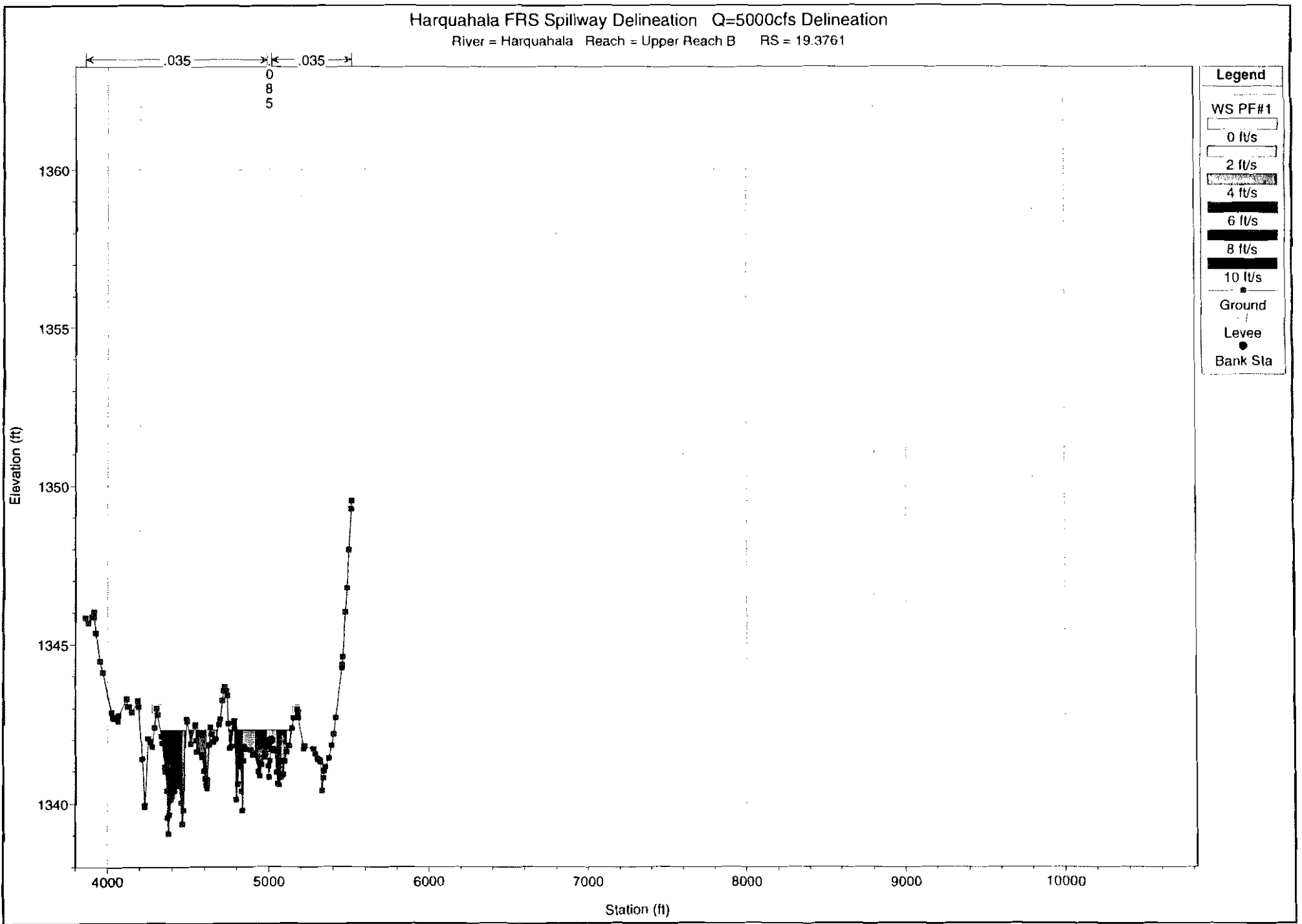
River = Harquahala Reach = Upper Reach B RS = 19.5602



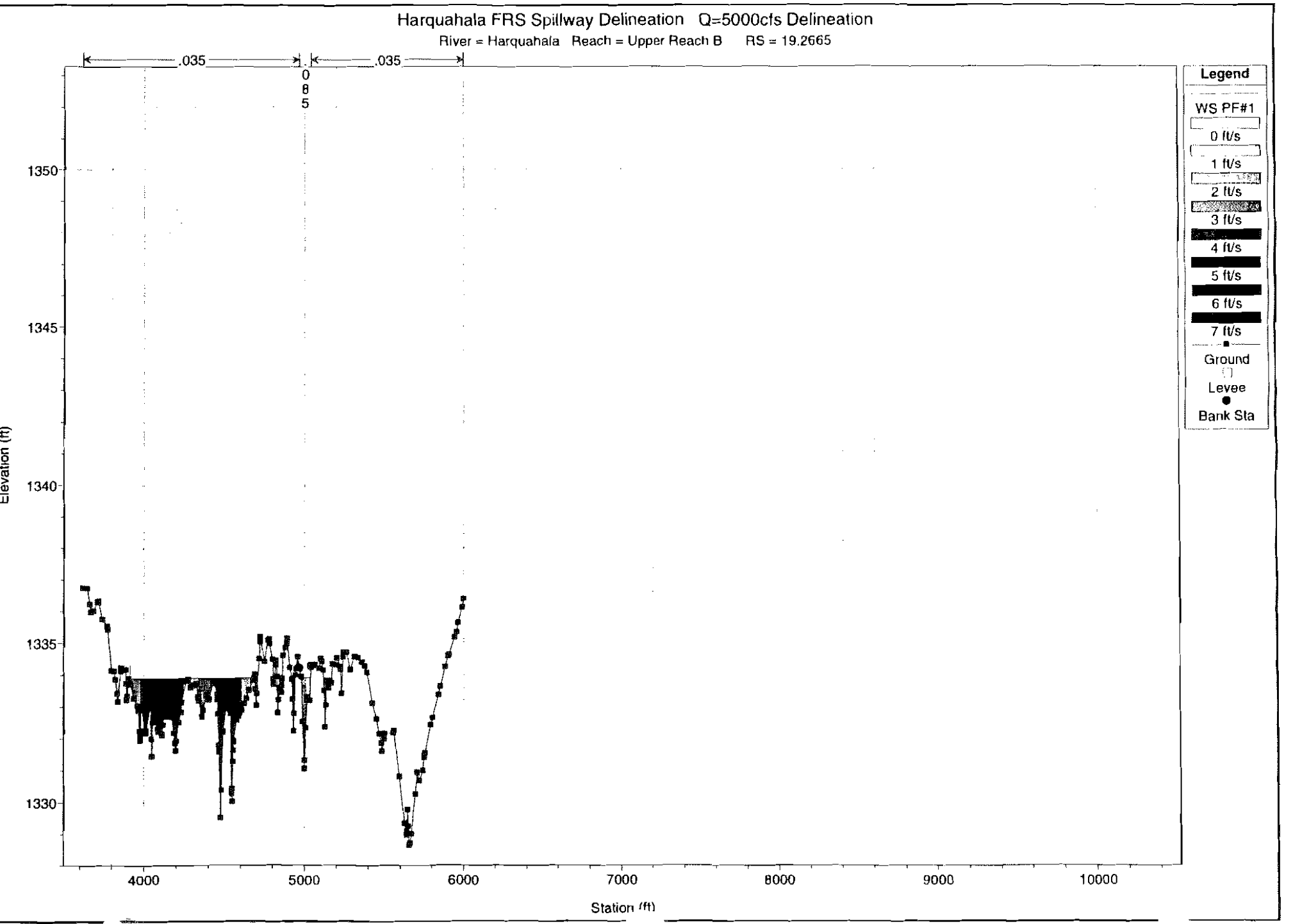
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



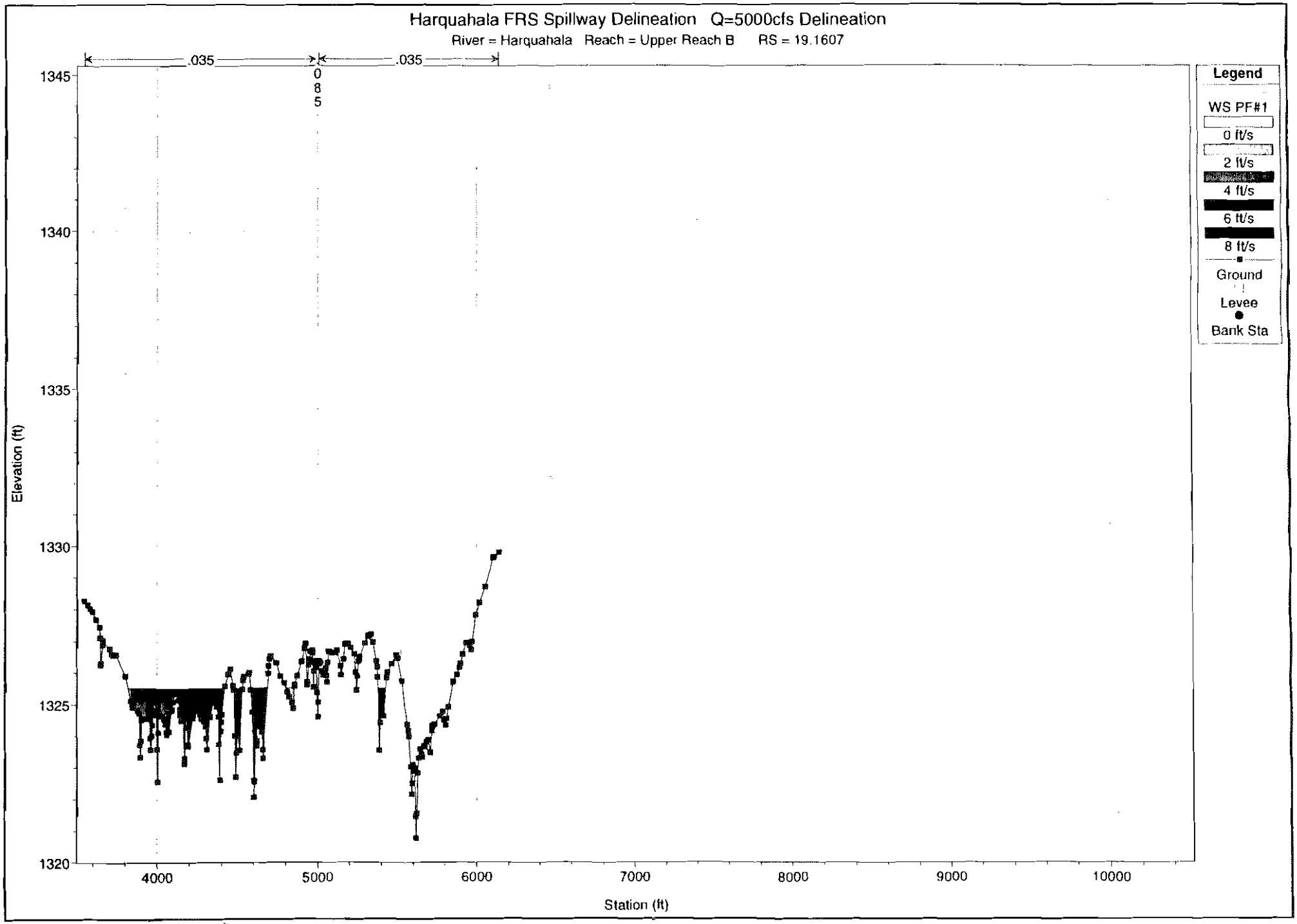
1 in Horiz. = 800 n Vert. = 4 ft



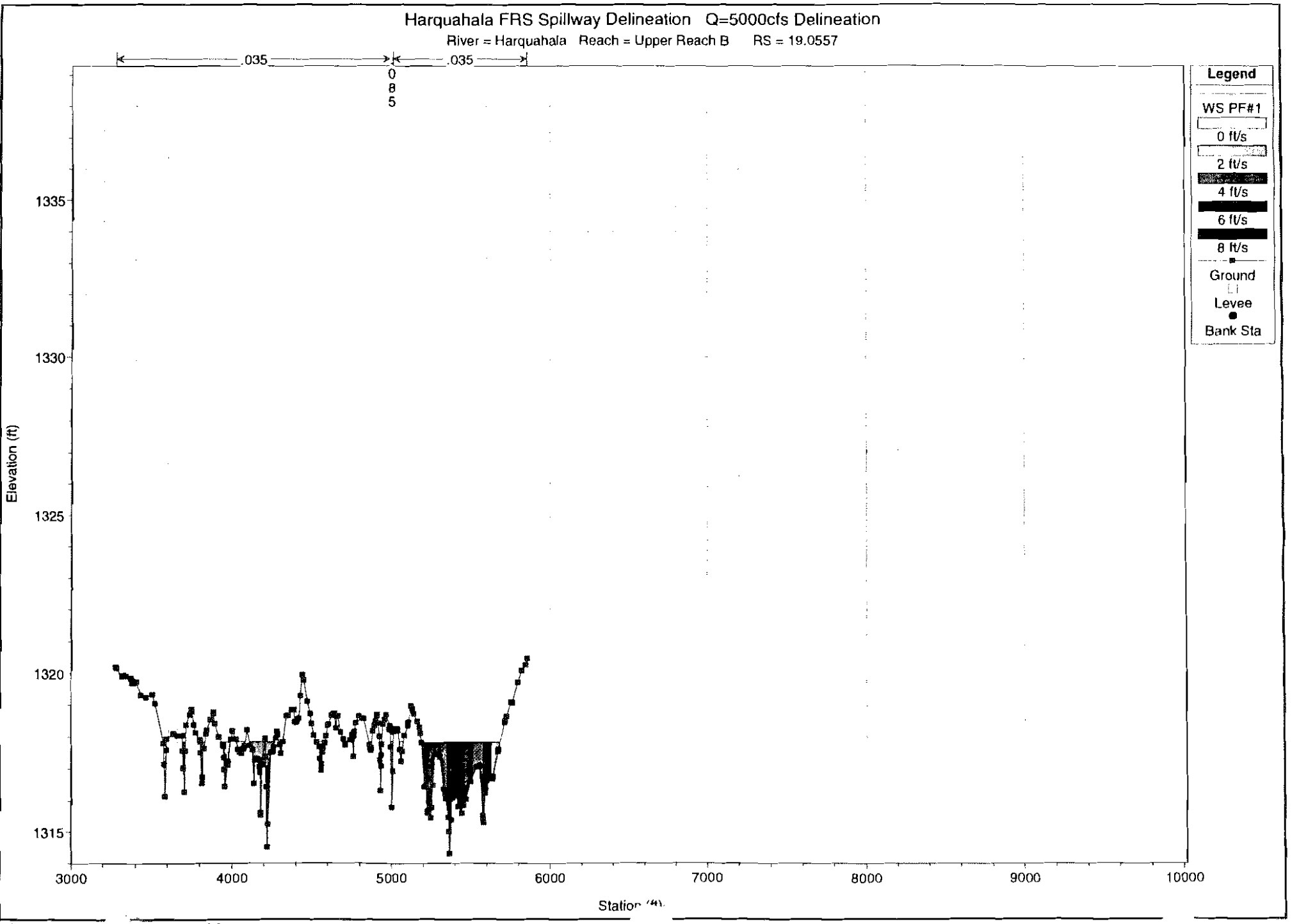
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



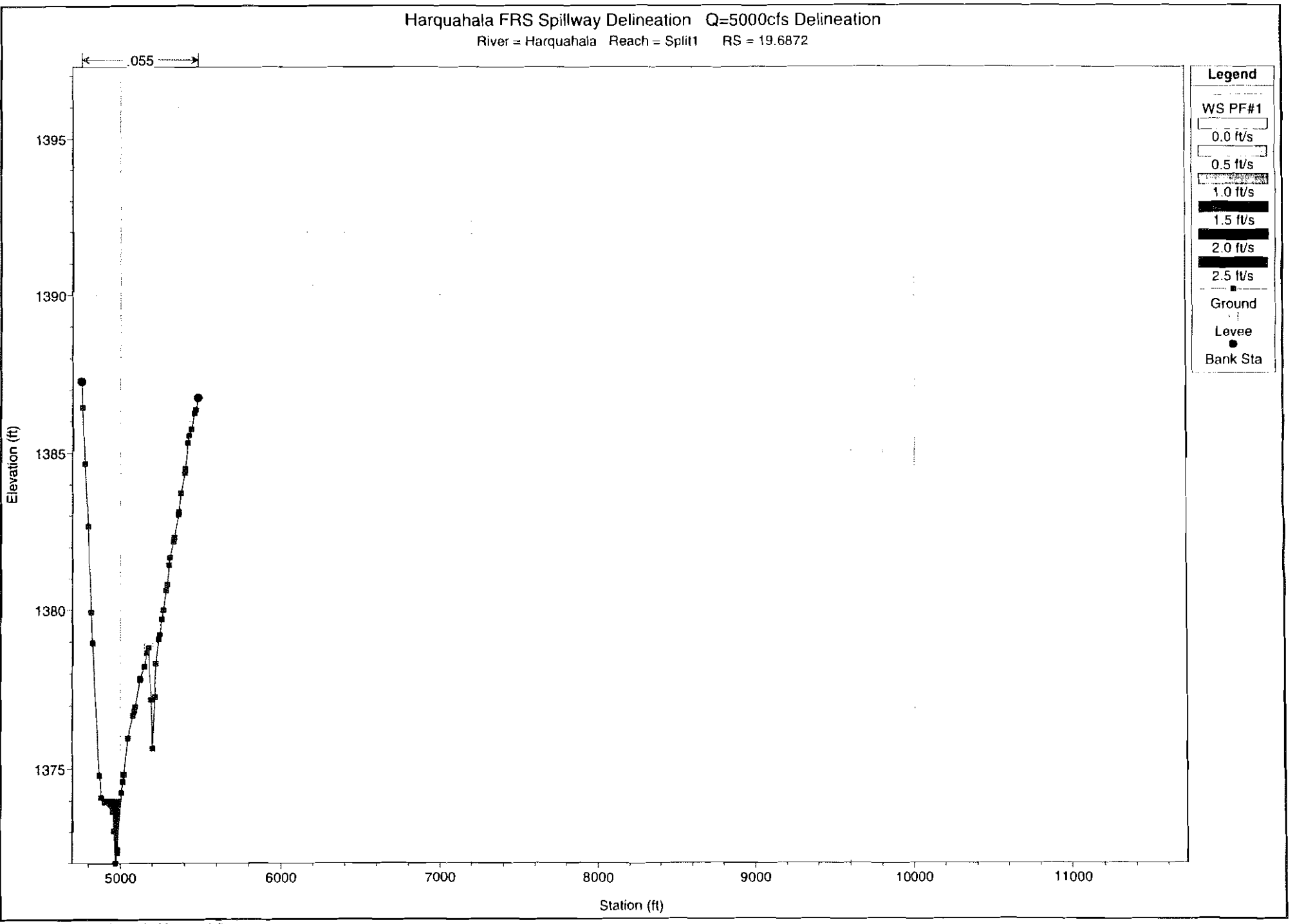
in Horiz. = 800 Vert. = 4 ft



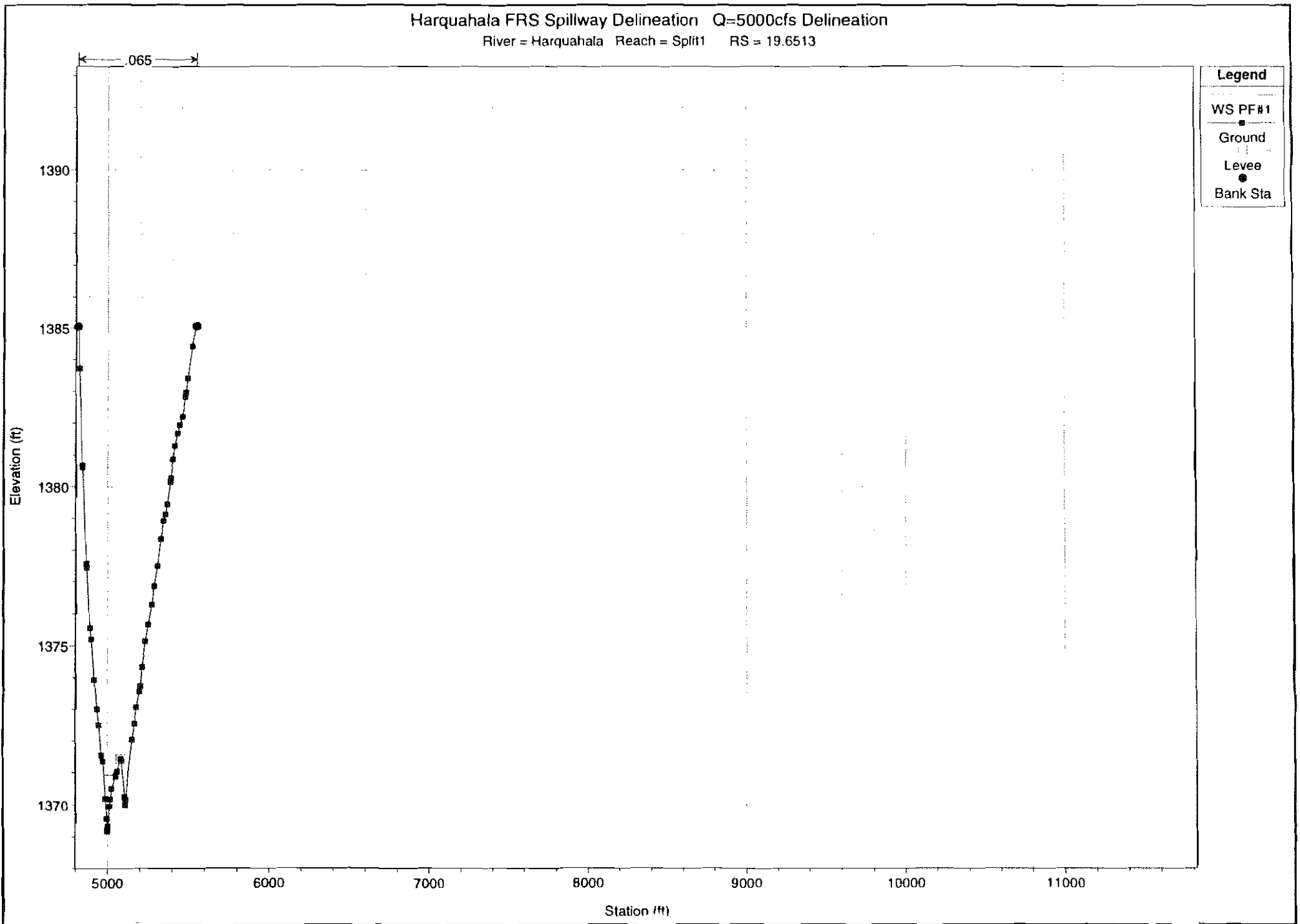
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



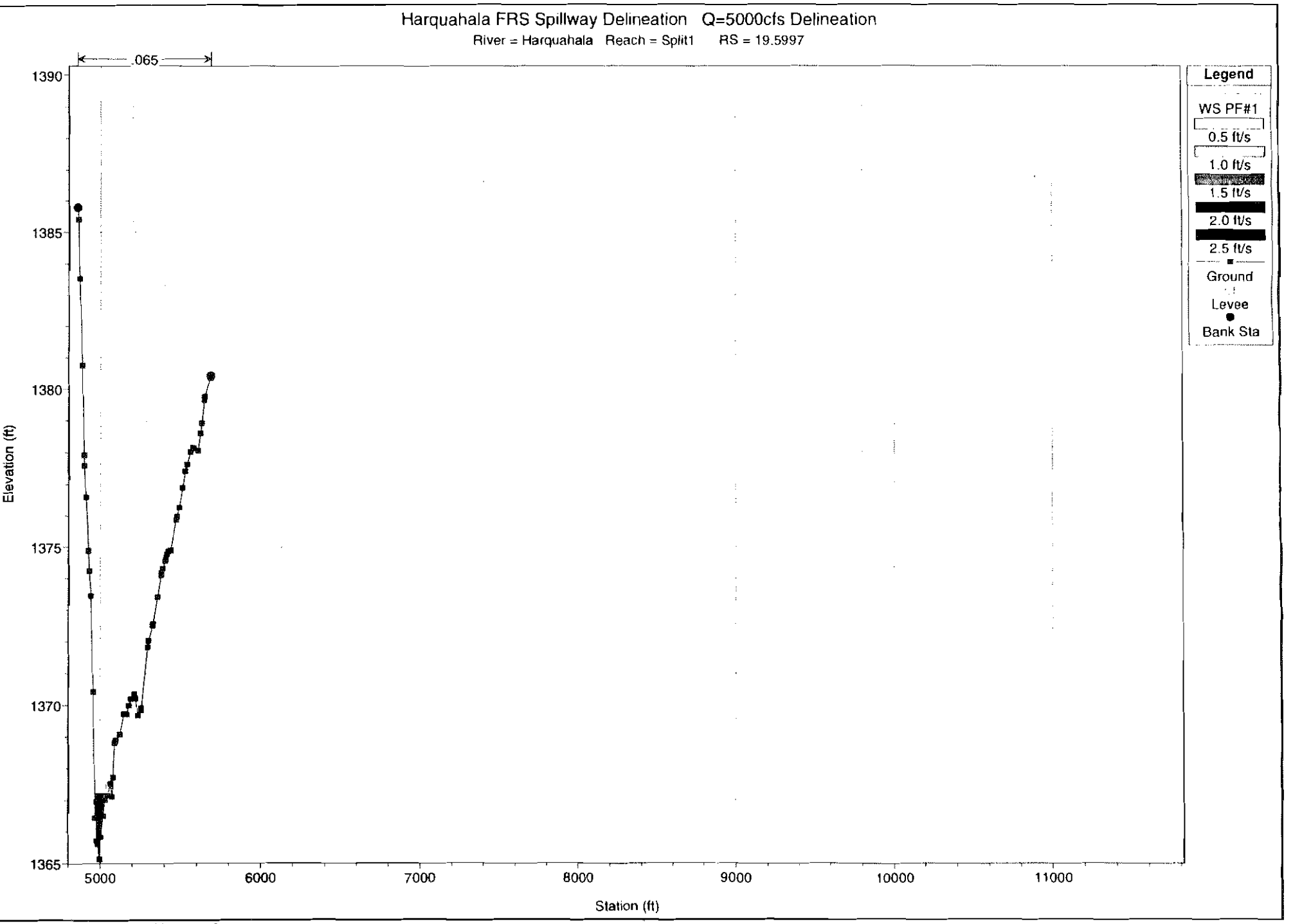
1 in Horiz. = 800 1 Vert. = 4 ft



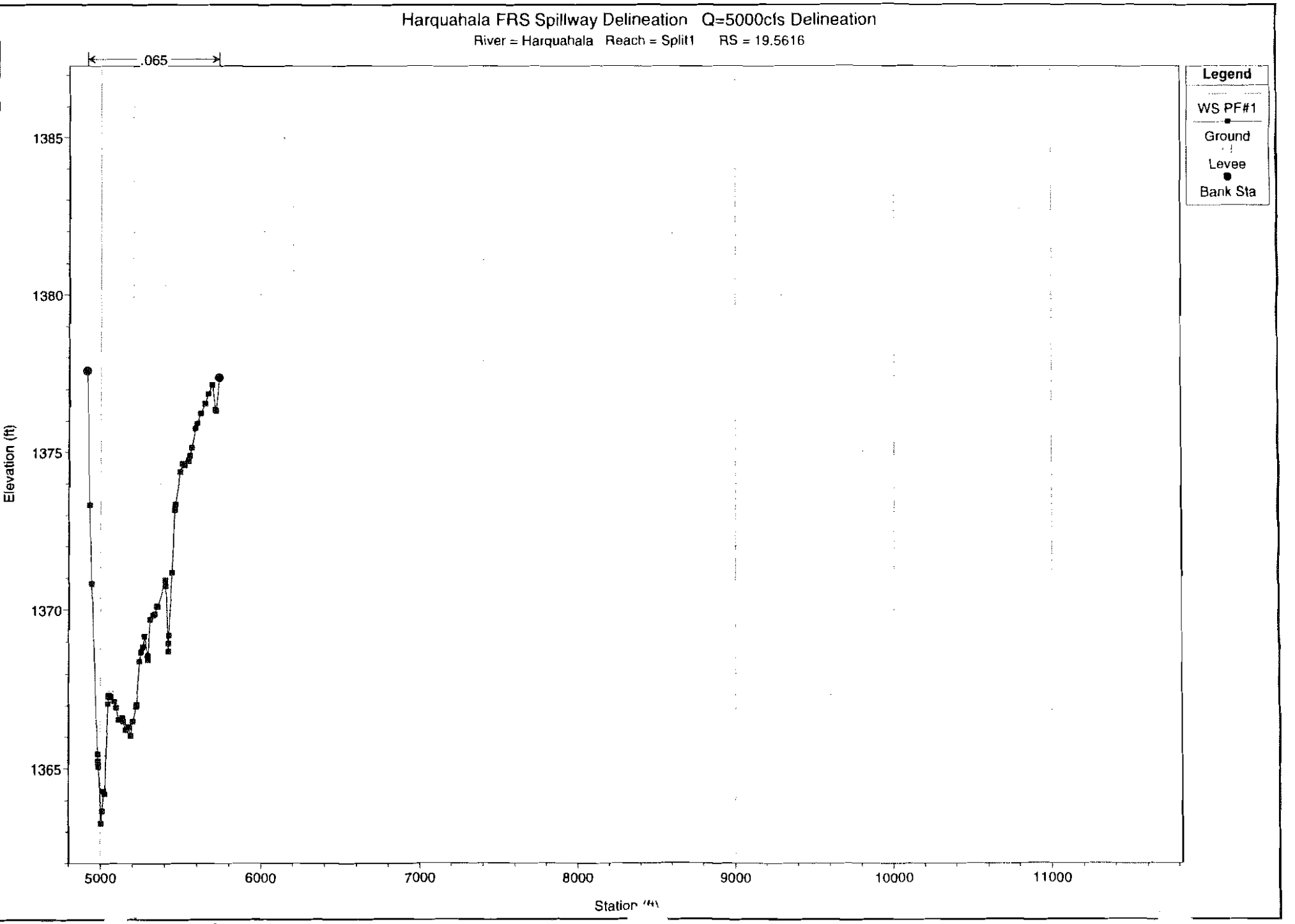
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 800 in Vert. = 4 ft



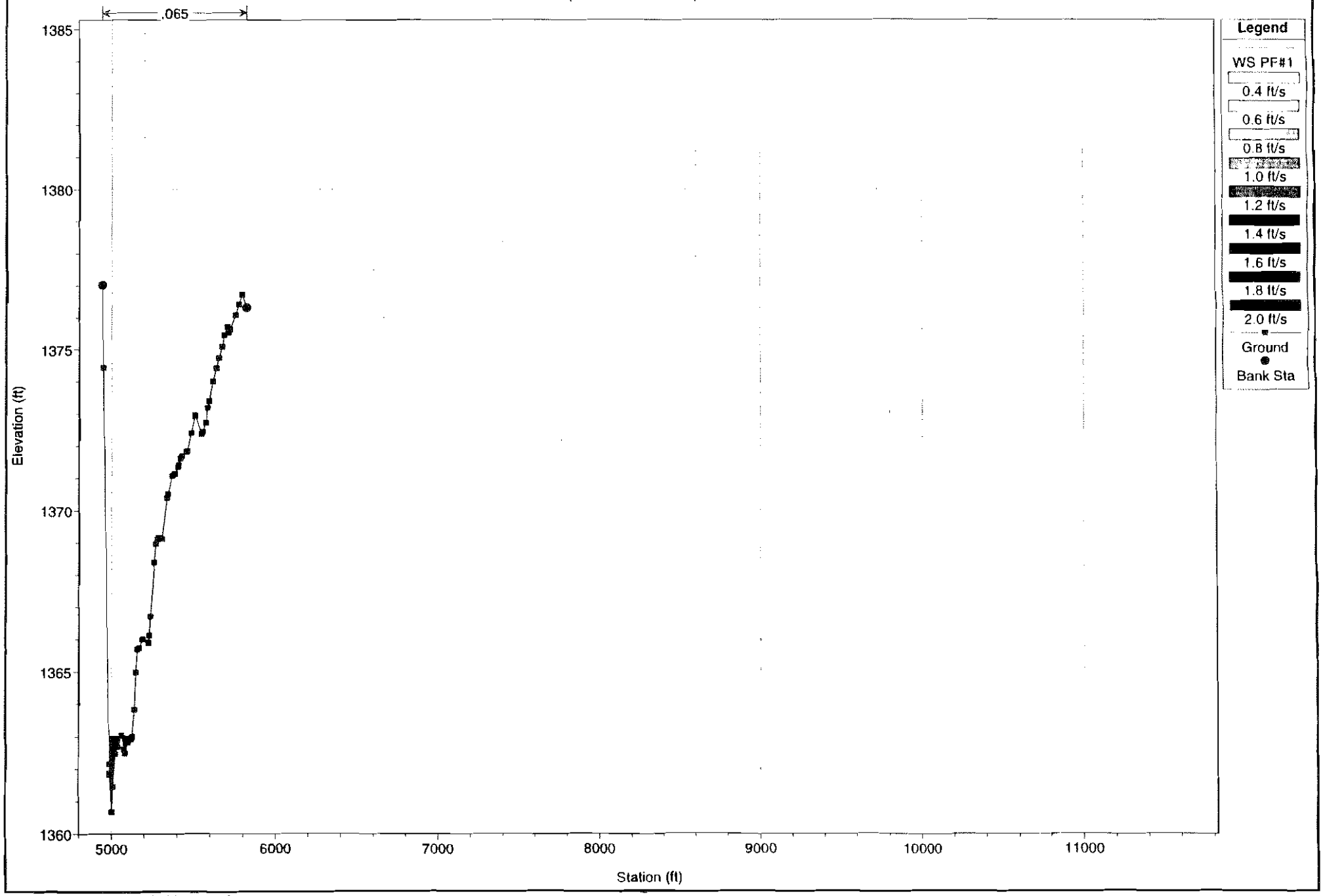
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



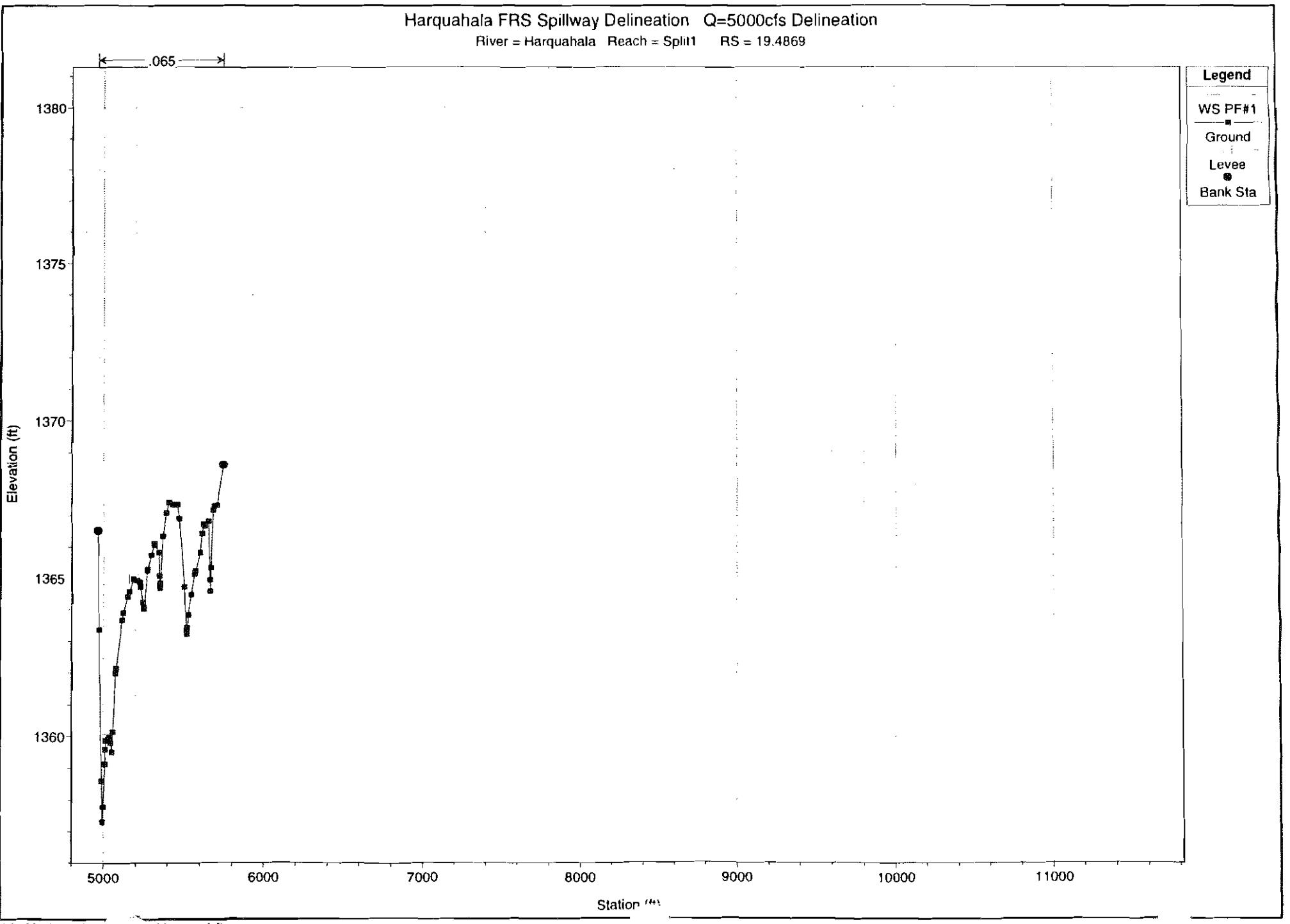
1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

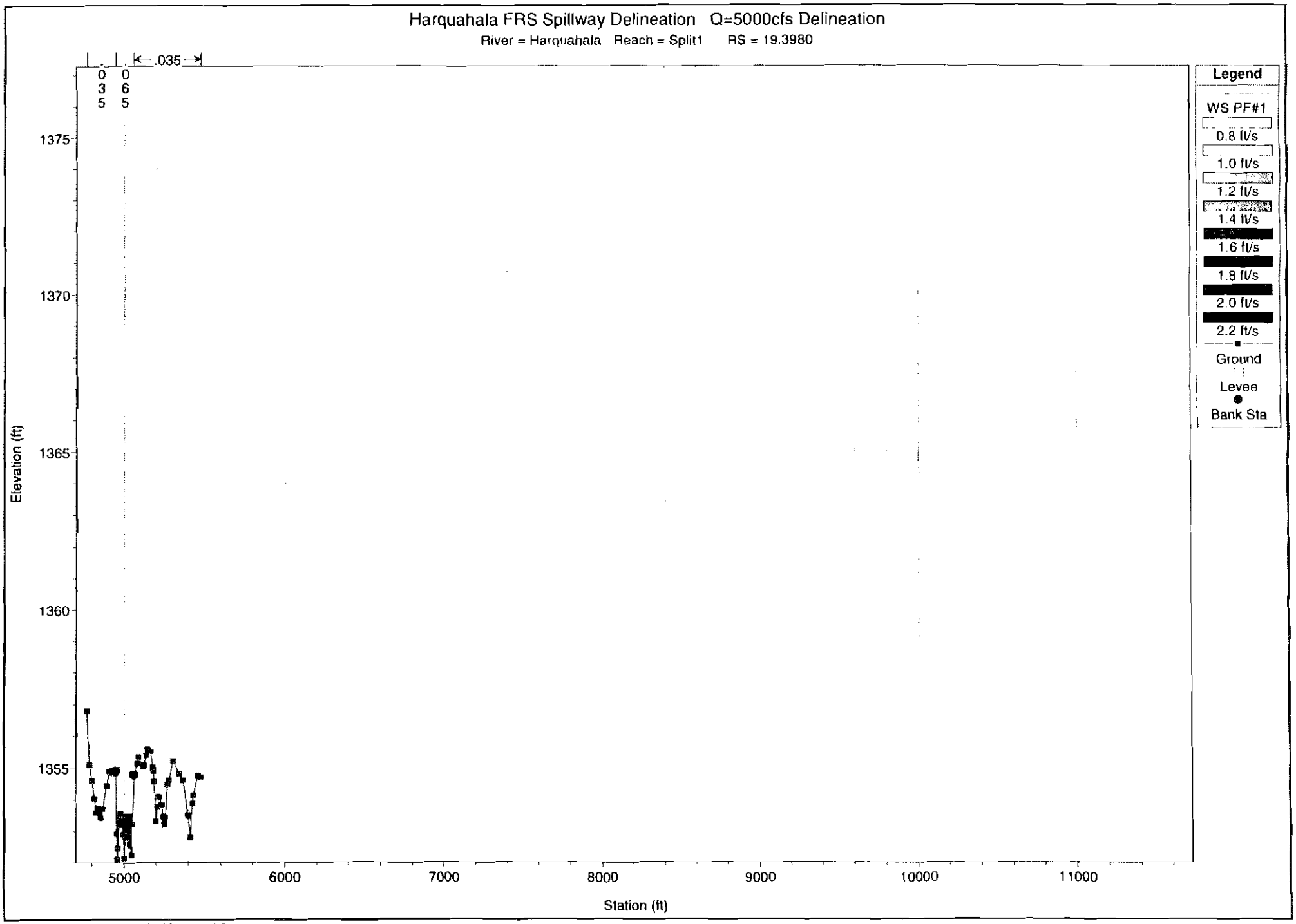
River = Harquahala Reach = Split1 RS = 19.5223



1 in Horiz. = 800 ft 1 in Vert. = 4 ft



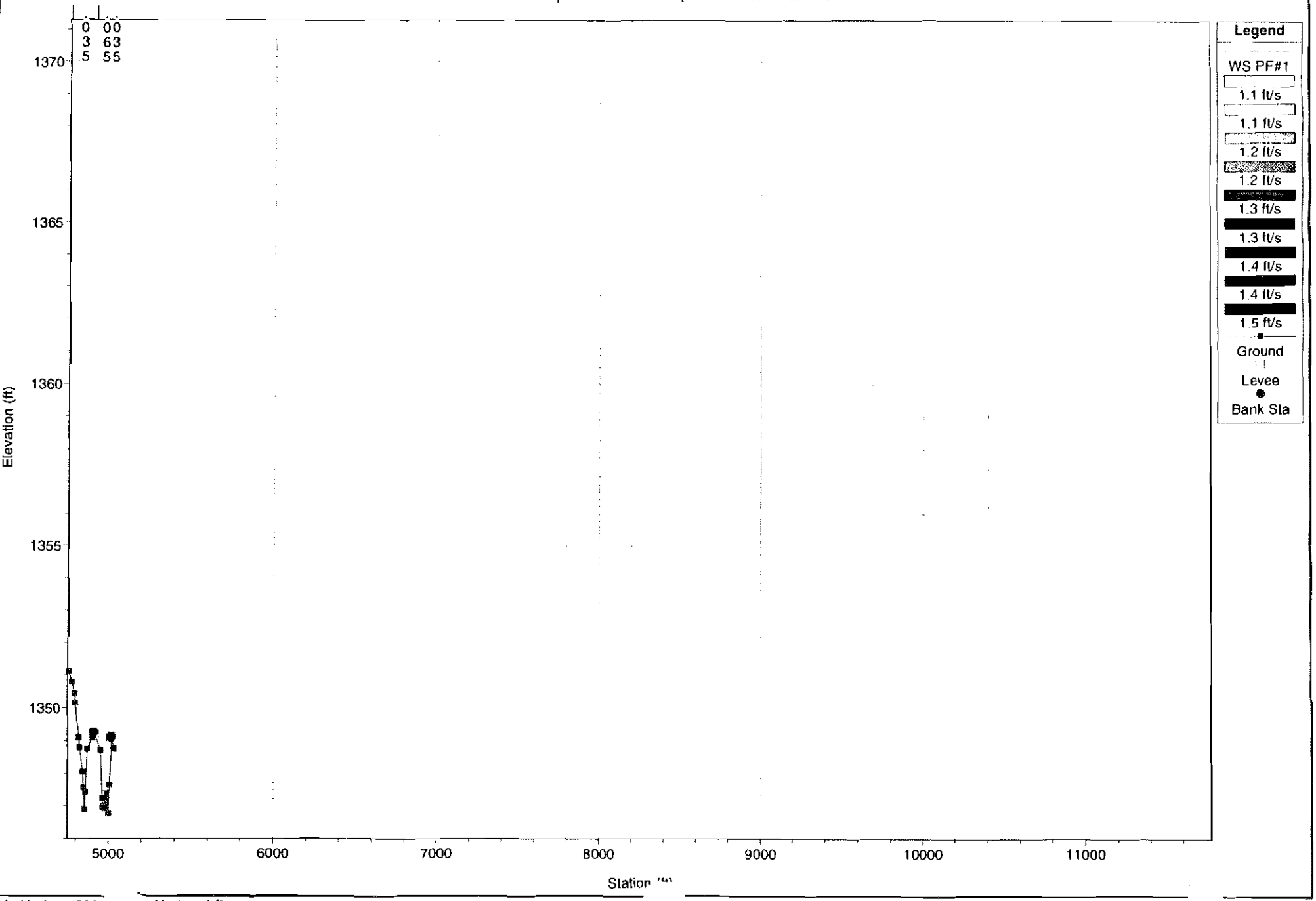
1 in Horiz. = 800 1 Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

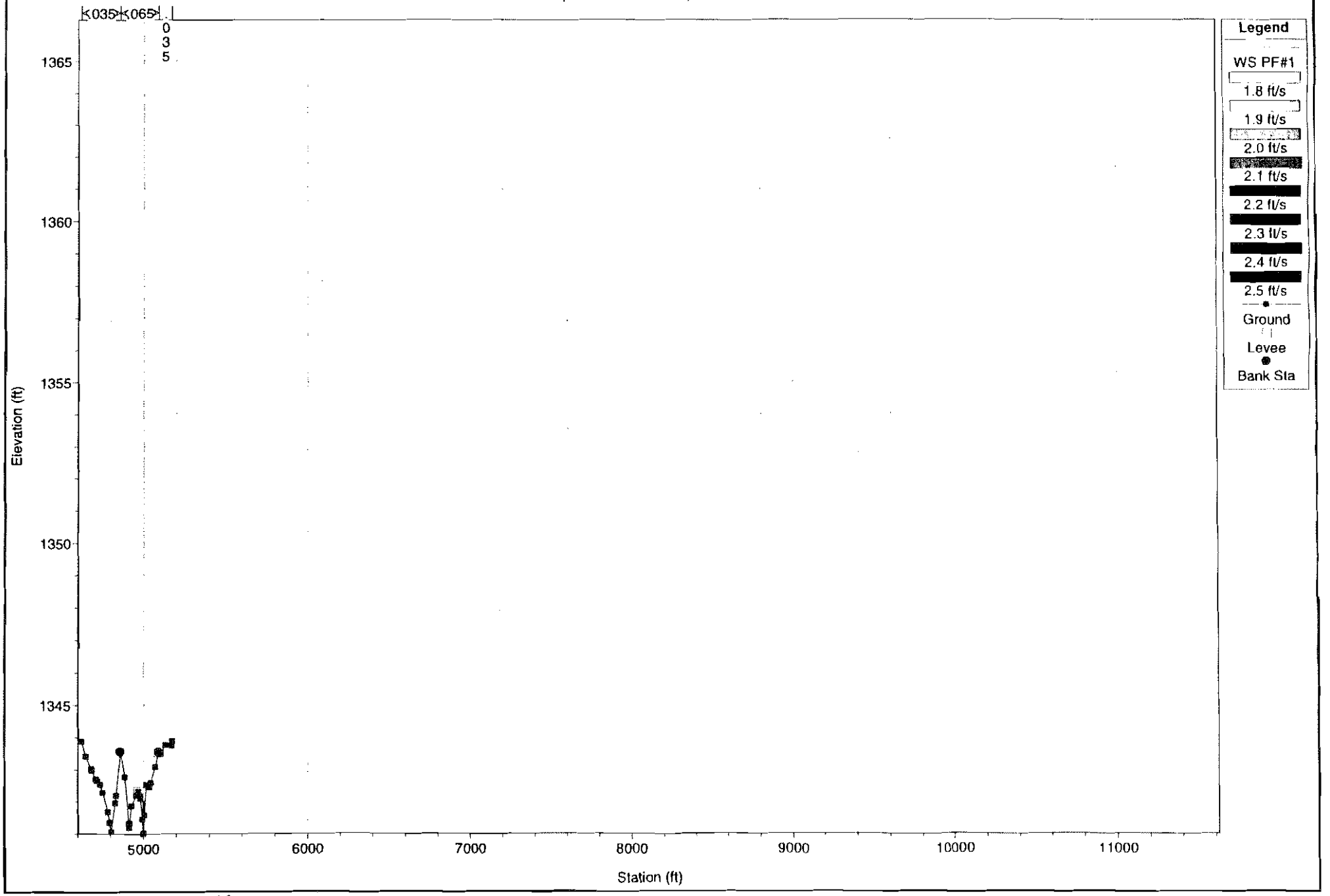
River = Harquahala Reach = Split 1A RS = 19.3216



in Horiz. = 800 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

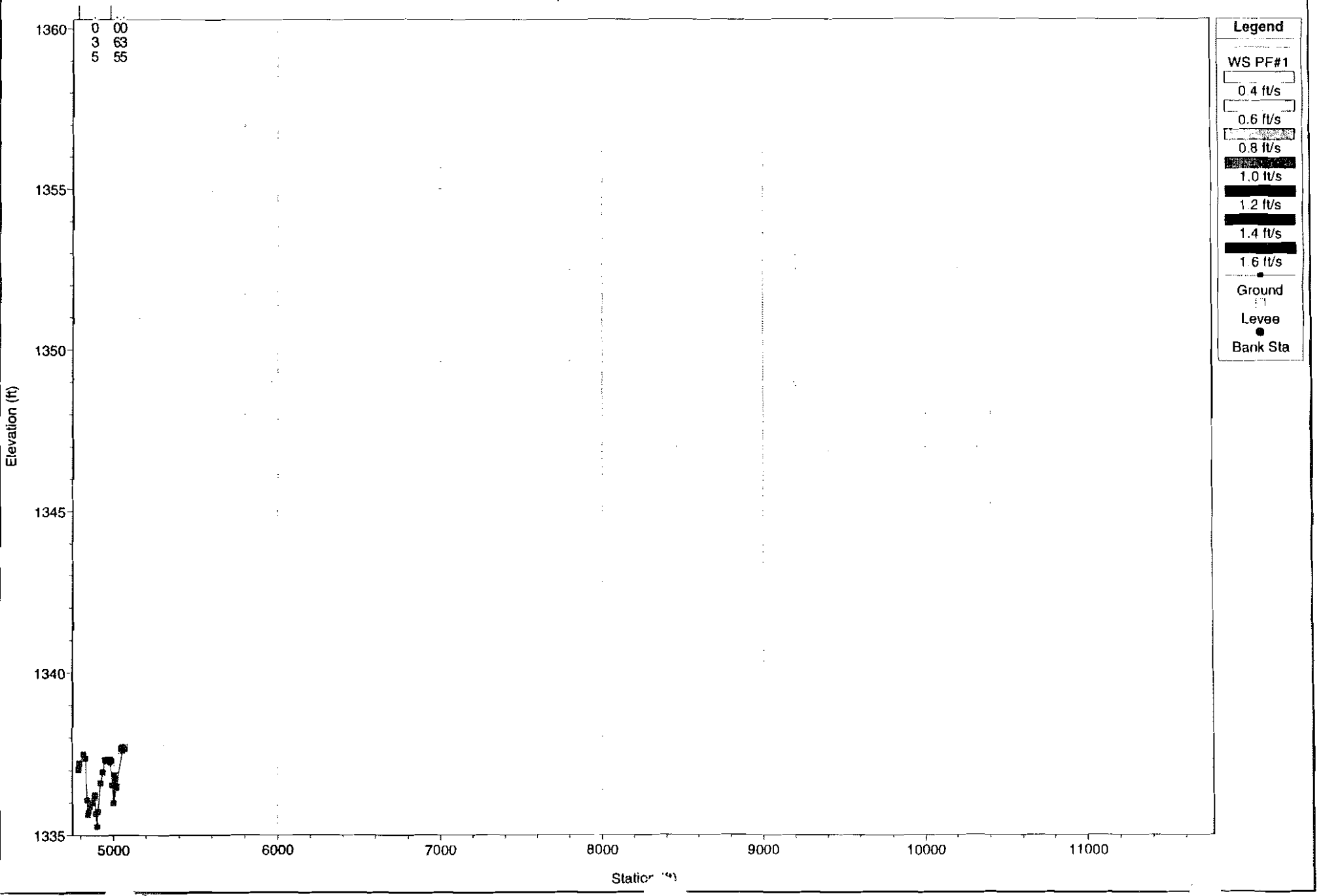
River = Harquahala Reach = Split 1A RS = 19.2398



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

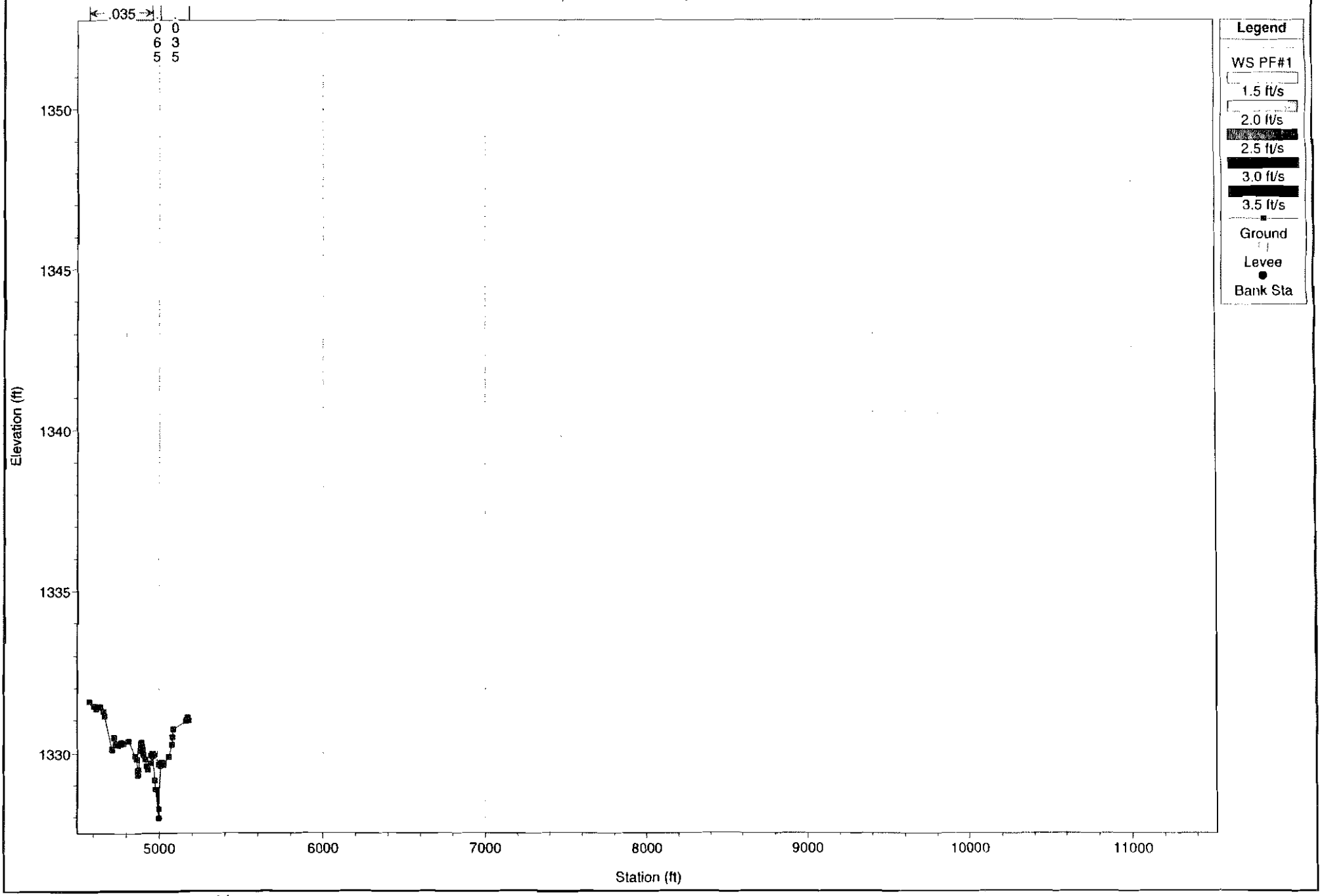
River = Harquahala Reach = Split 1A RS = 19.1676



1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

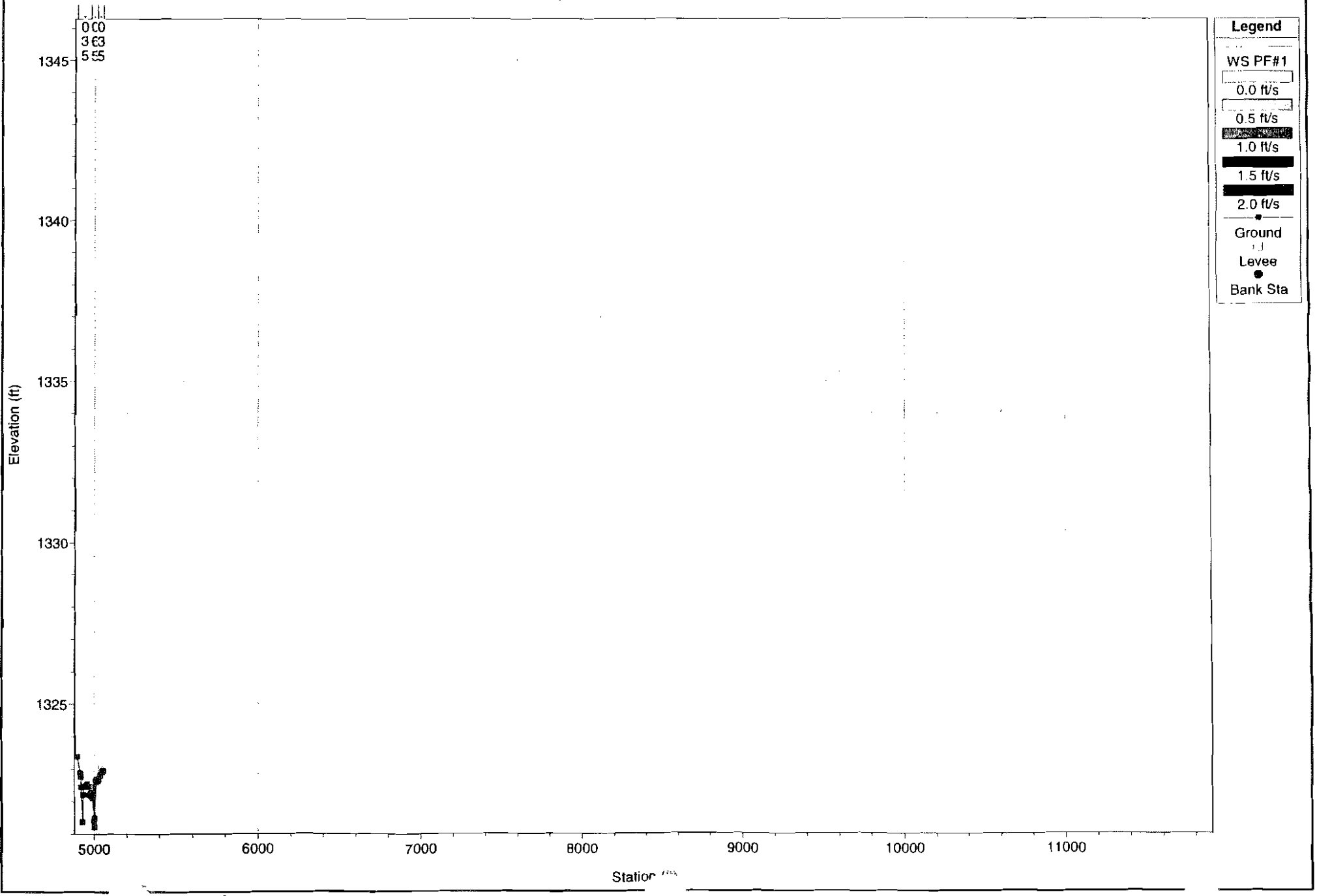
River = Harquahala Reach = Split 1A RS = 19.0811



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

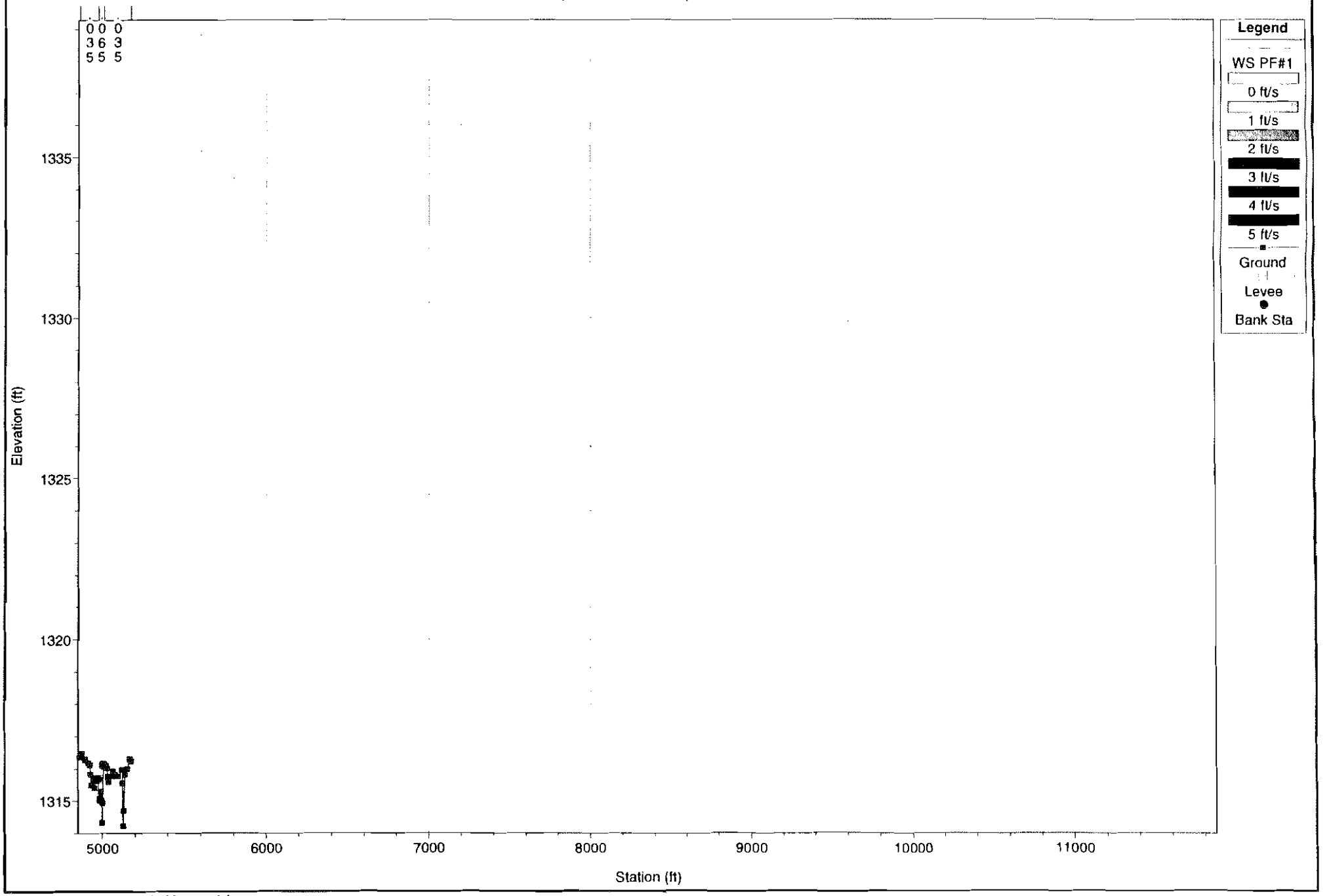
River = Harquahala Reach = Split 1A RS = 18.9967



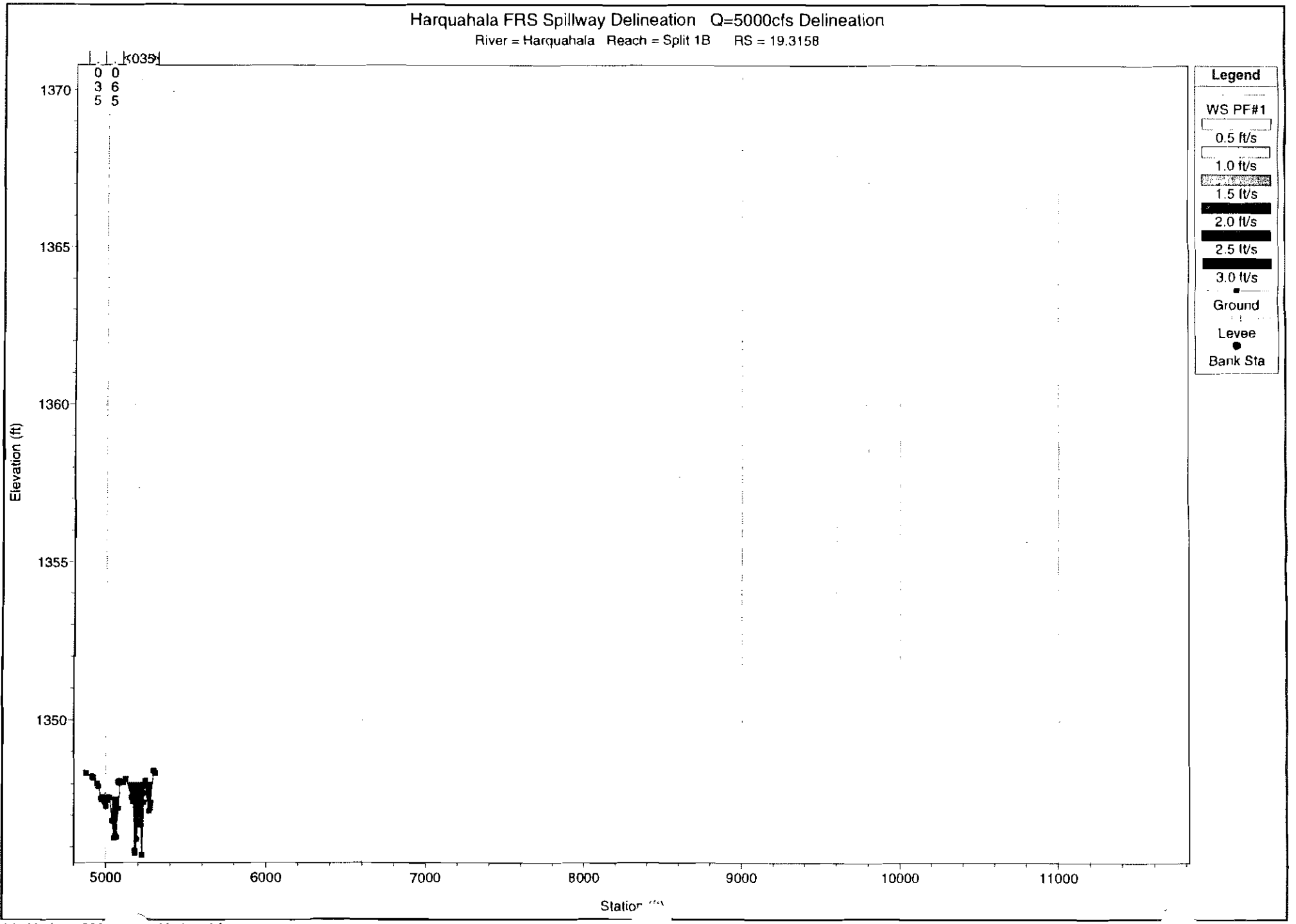
1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

River = Harquahala Reach = Split 1A RS = 18.9165



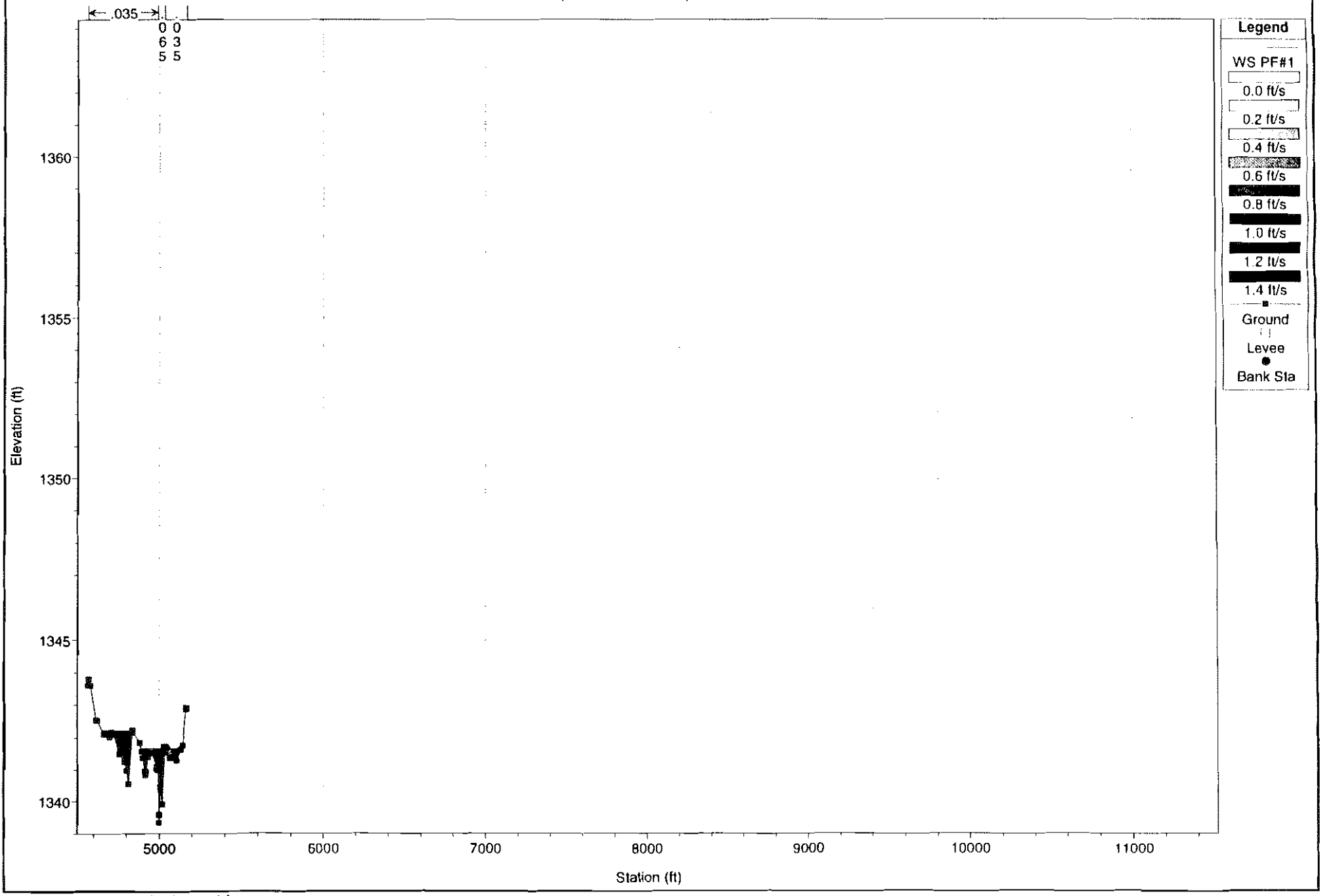
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 800 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

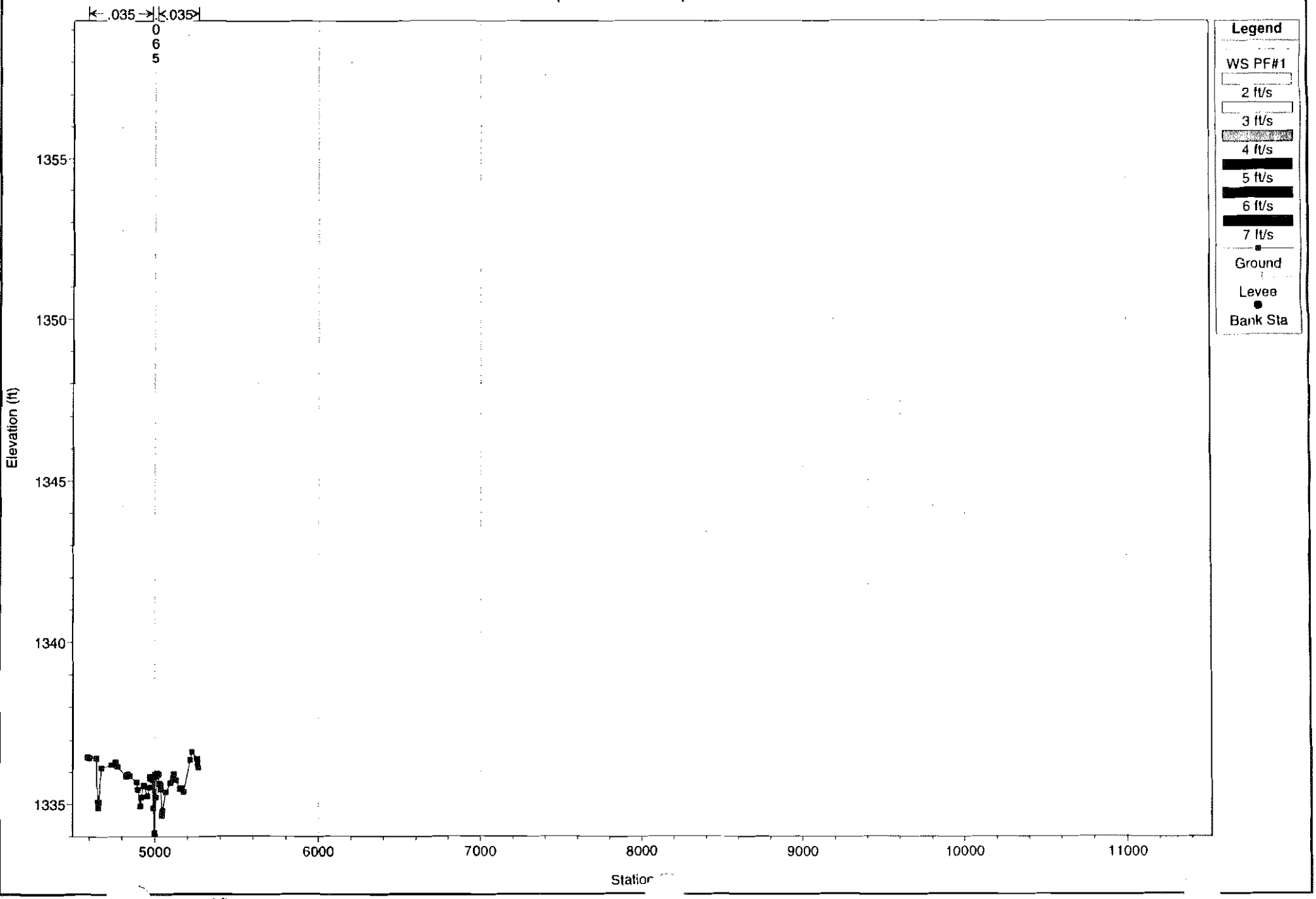
River = Harquahala Reach = Split 1B RS = 19.2400



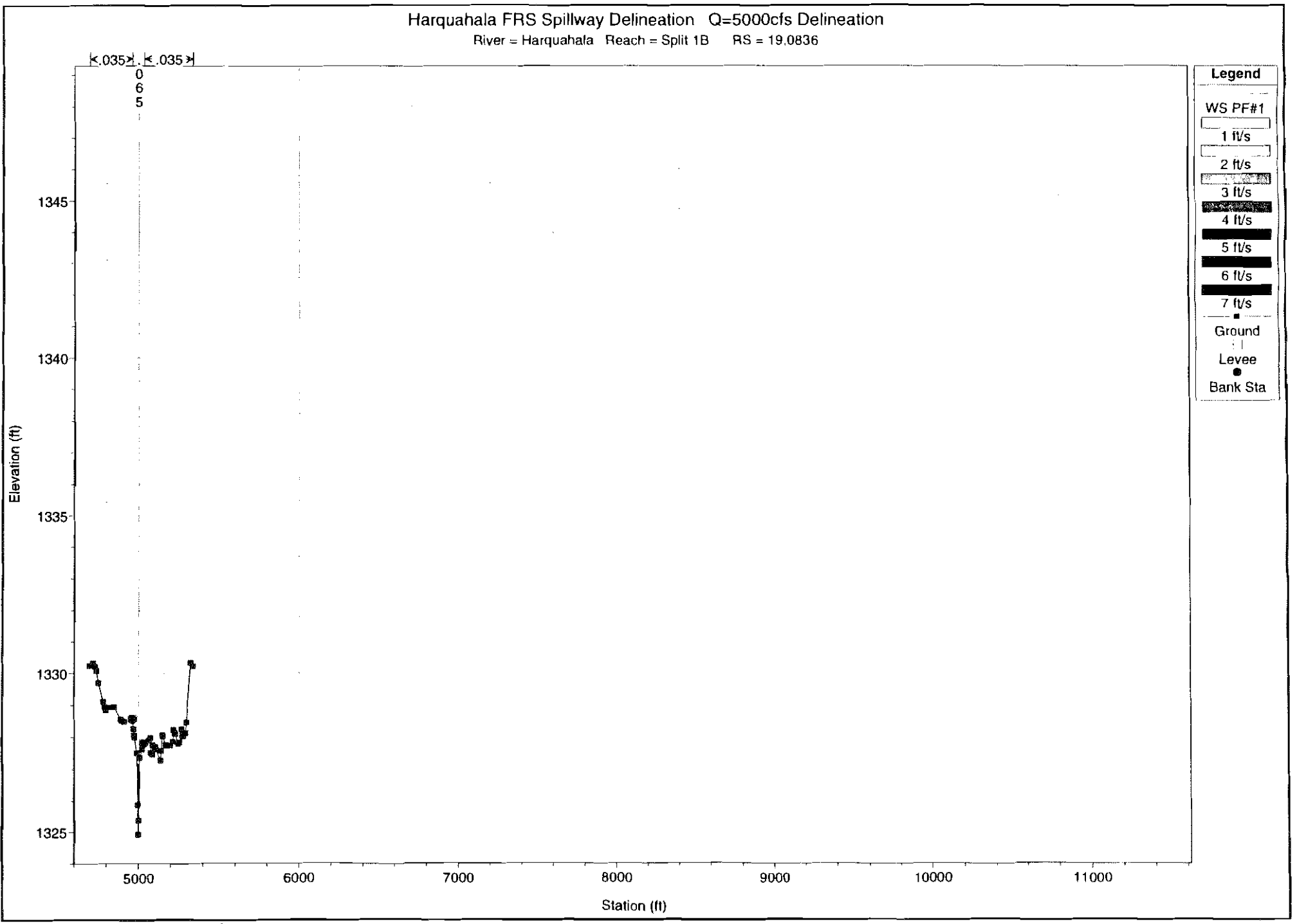
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

River = Harquahala Reach = Split 1B RS = 19.1631



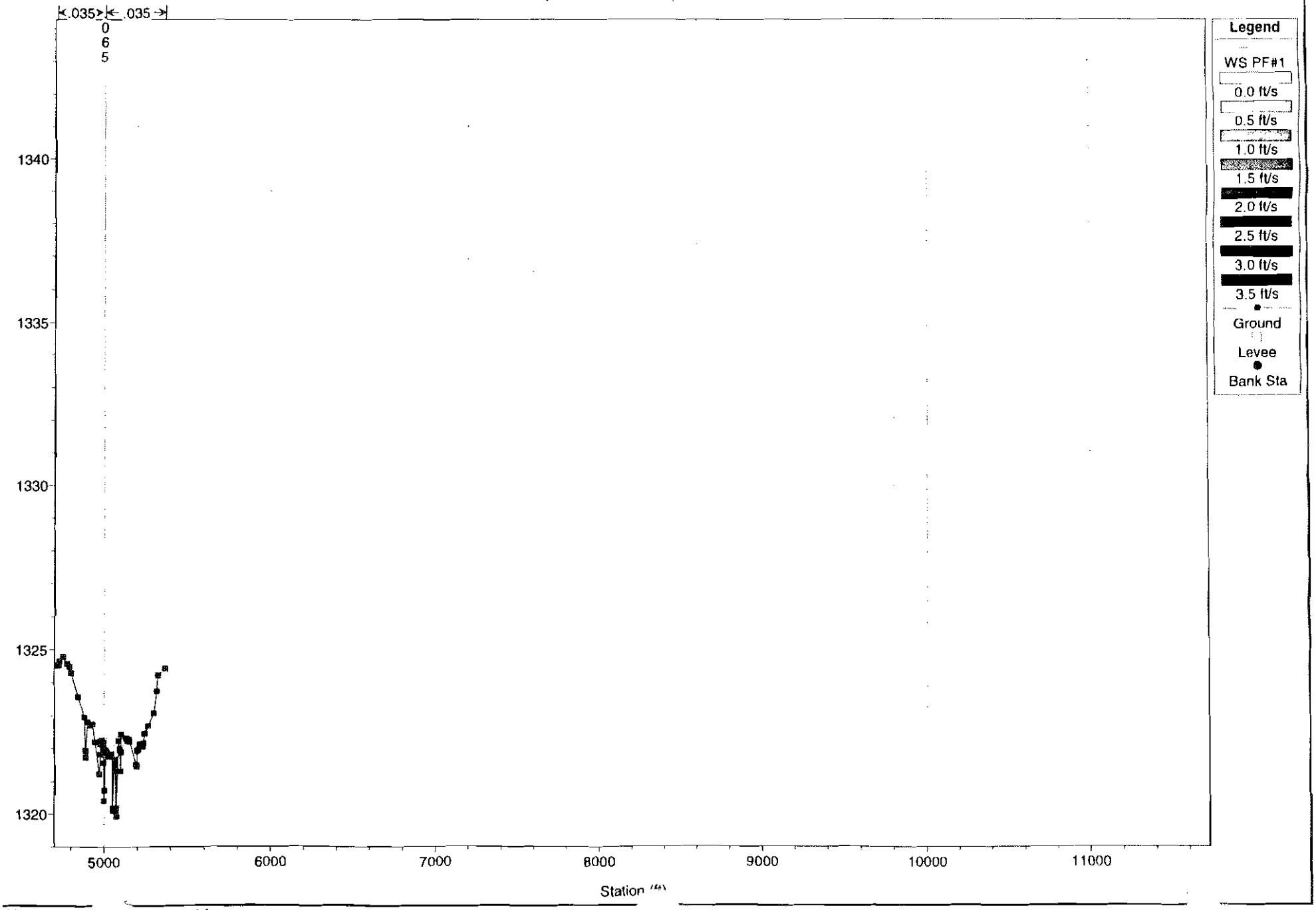
1 in Horiz. = 800 1 Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

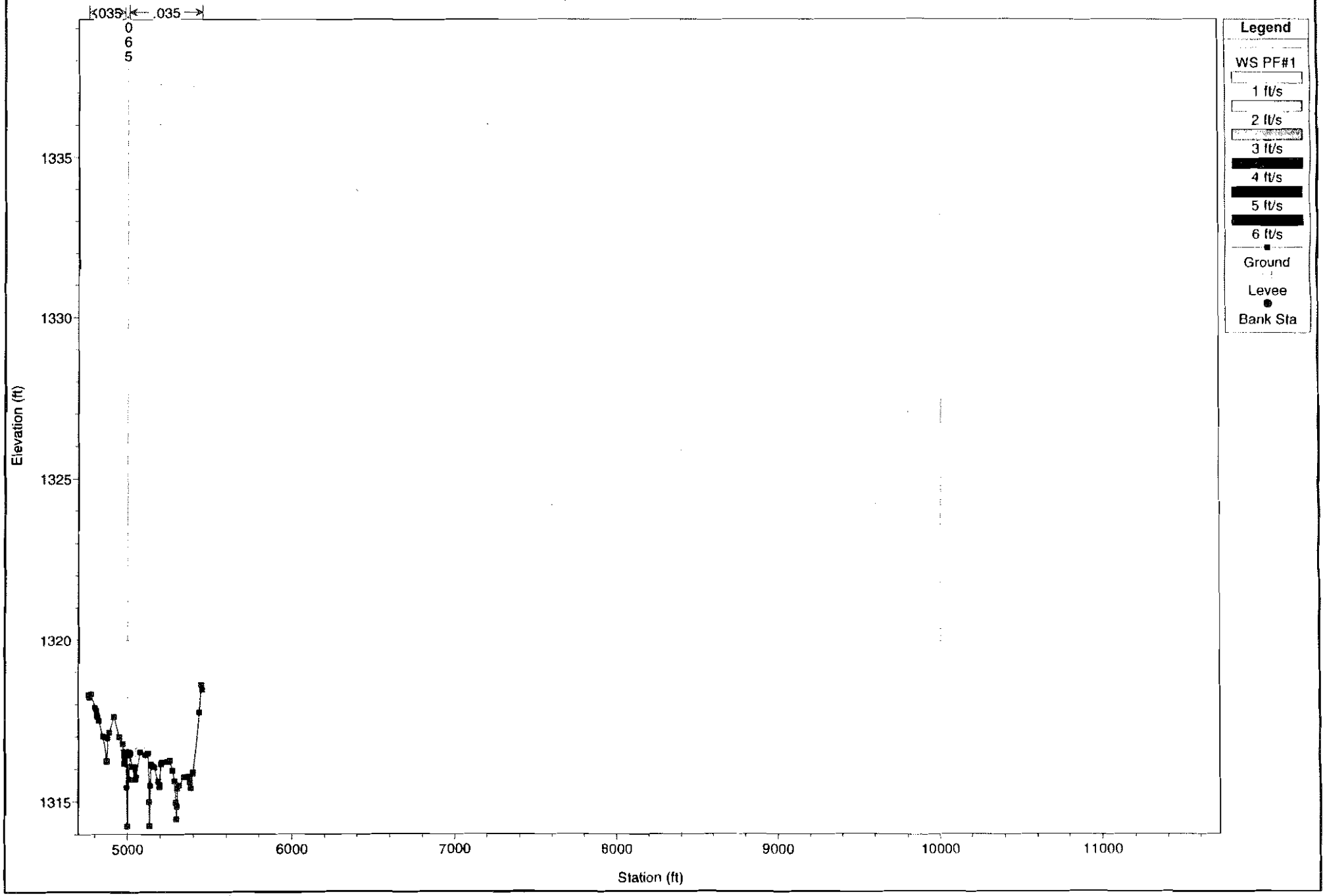
River = Harquahala Reach = Split 1B RS = 19.0153



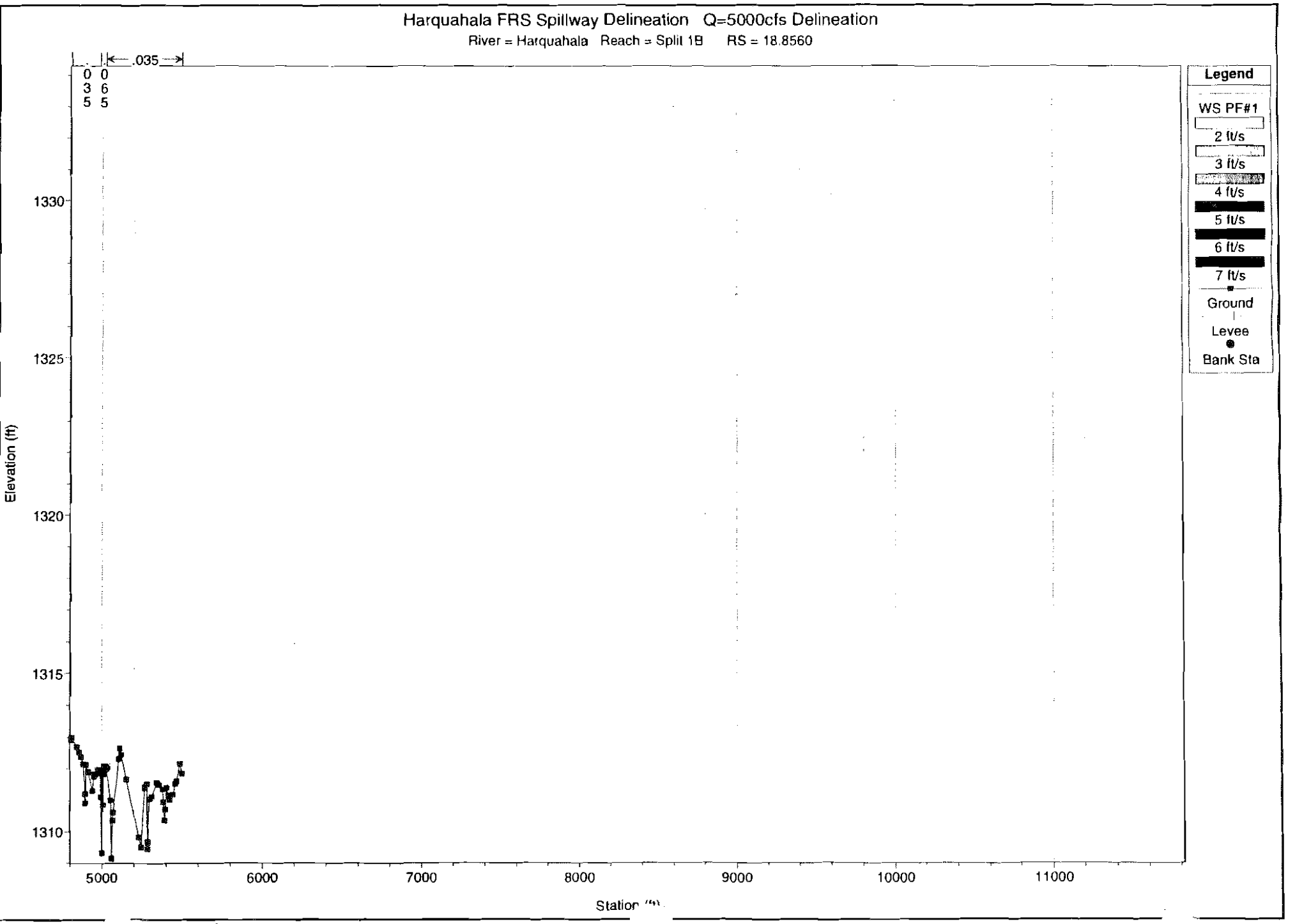
Horiz. = 800 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

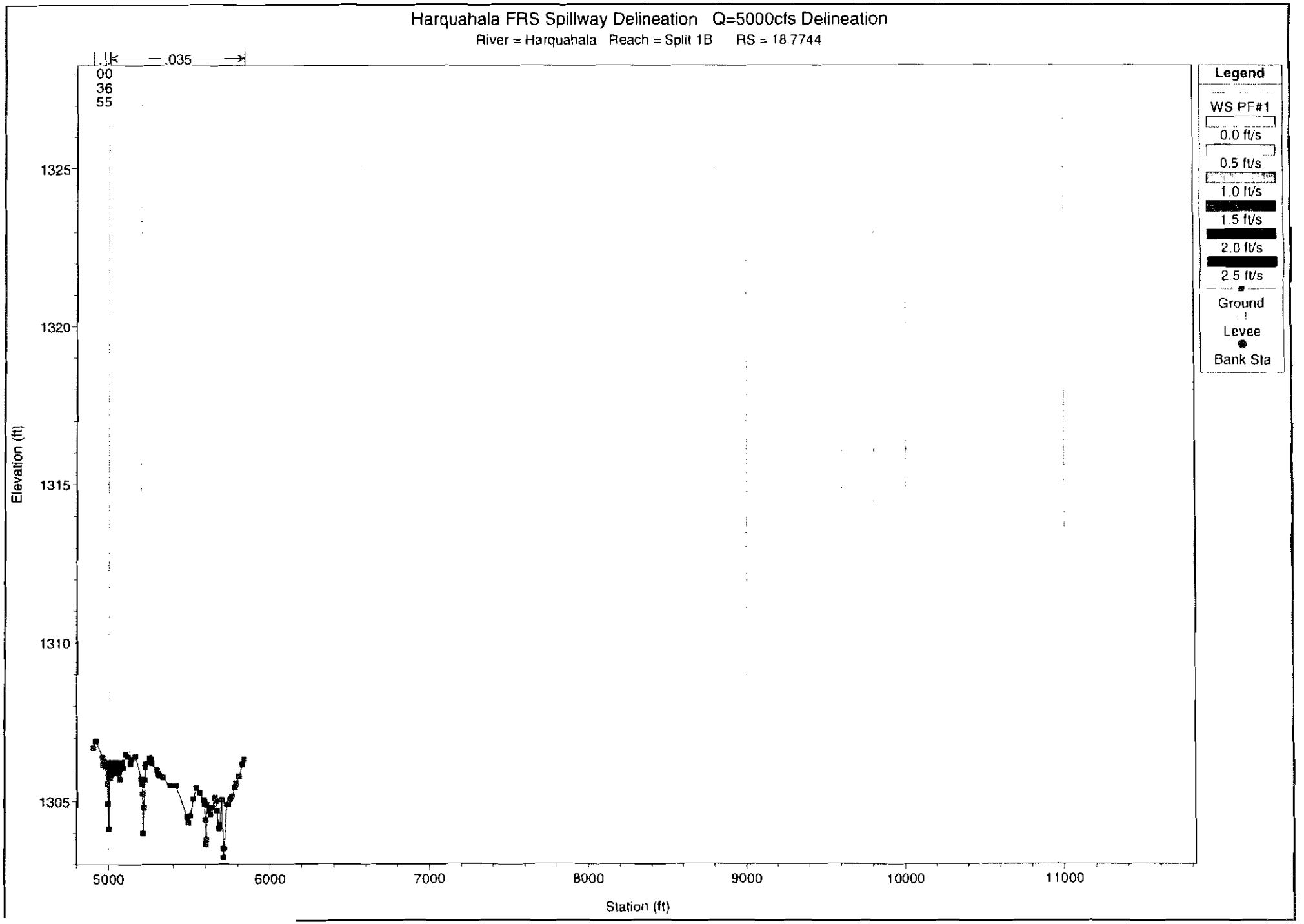
River = Harquahala Reach = Split 1B RS = 18.9337

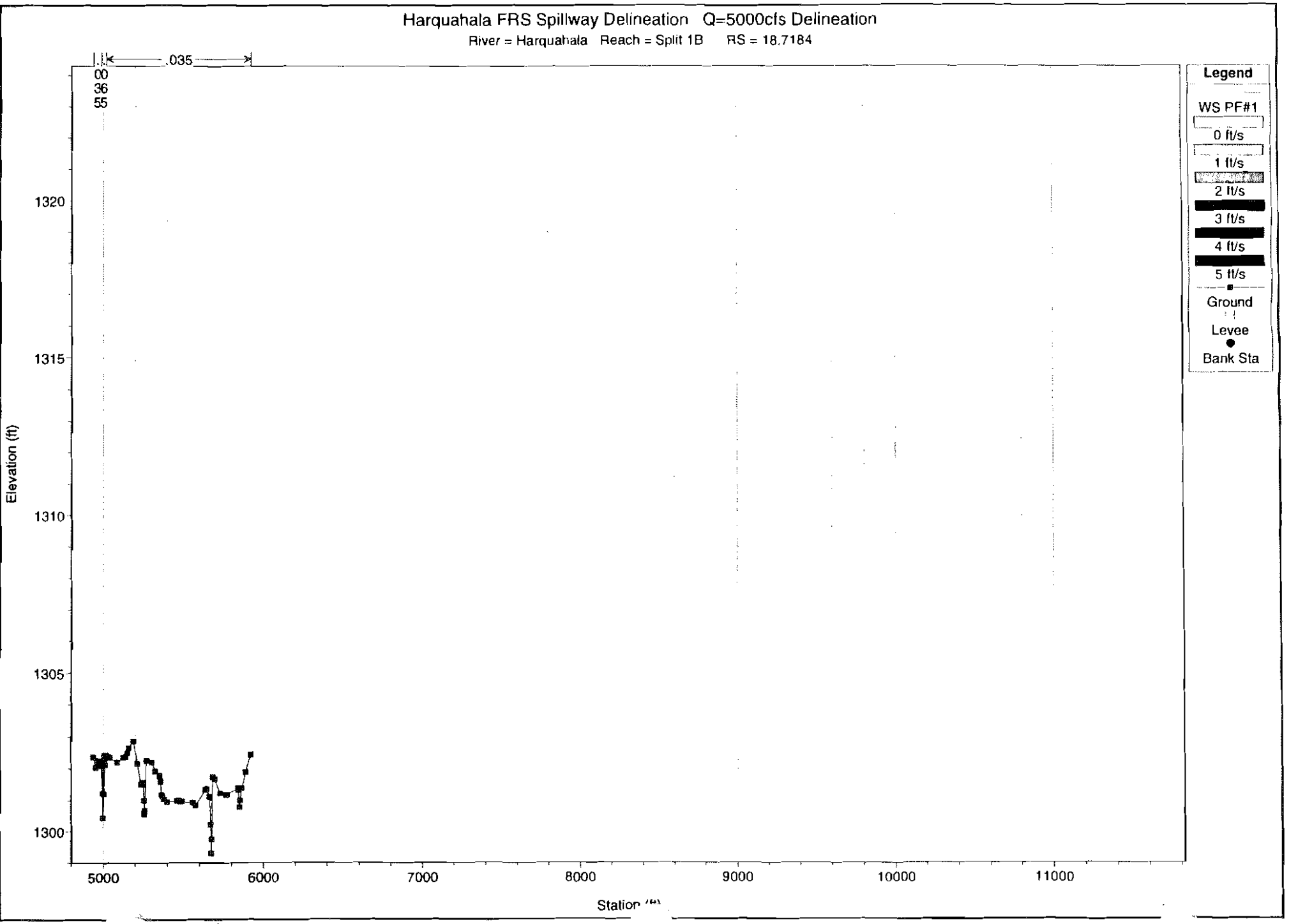


1 in Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 800 Vert. = 4 ft

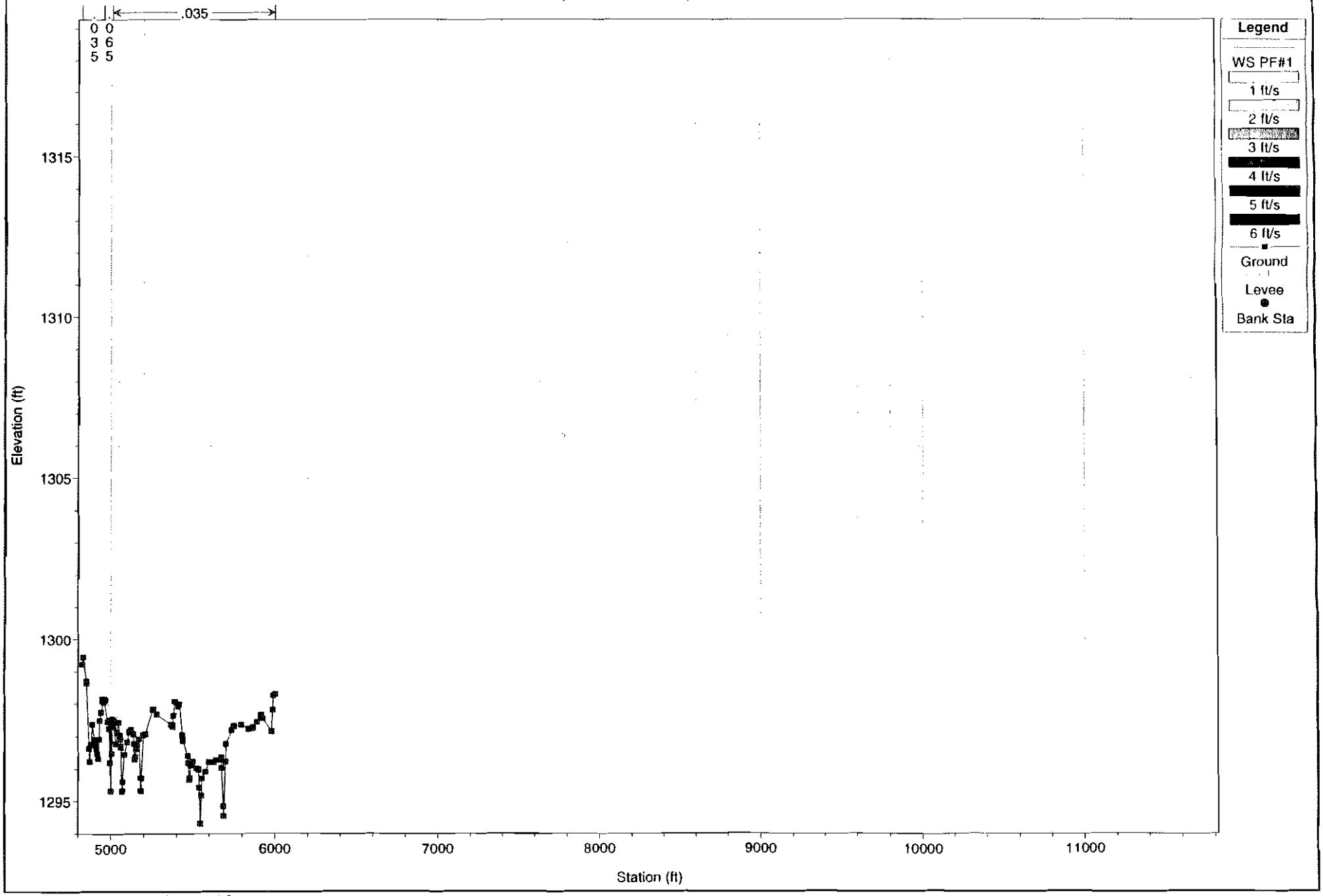

Harquahala FRS Spillway Delineation Q=5000cfs Delineation
River = Harquahala Reach = Split 1B RS = 18.7744
.035
00
36
55
1325
1320
1315
1310
1305
Elevation (ft)
5000
6000
7000
8000
9000
10000
11000
Station (ft)
Legend
WS PF#1
0.0 ft/s
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
Ground
Levee
Bank Sta



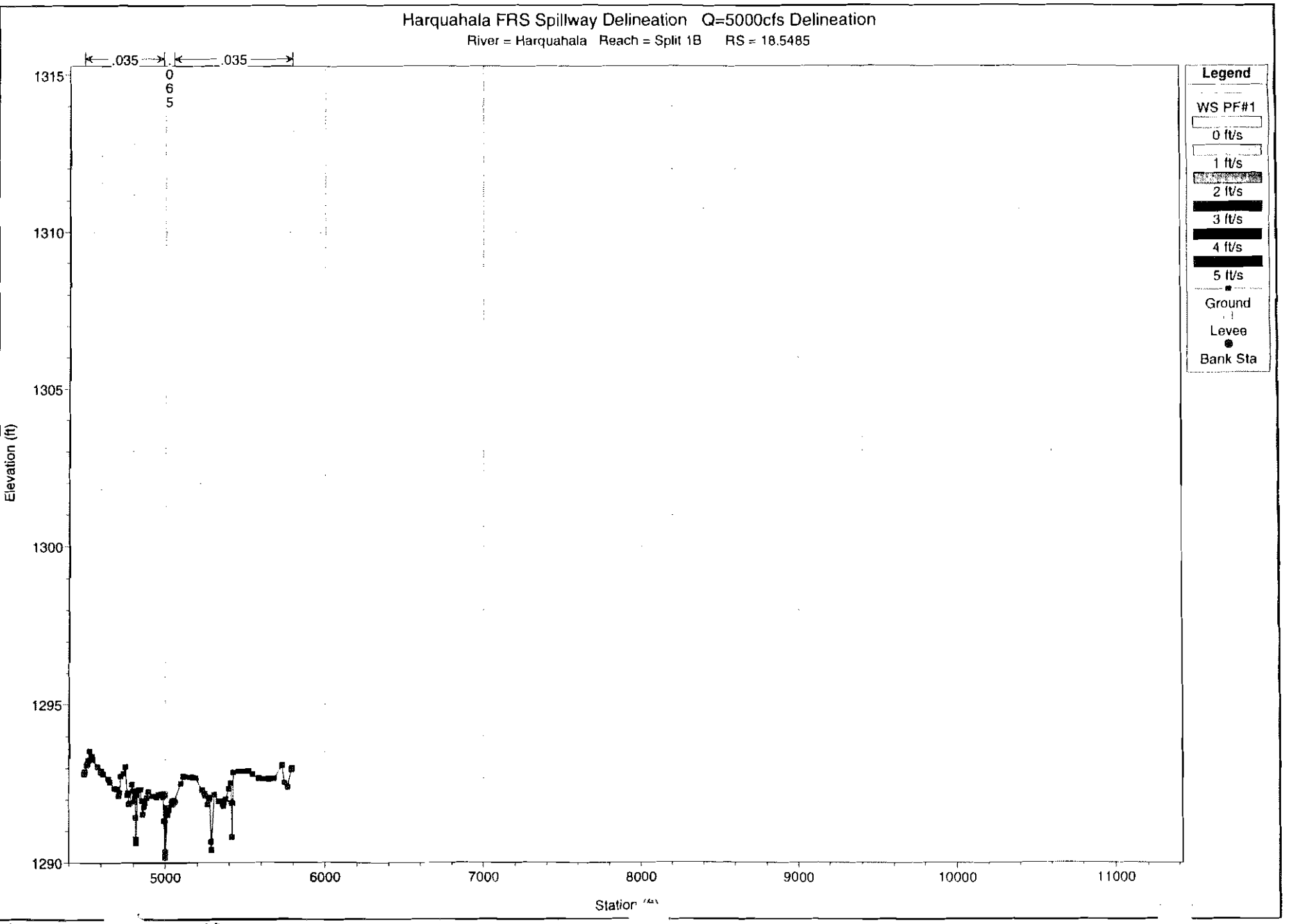
1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

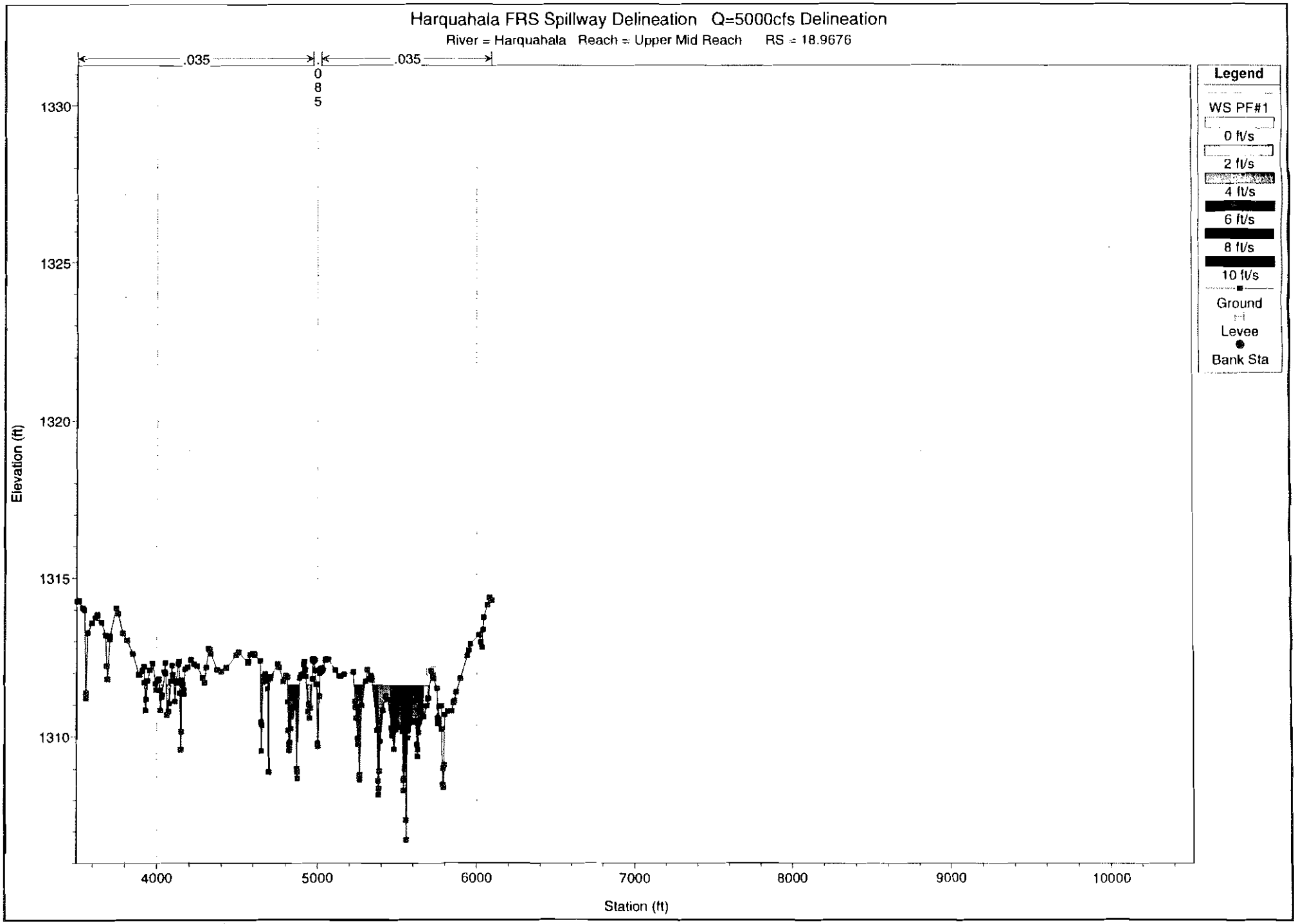
River = Harquahala Reach = Split 1B RS = 18.6384



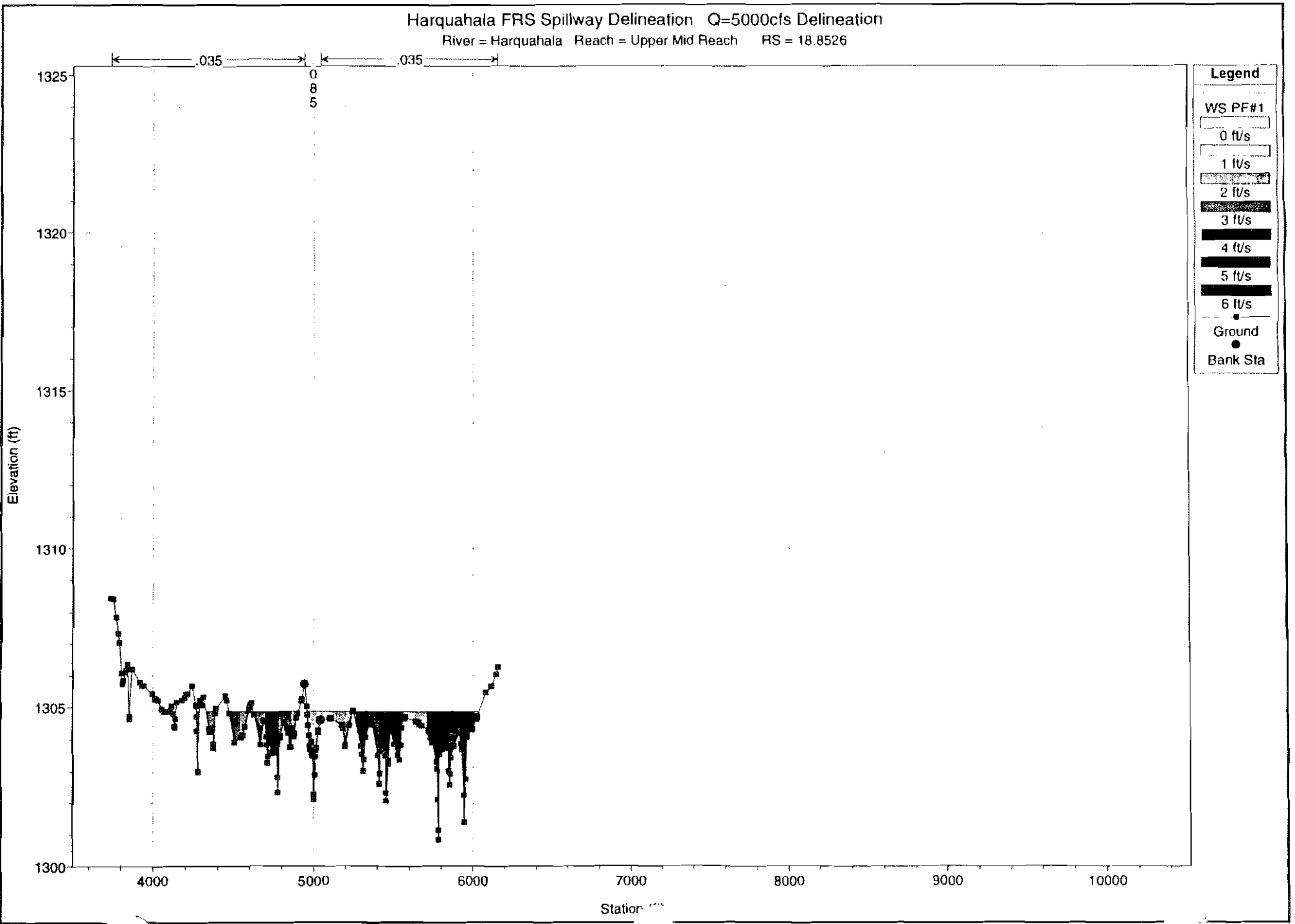
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



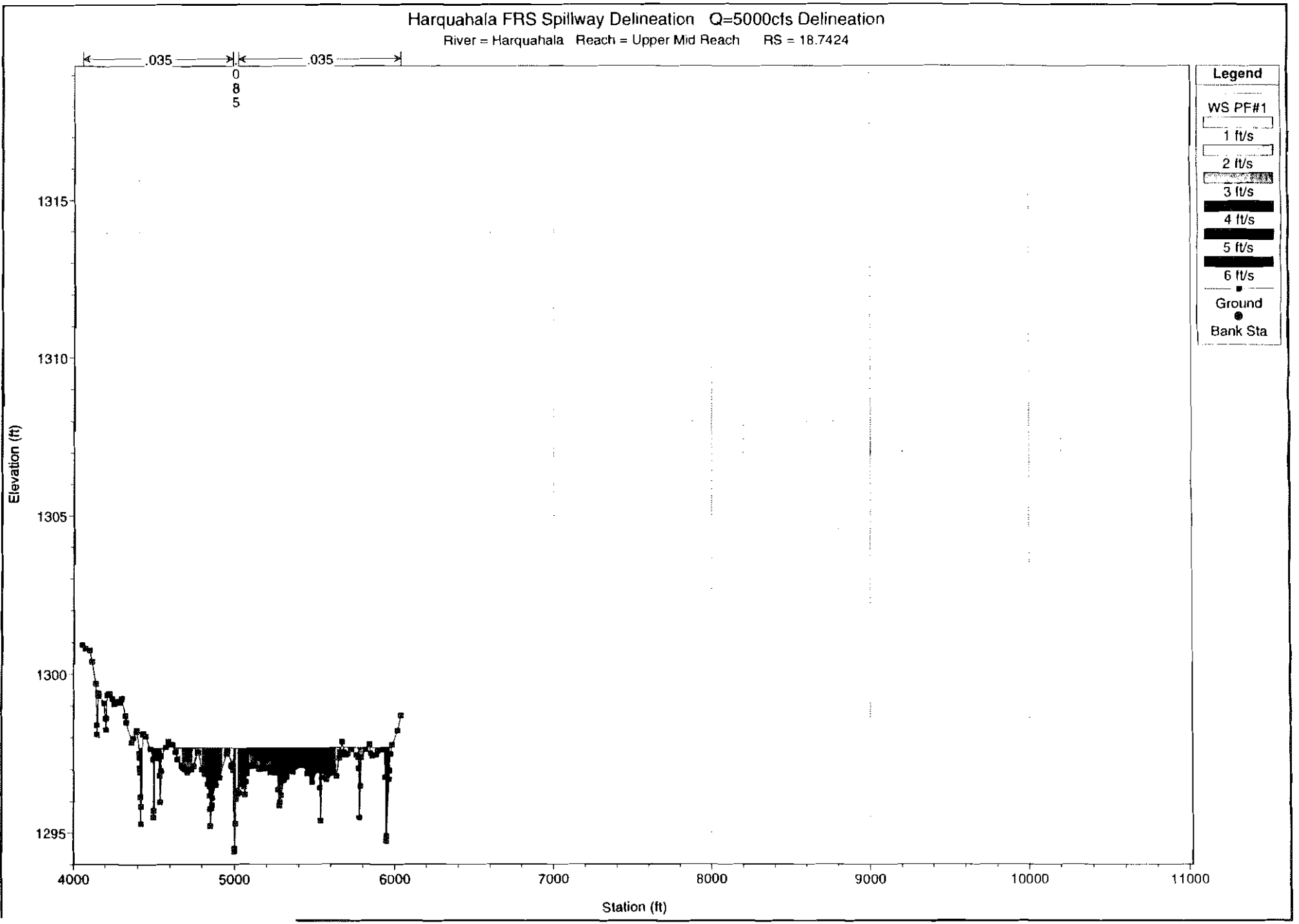
1 in Horiz. = 800 1 Vert. = 4 ft

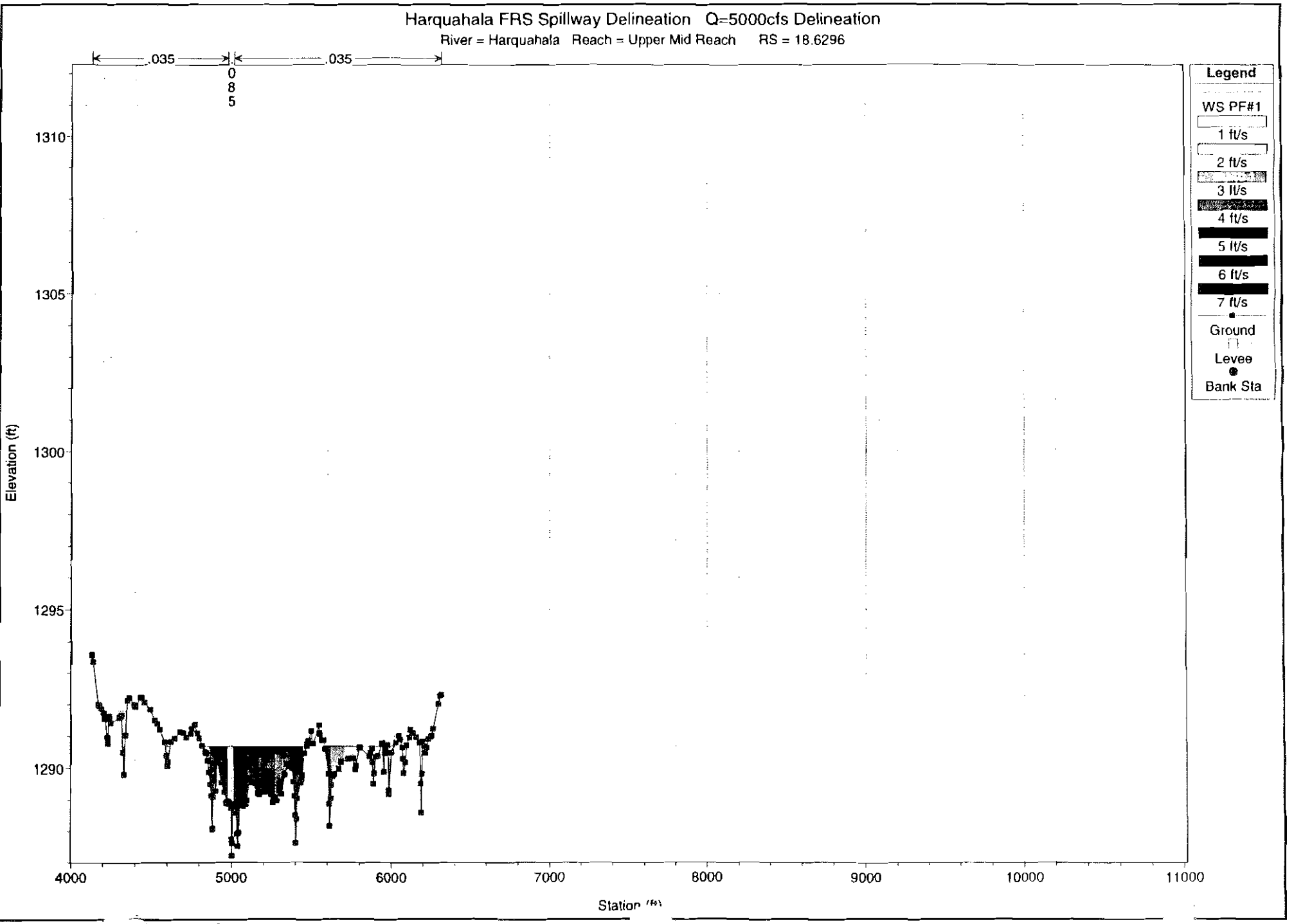


1 in Horiz. = 800 ft 1 in Vert. = 4 ft

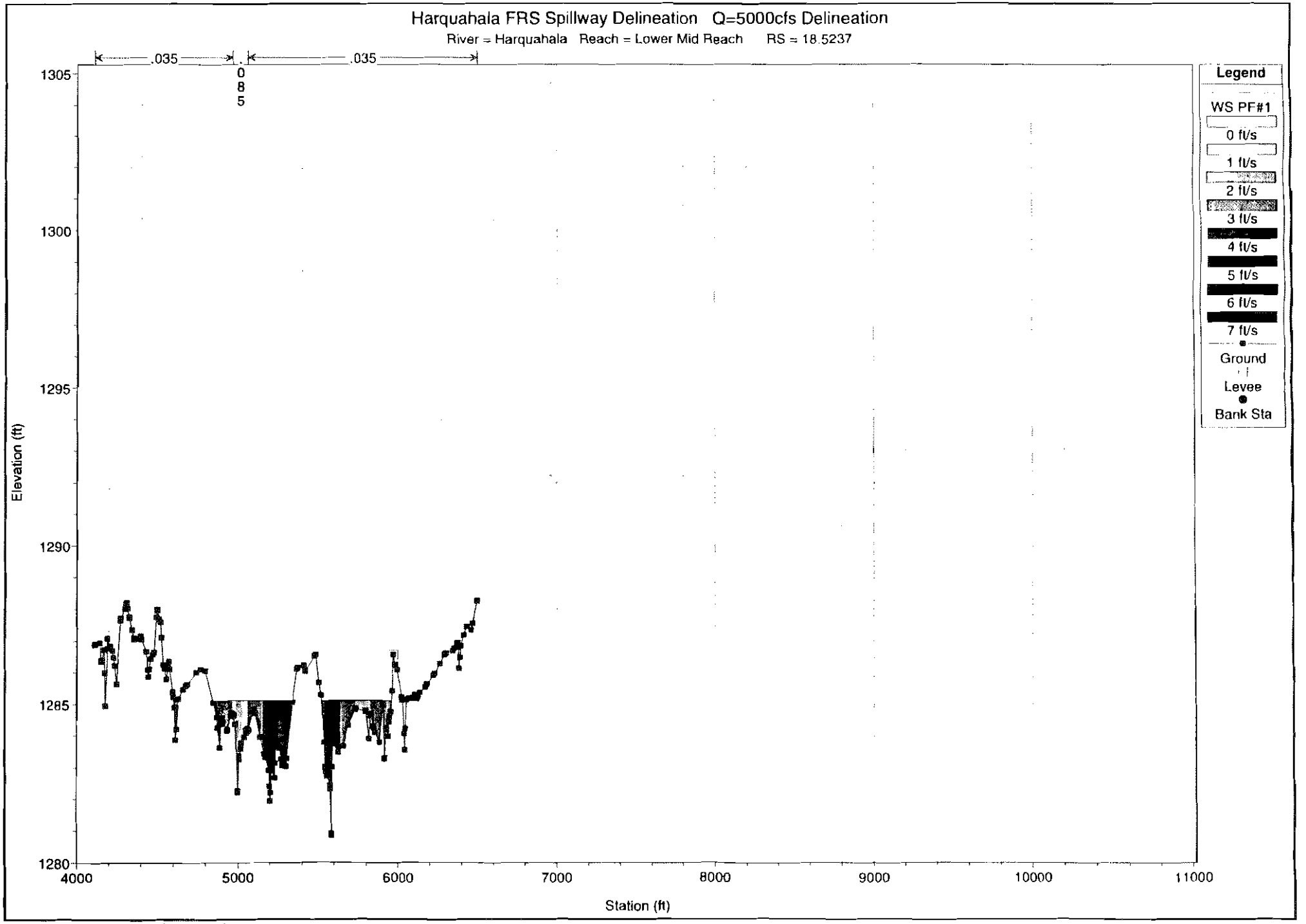


1 in Horiz. = 800 Vert. = 4 ft

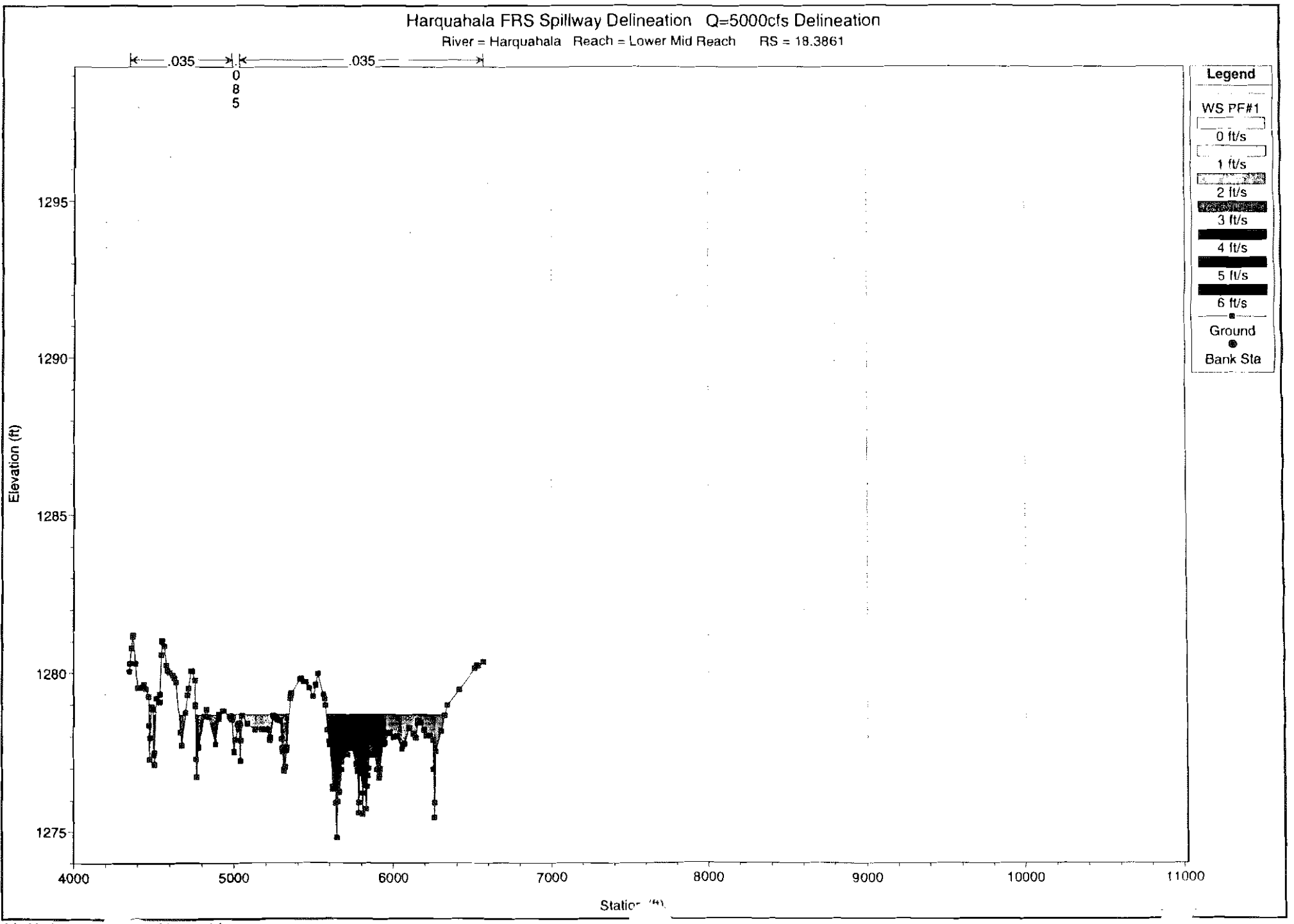

Harquahala FRS Spillway Delineation Q=5000cfs Delineation
River = Harquahala Reach = Upper Mid Reach RS = 18.7424
.035
.035
085
Legend
WS PF#1
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
1315
1310
1305
1300
1295
4000
5000
6000
7000
8000
9000
10000
11000
Station (ft)

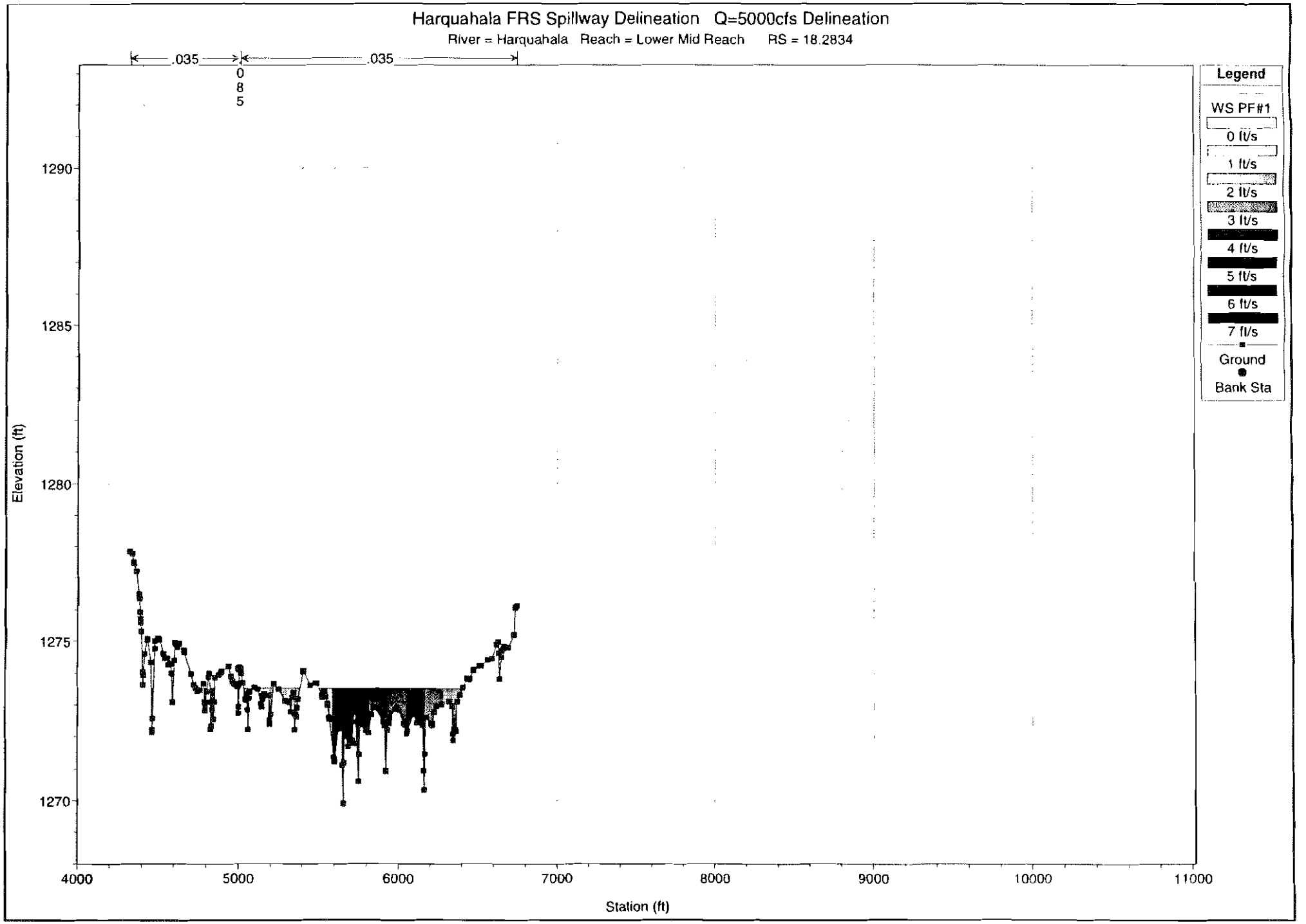


1 in Horiz. = 800 1 Vert. = 4 ft

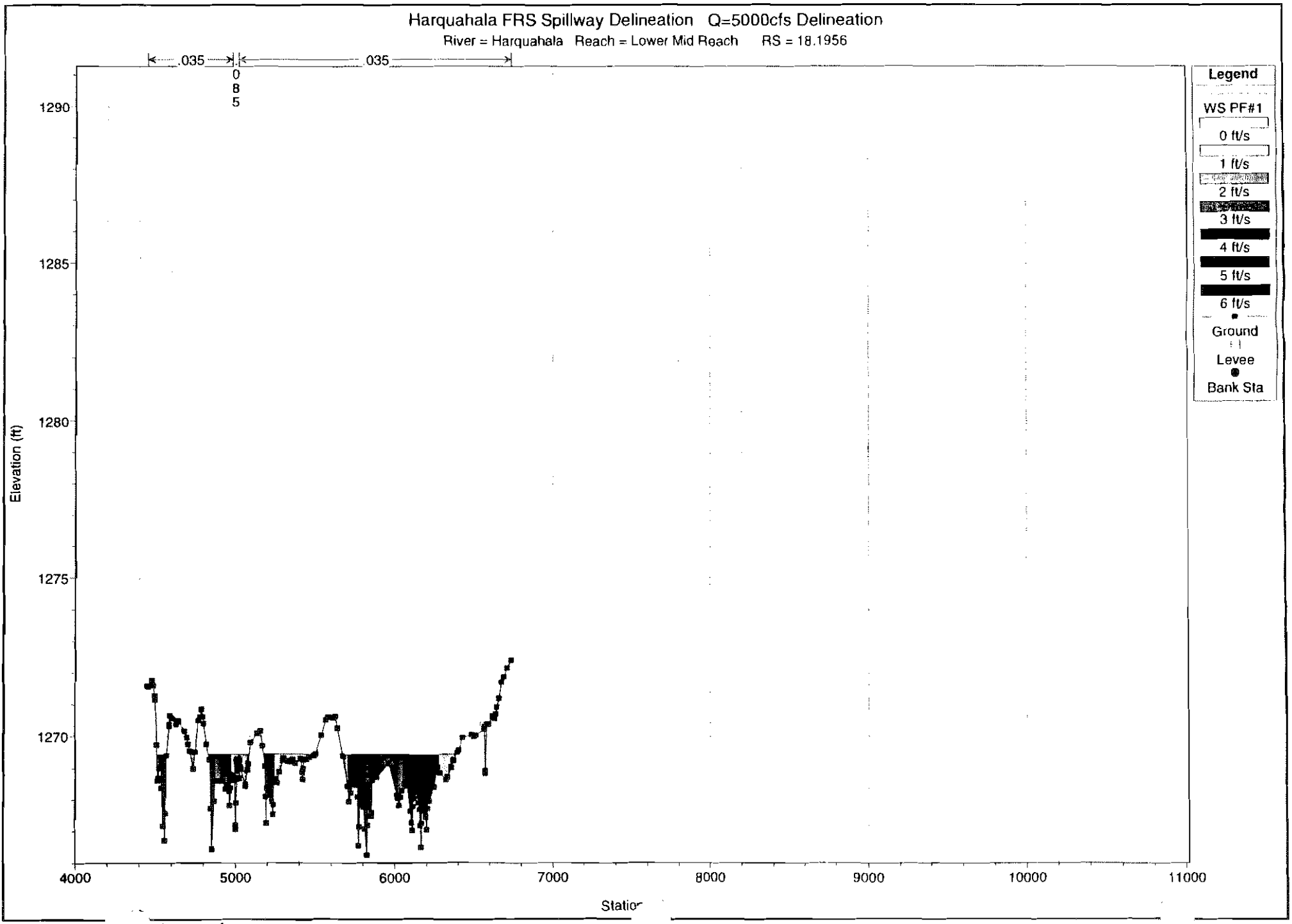


1 in Horiz. = 800 ft 1 in Vert. = 4 ft

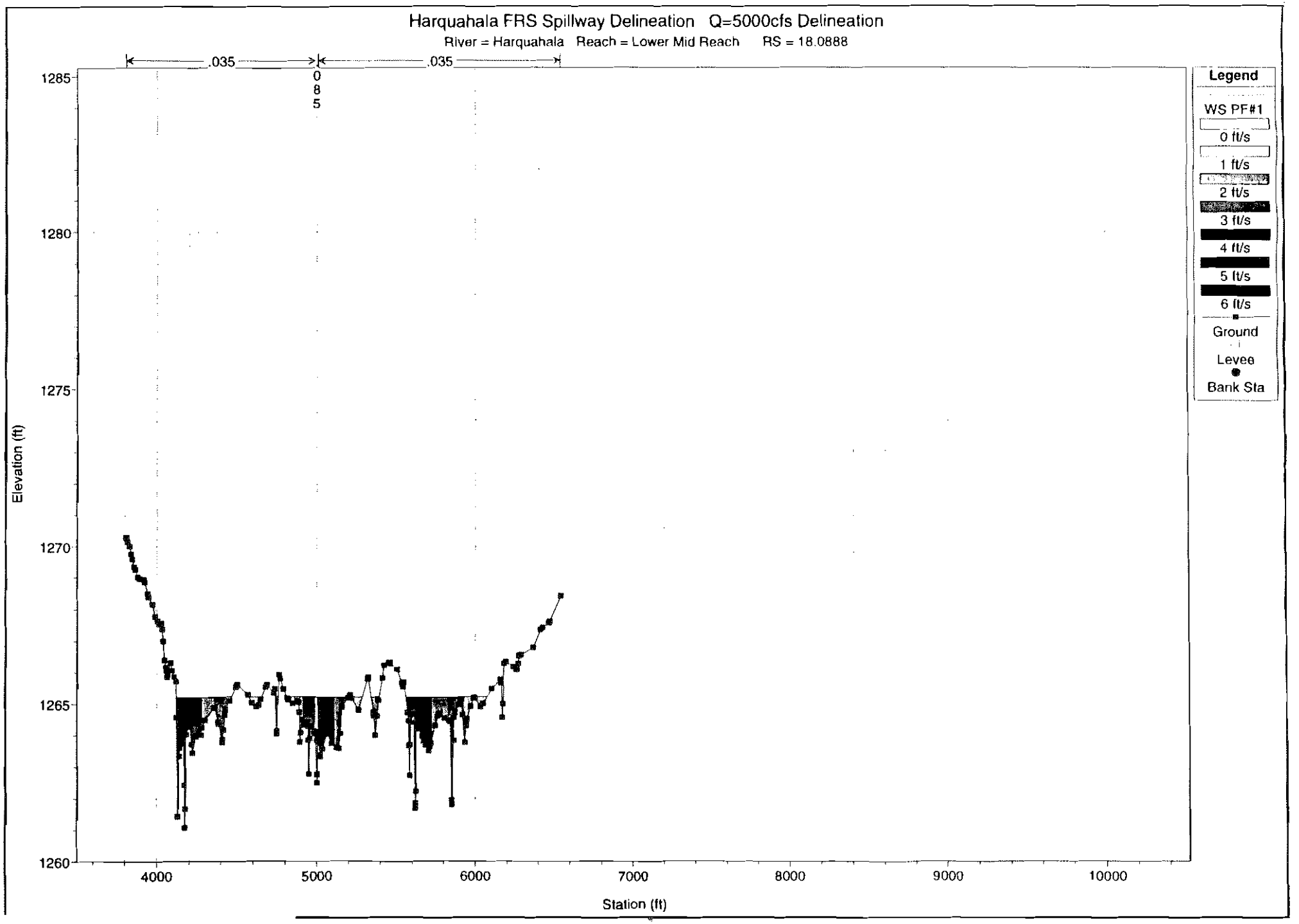

Harquahala FRS Spillway Delineation Q=5000cfs Delineation
River = Harquahala Reach = Lower Mid Reach RS = 18.3861
.035
.085
.035
Legend
WS PF#1
0 ft/s
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
1295
1290
1285
1280
1275
4000
5000
6000
7000
8000
9000
10000
11000
1 in Horiz. = 800
Vert. = 4 ft

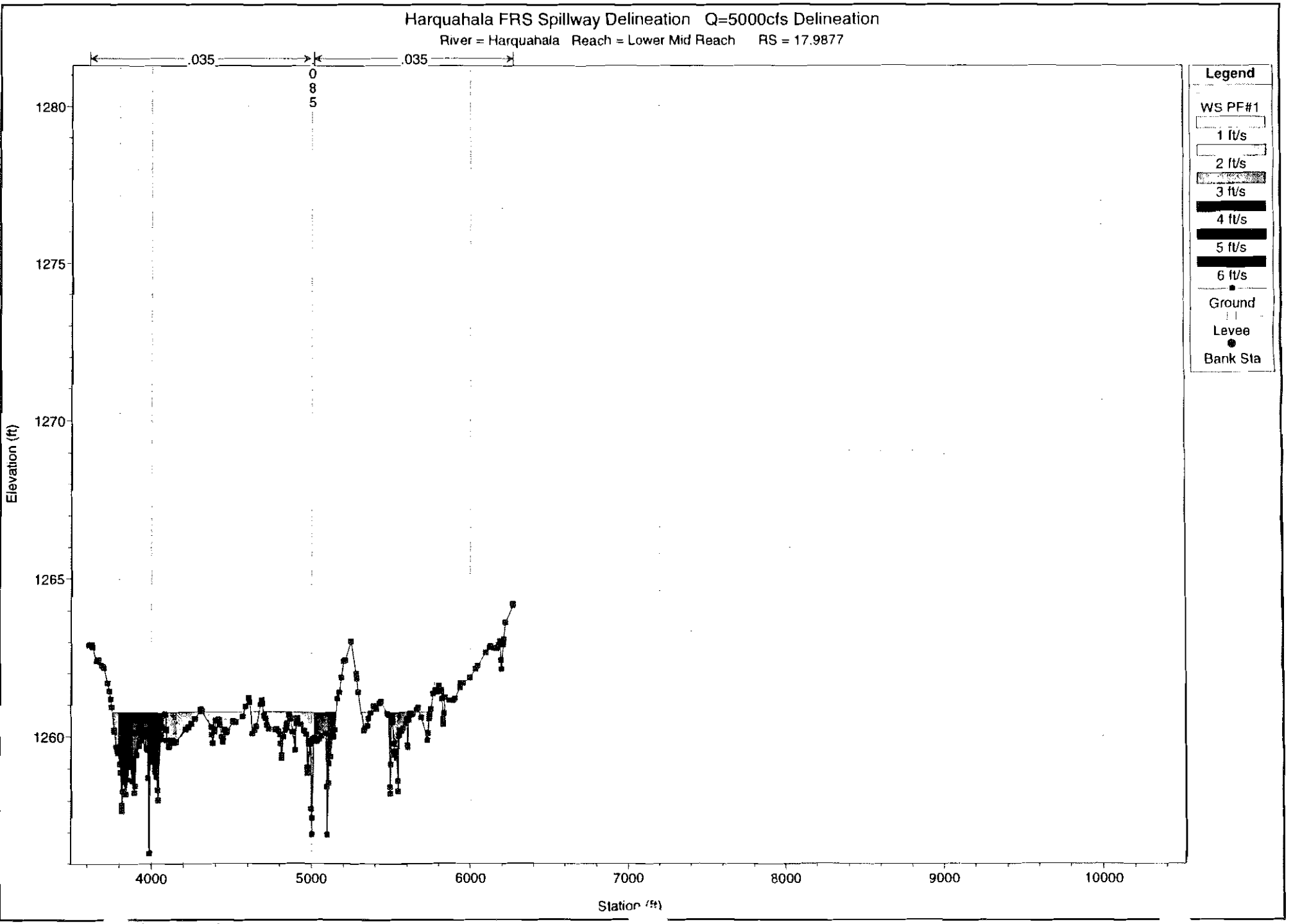


1 in Horiz. = 800 ft 1 in Vert. = 4 ft

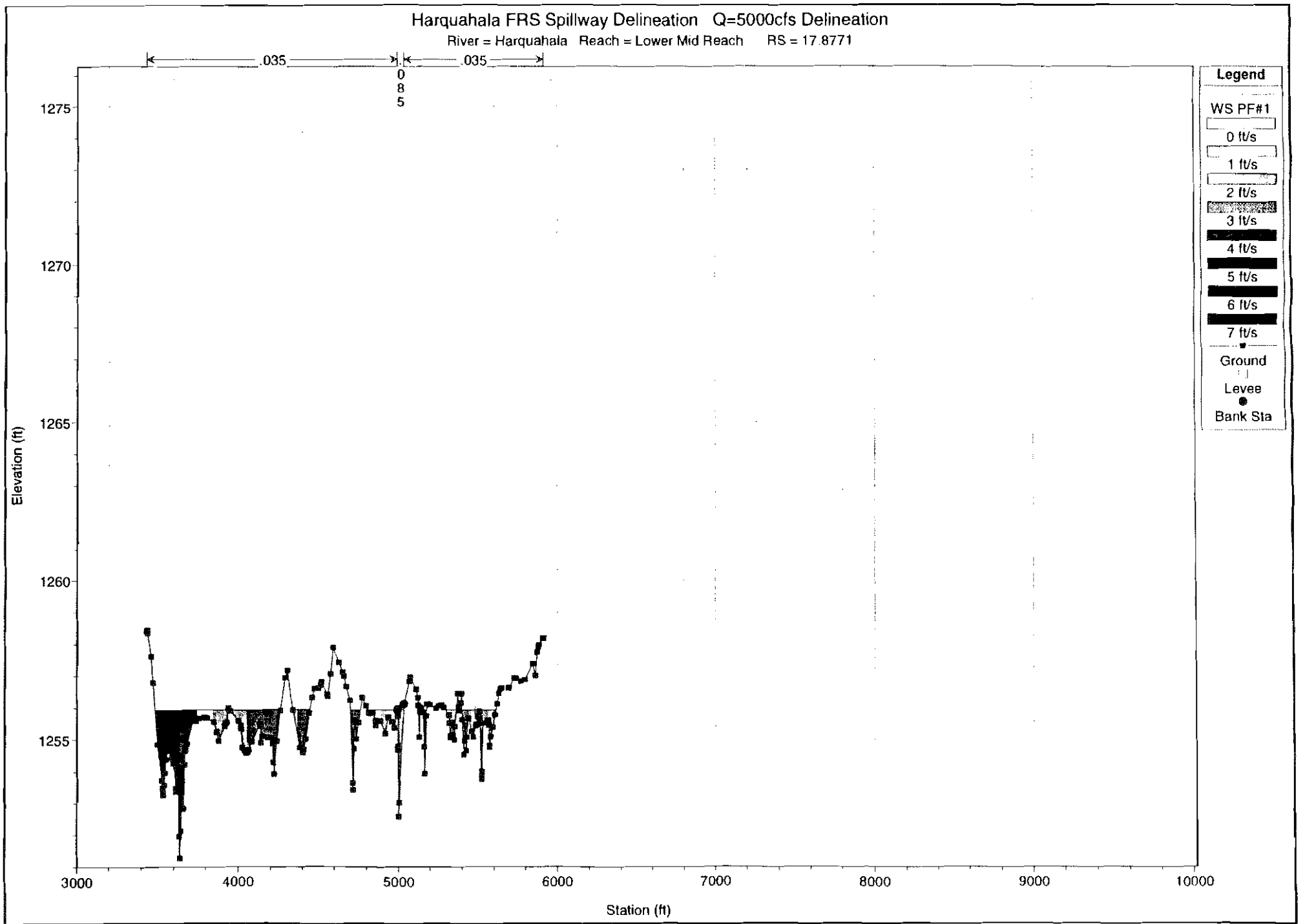


1 in Horiz. = 800 n Vert. = 4 ft

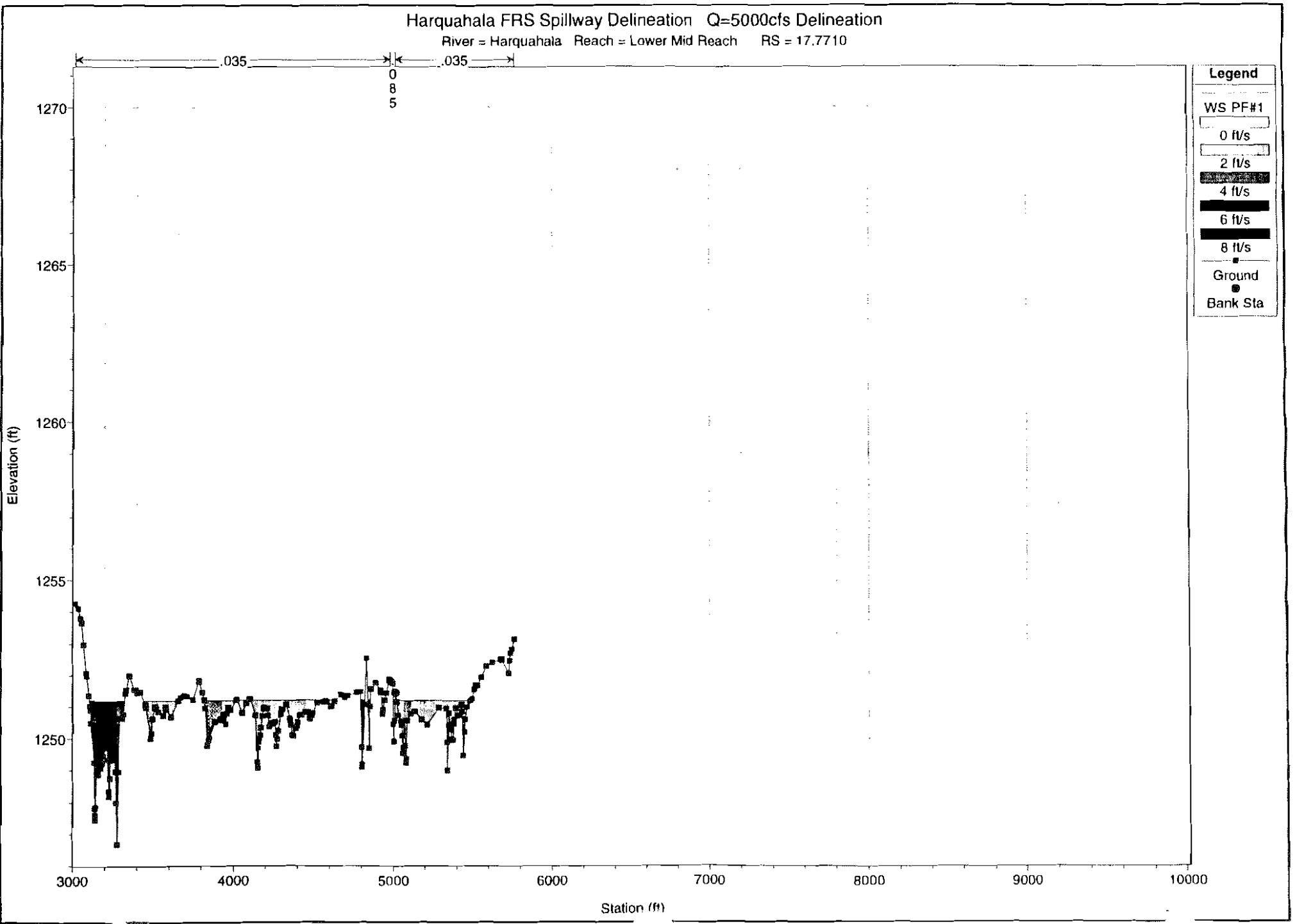

Harquahala FRS Spillway Delineation Q=5000cfs Delineation
River = Harquahala Reach = Lower Mid Reach RS = 18.0888
.035
.035
085
Legend
WS PF#1
0 ft/s
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Levee
Bank Sta
Elevation (ft)
1285
1280
1275
1270
1265
1260
4000
5000
6000
7000
8000
9000
10000
Station (ft)



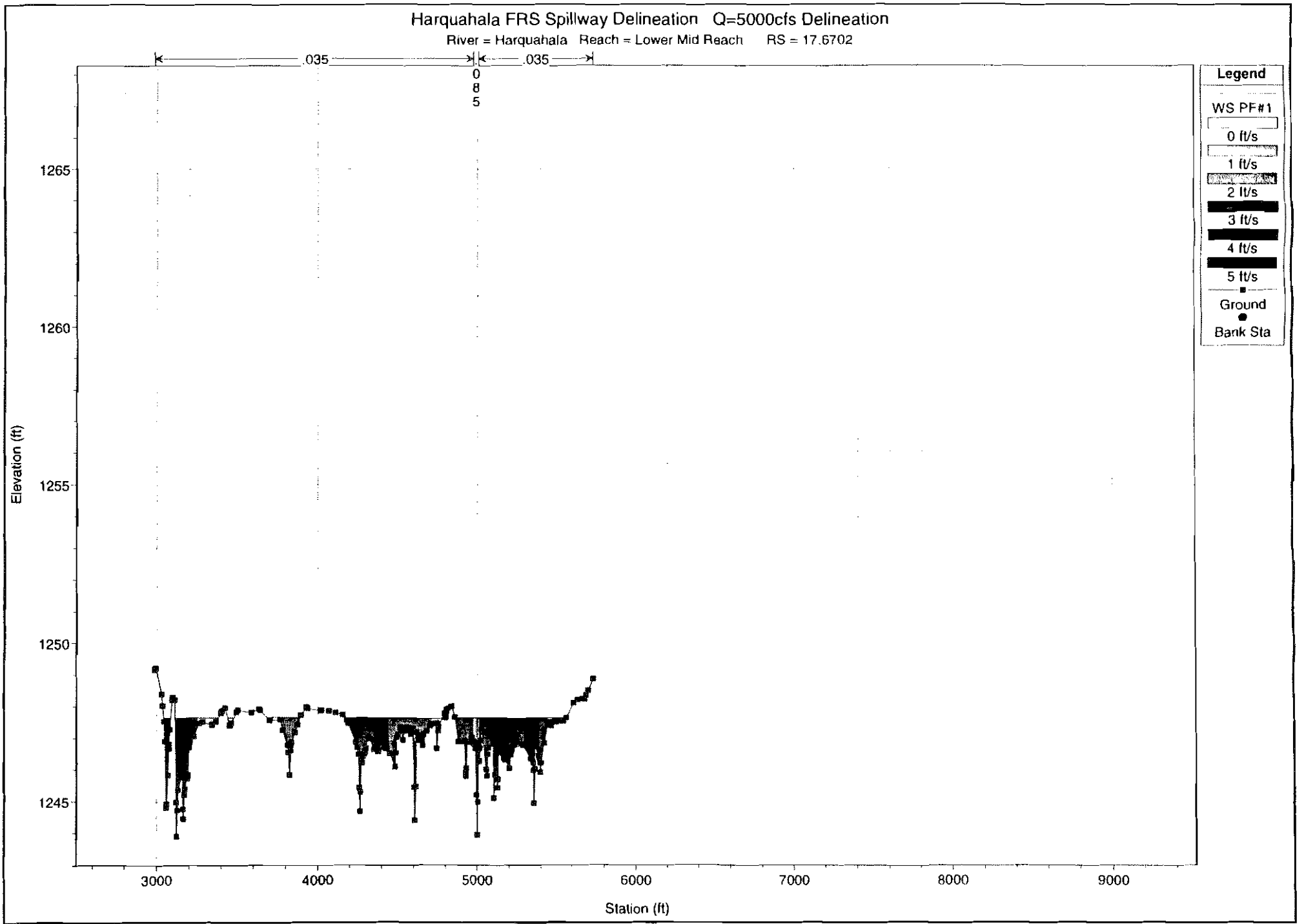
1 in Horiz. = 800 in Vert. = 4 ft



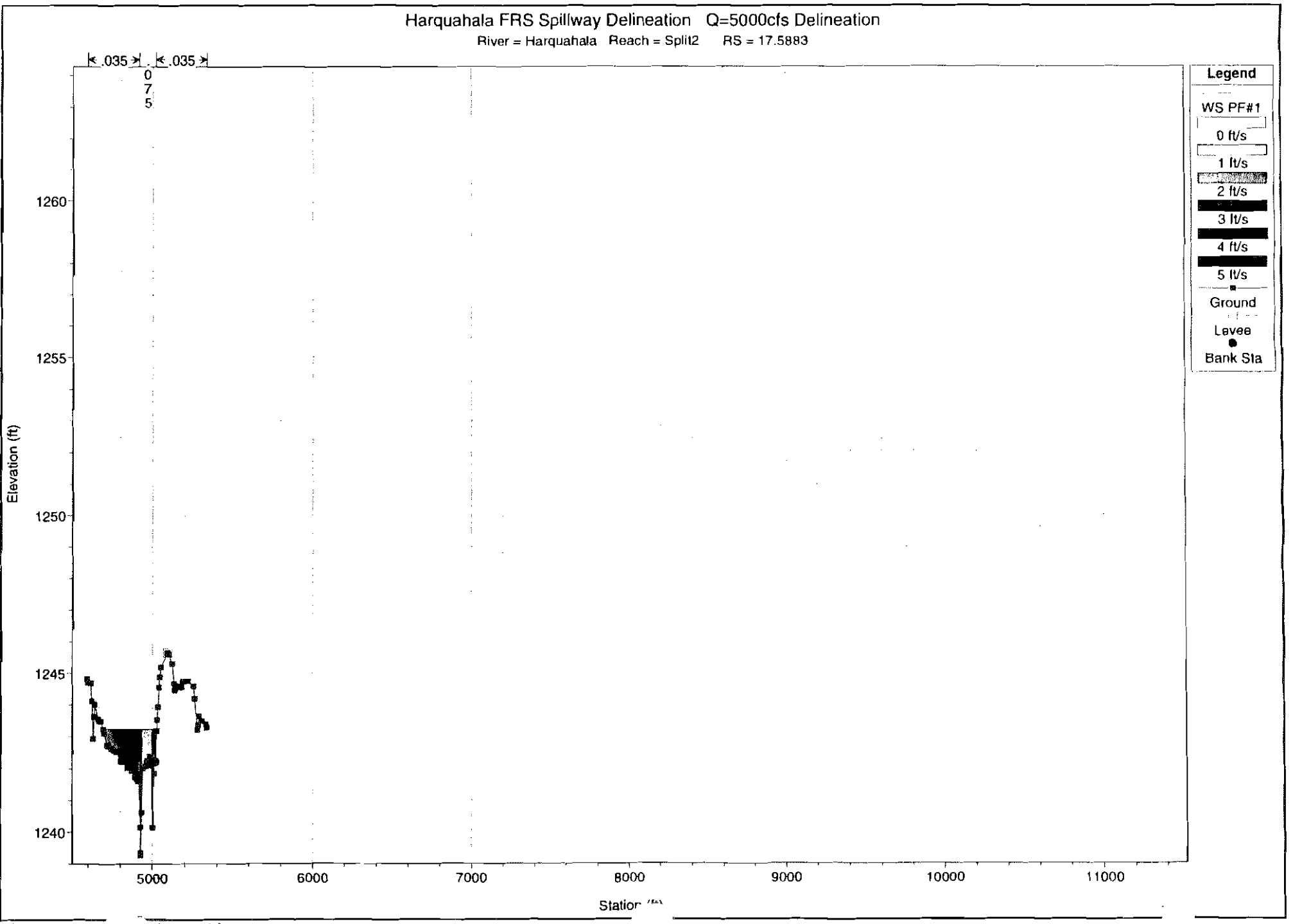
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 800 n Vert. = 4 ft



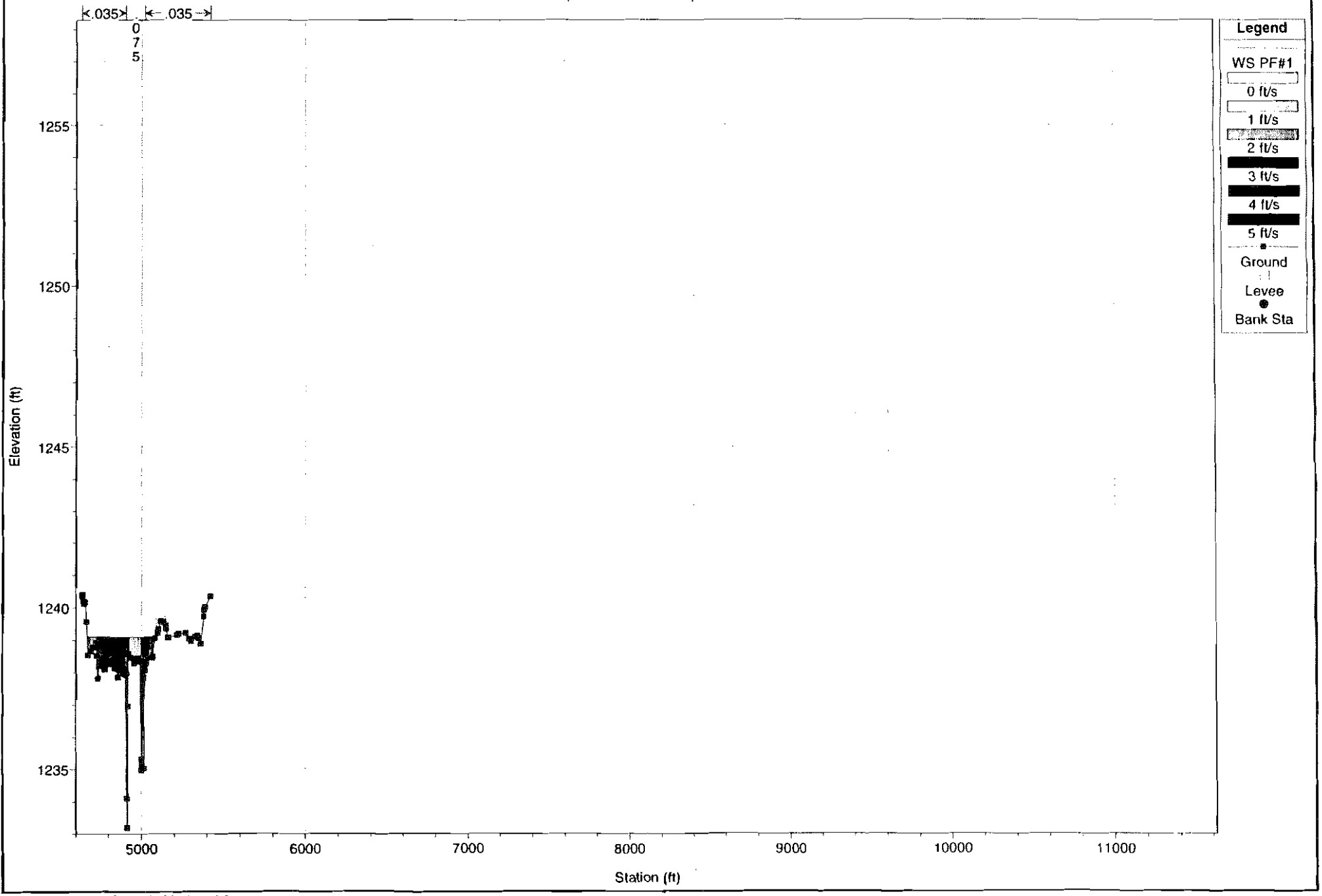
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



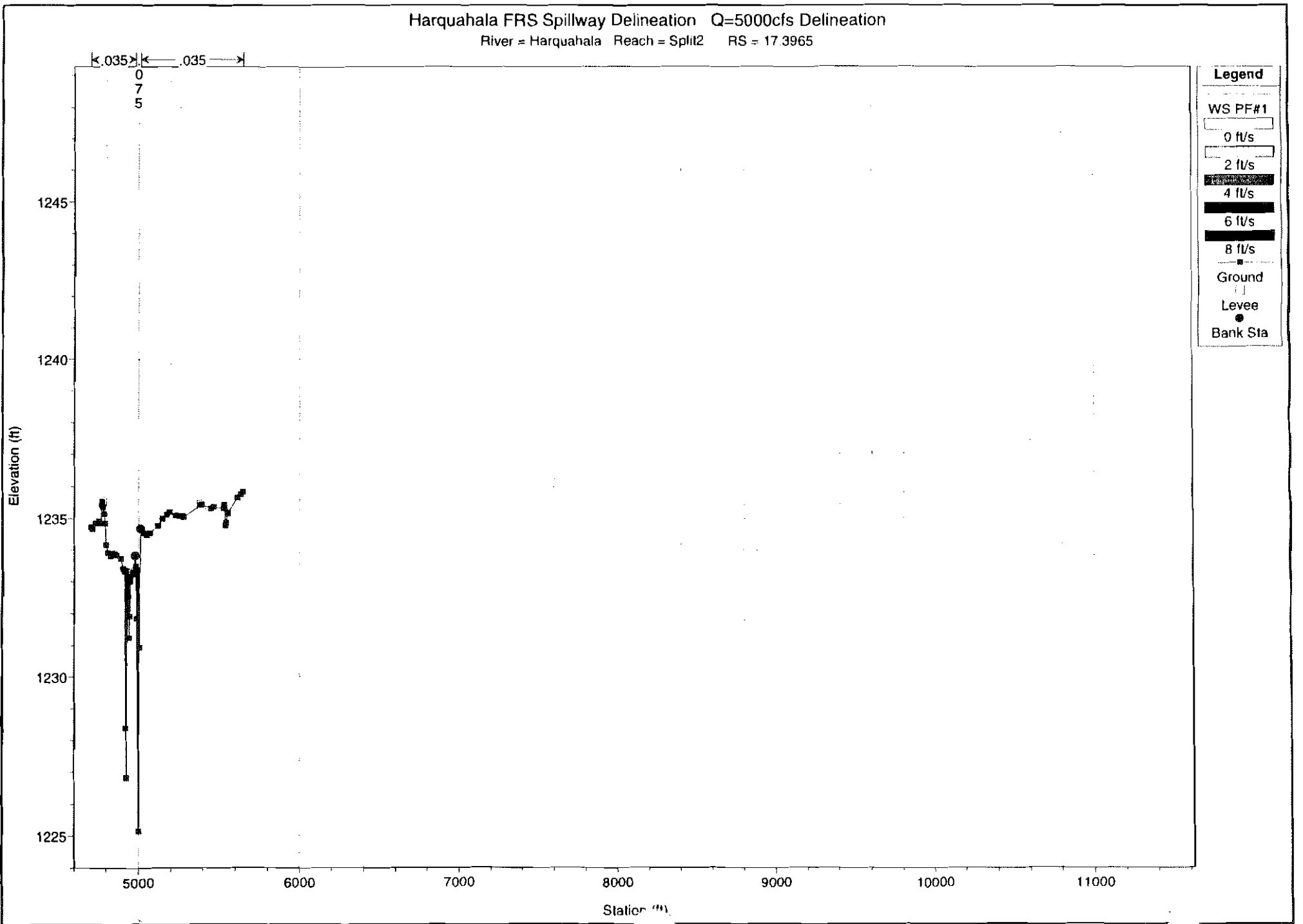
1 in Horiz. = 800) Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

River = Harquahala Reach = Split2 RS = 17.4913



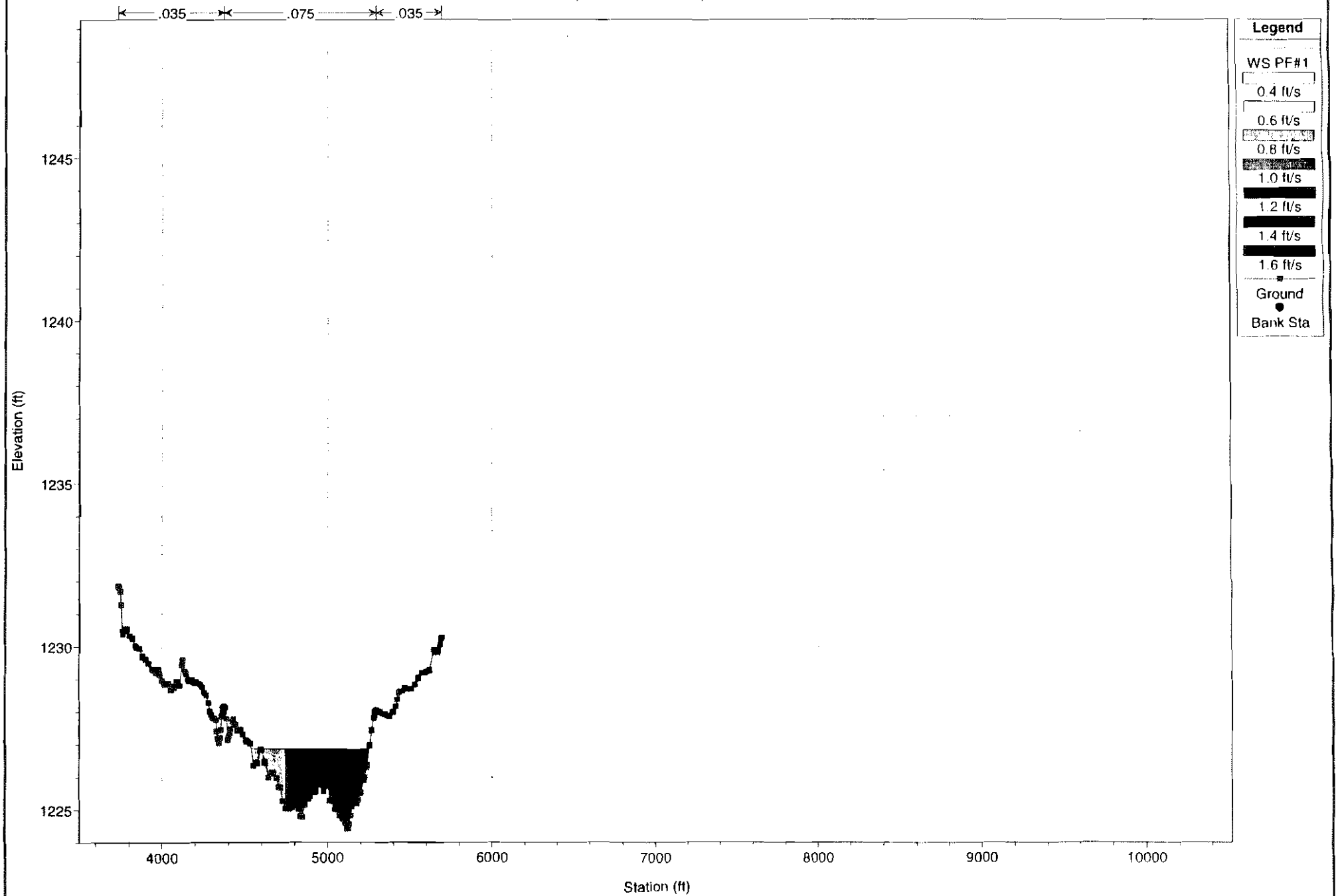
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



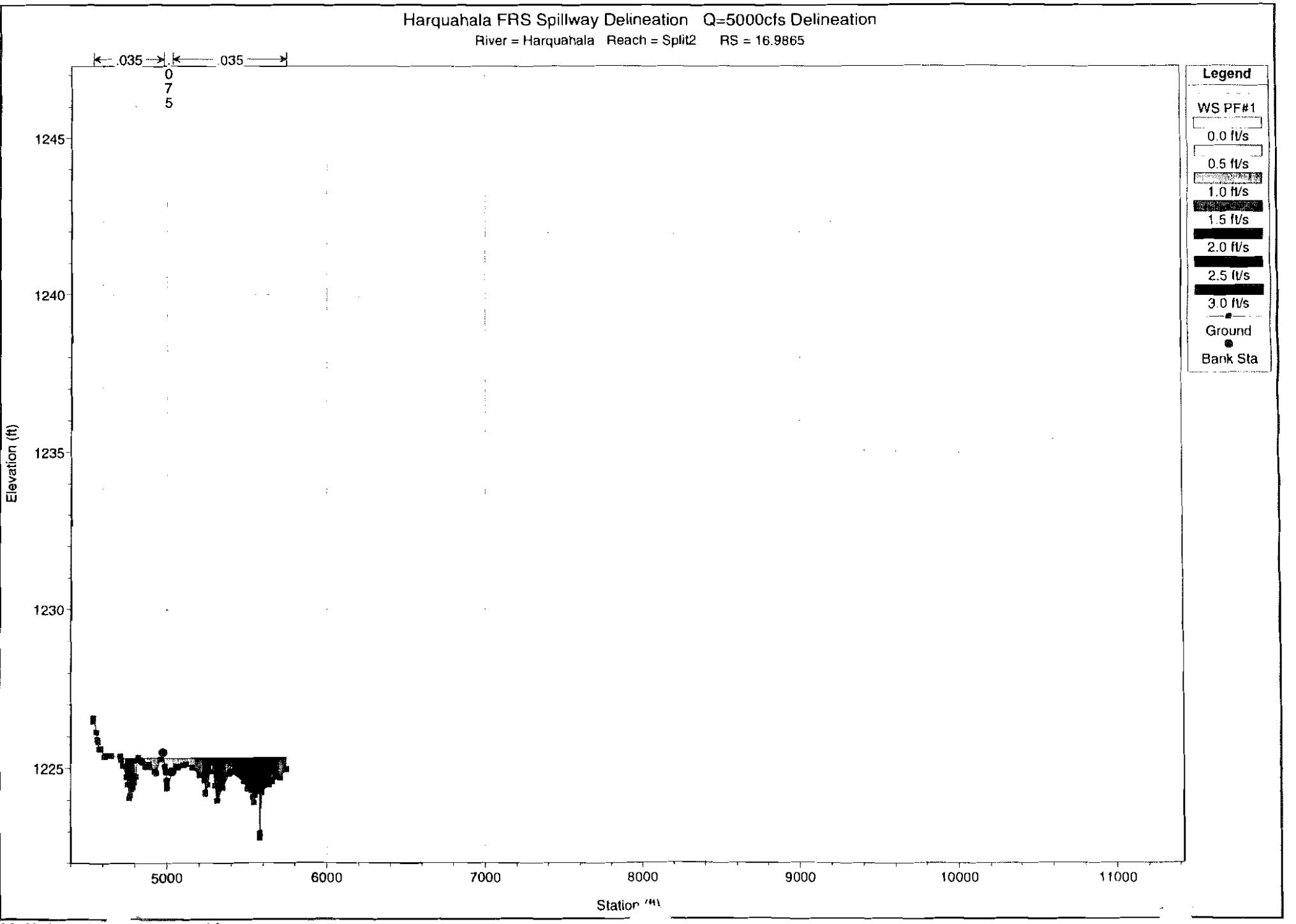
1 in Horiz. = 800 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=5000cfs Delineation

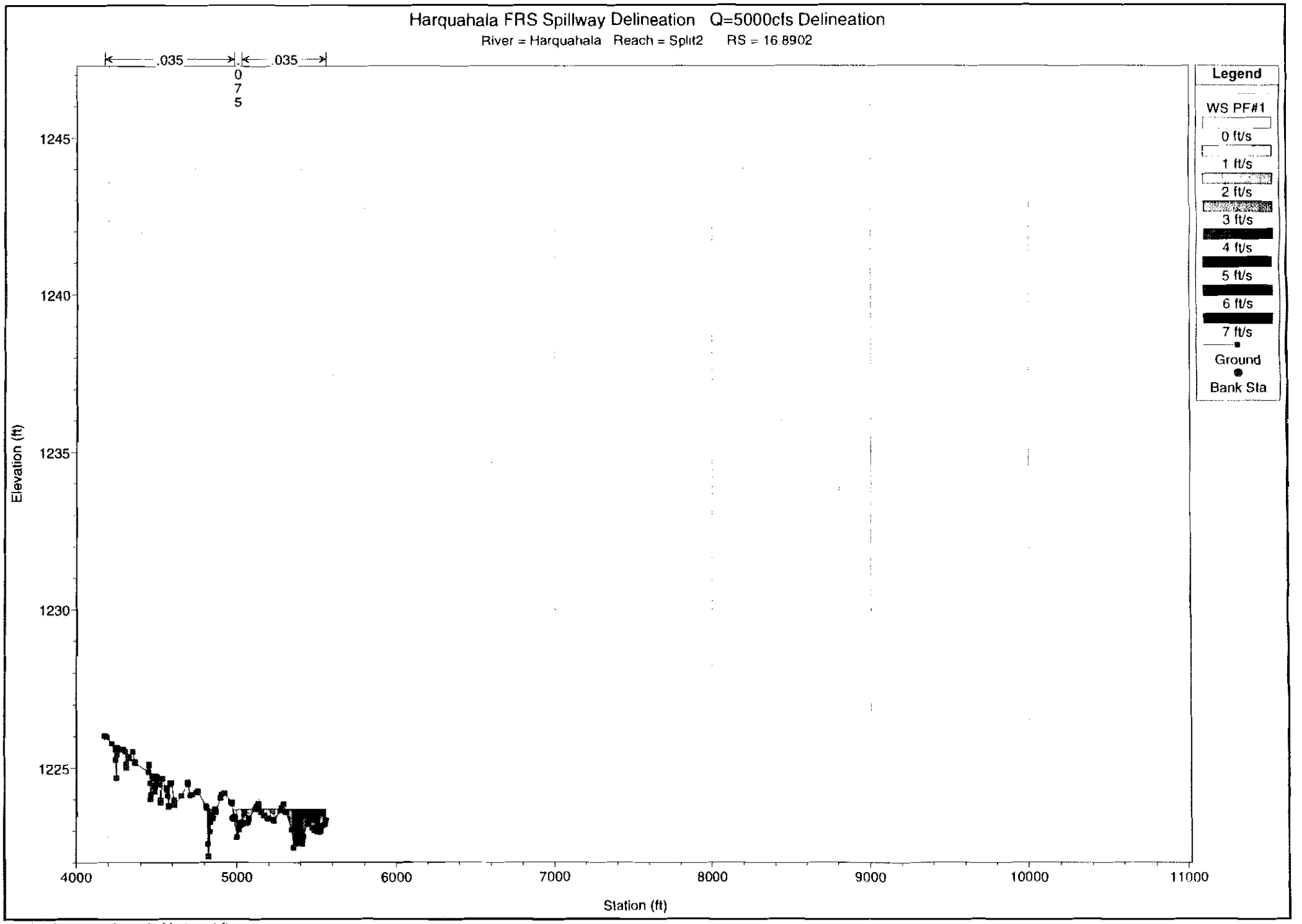
River = Harquahala Reach = Split2 RS = 17.1420



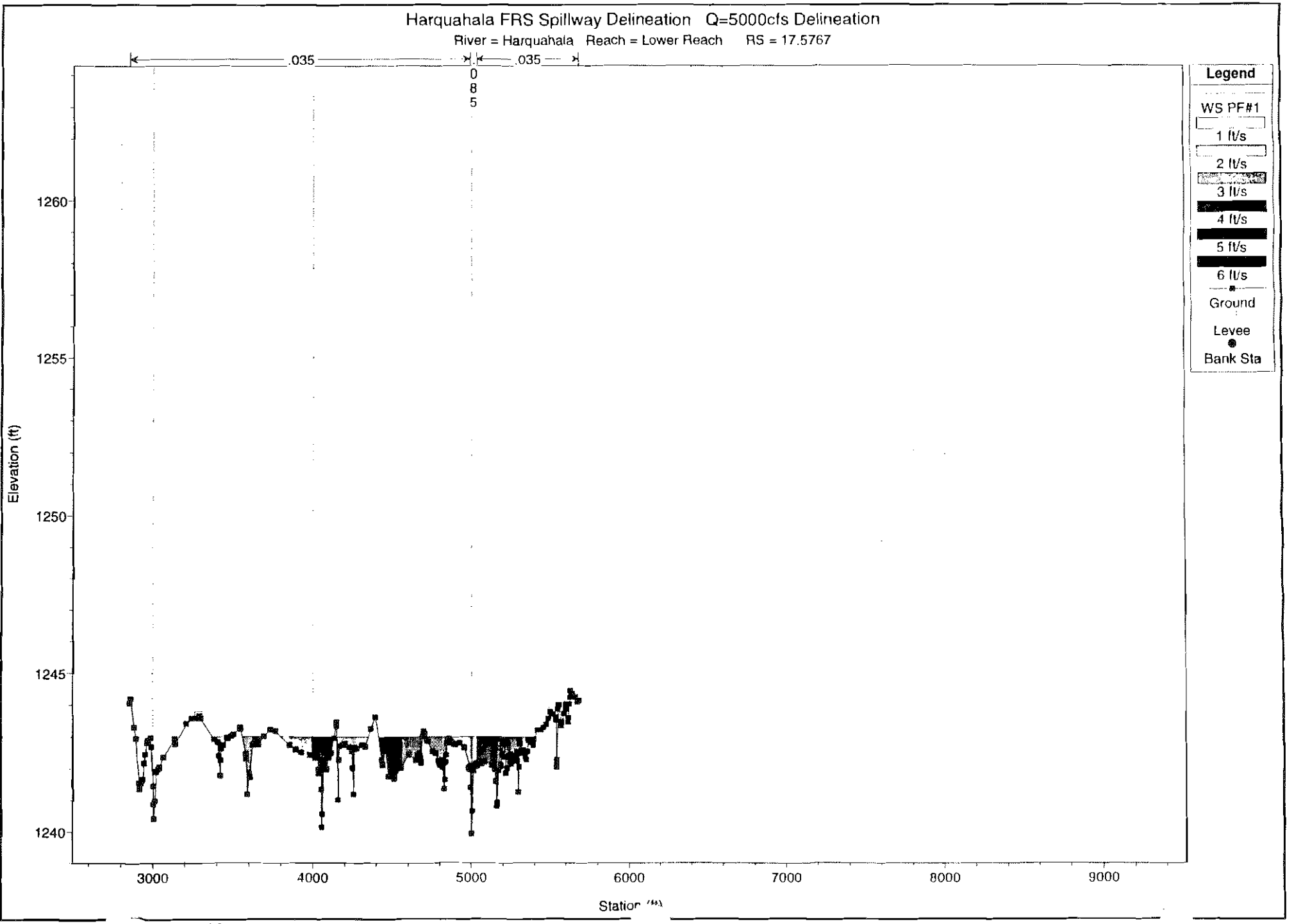
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



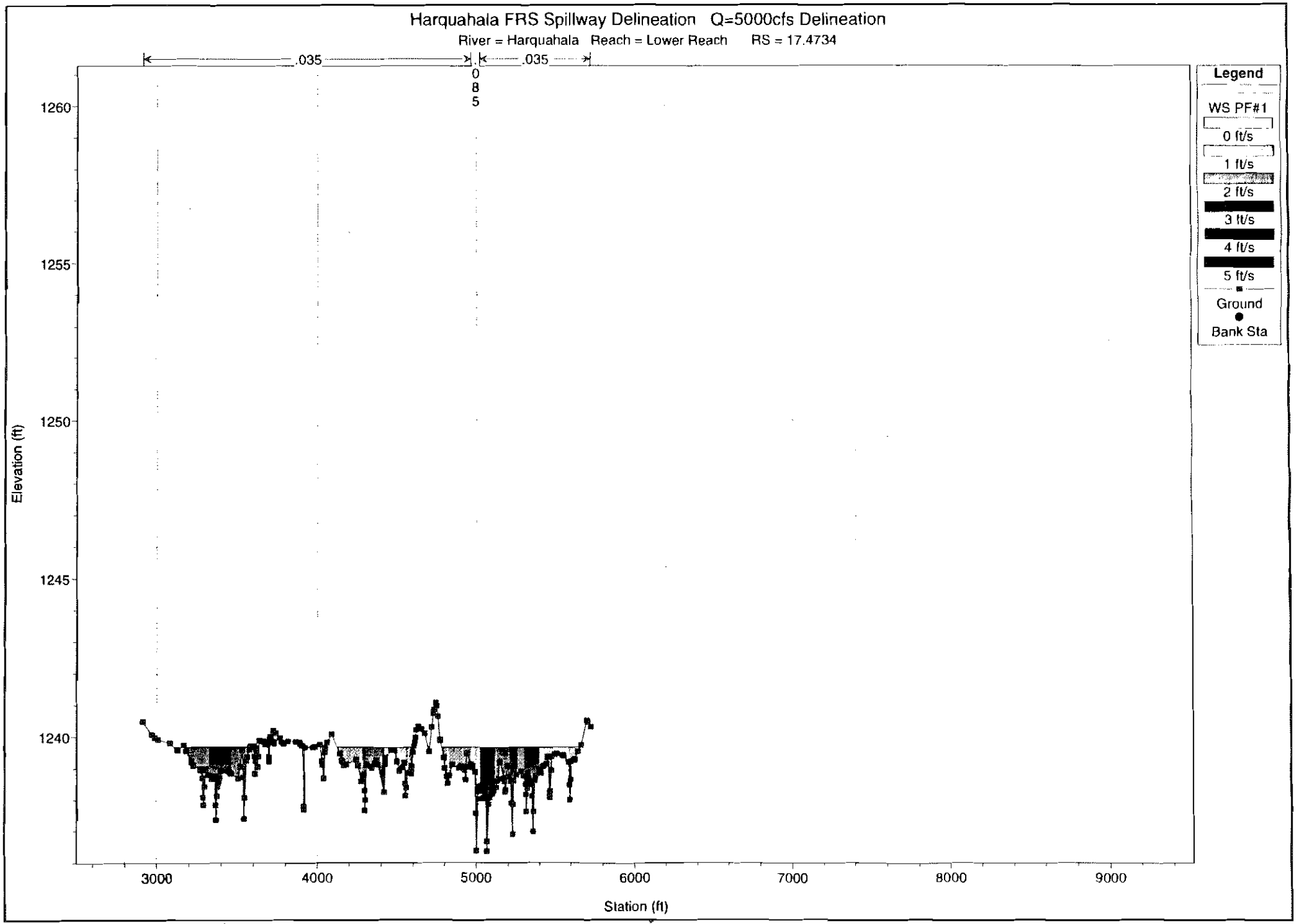
1 in Horiz. = 800 1 Vert. = 4 ft



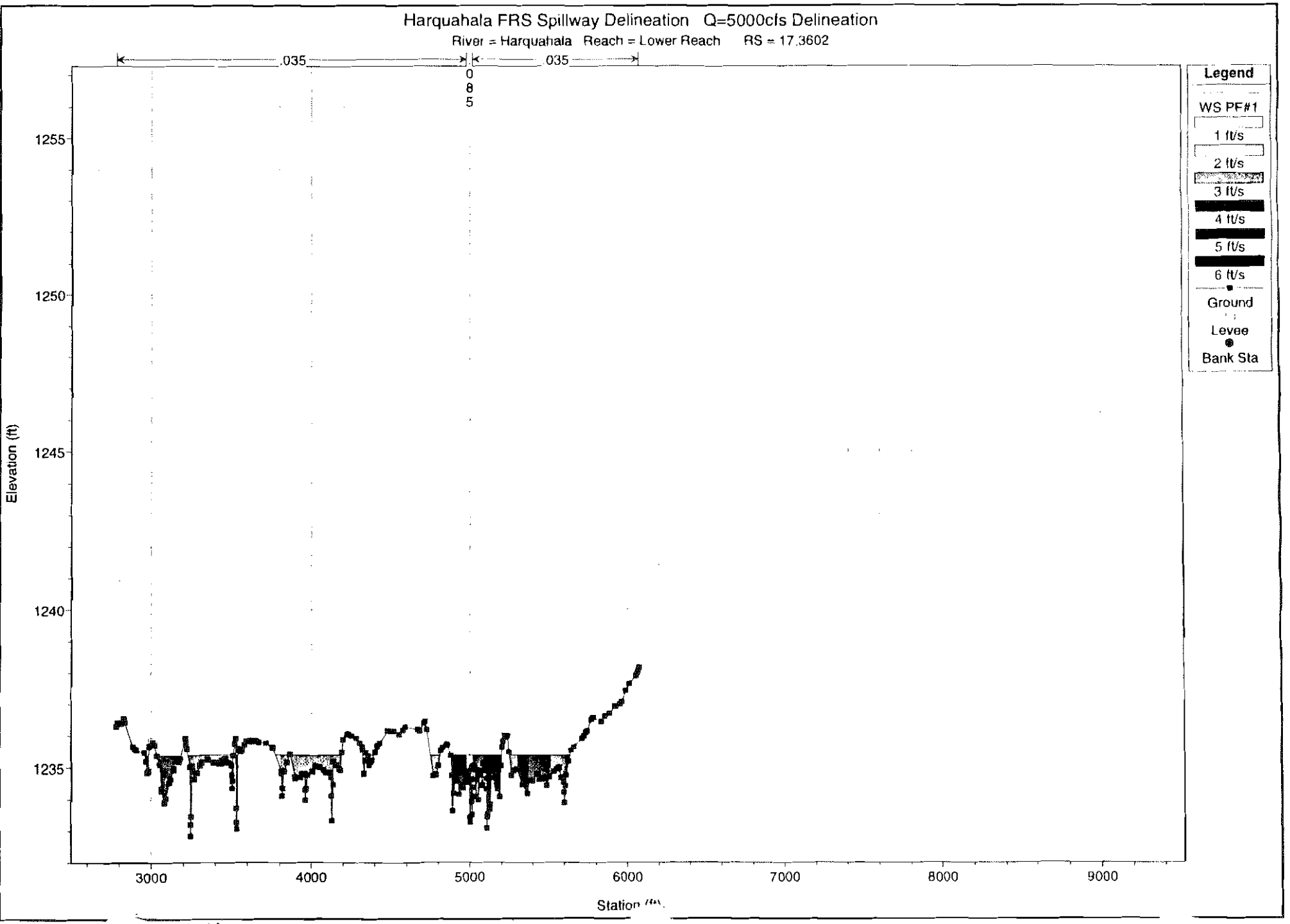
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



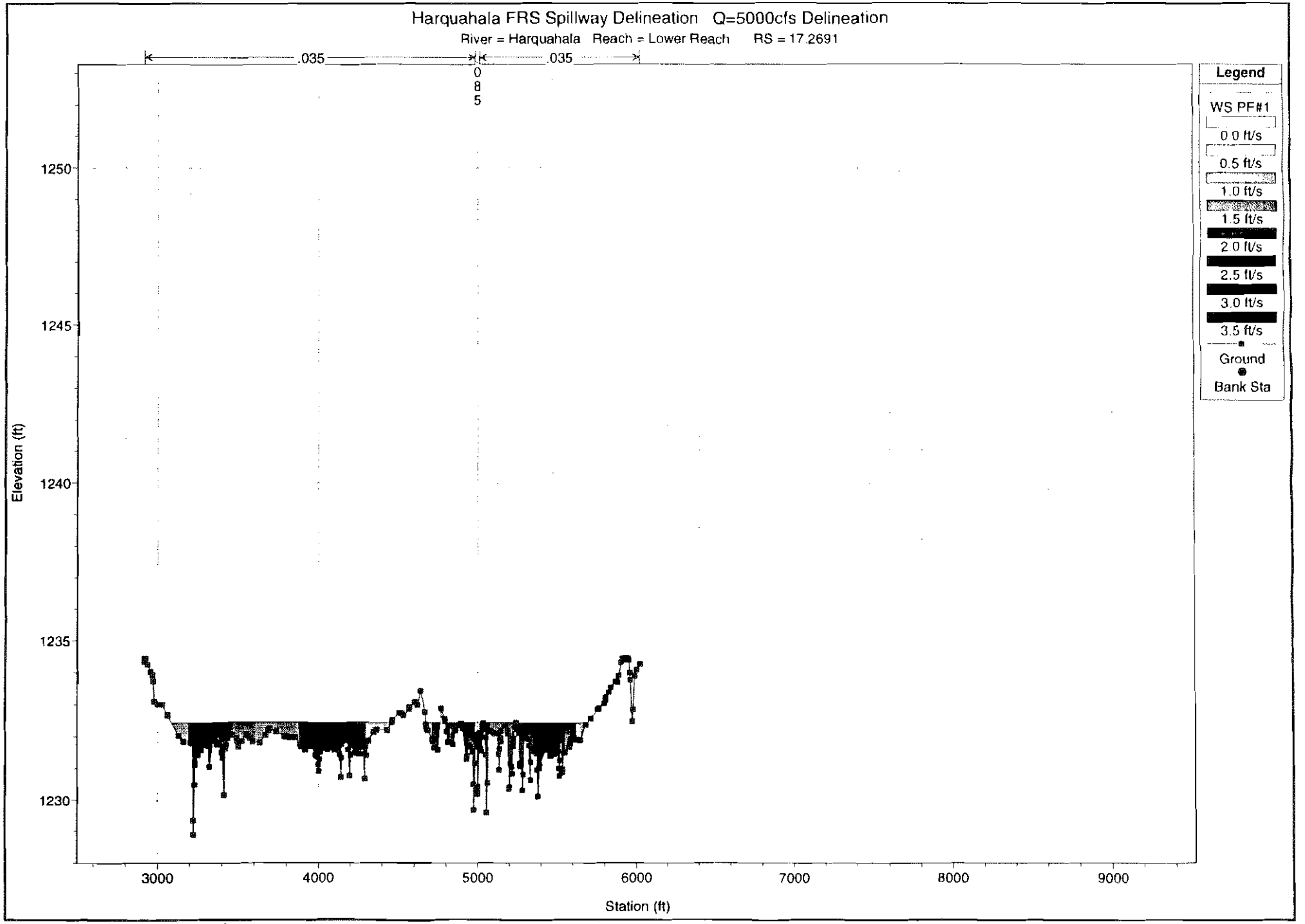
1 in Horiz. = 800 1 Vert. = 4 ft



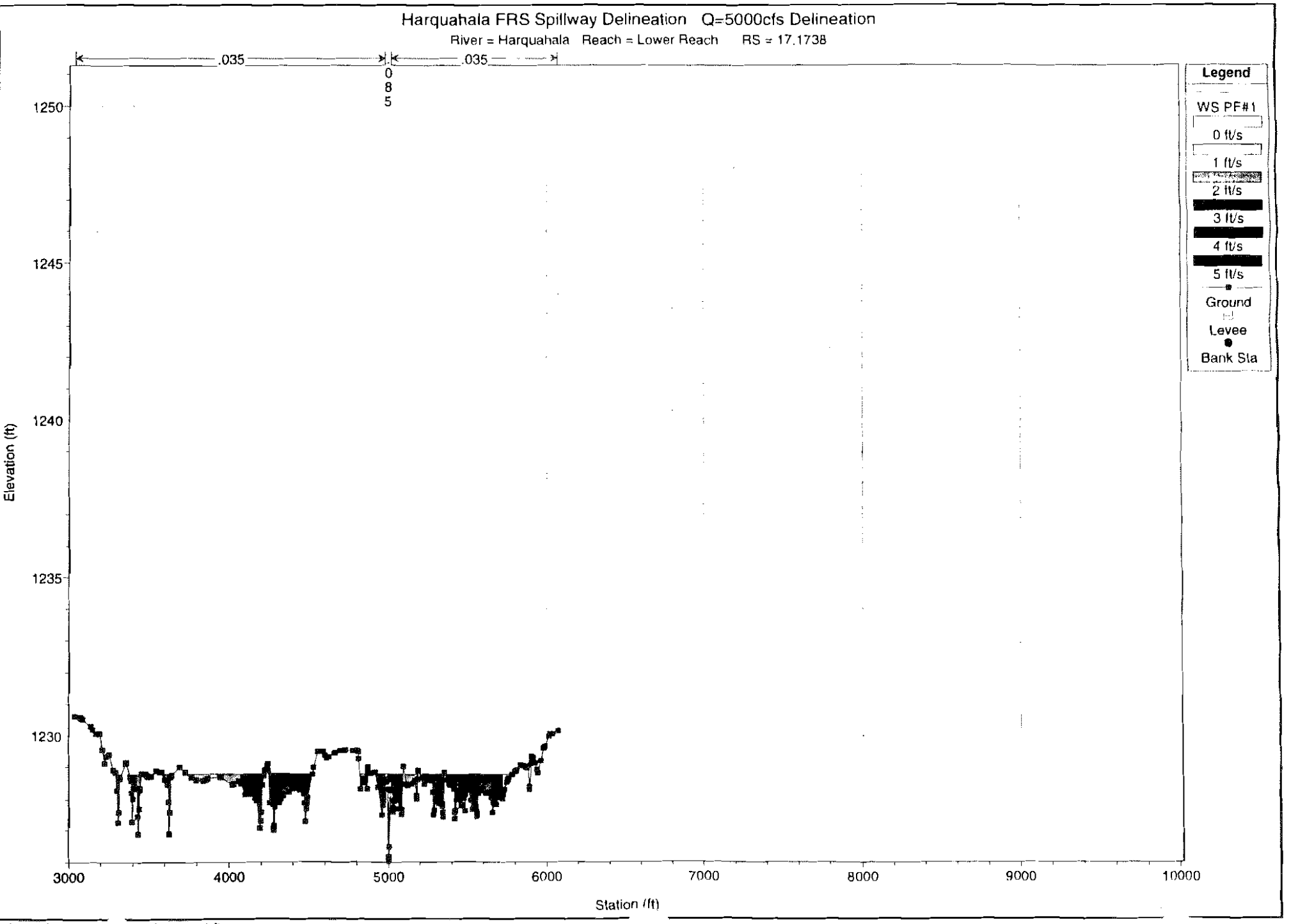
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



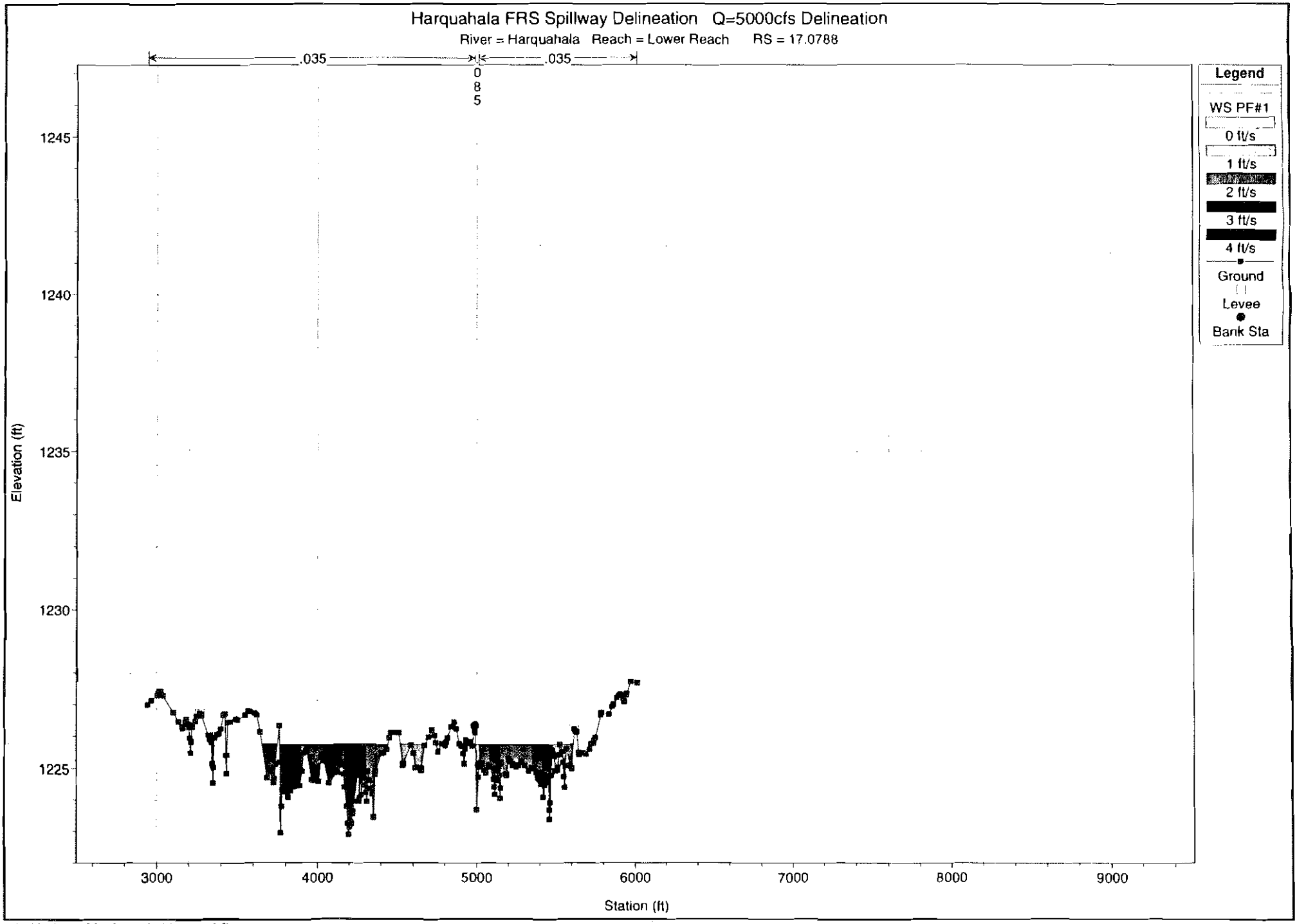
1 in Horiz. = 800 1 Vert. = 4 ft



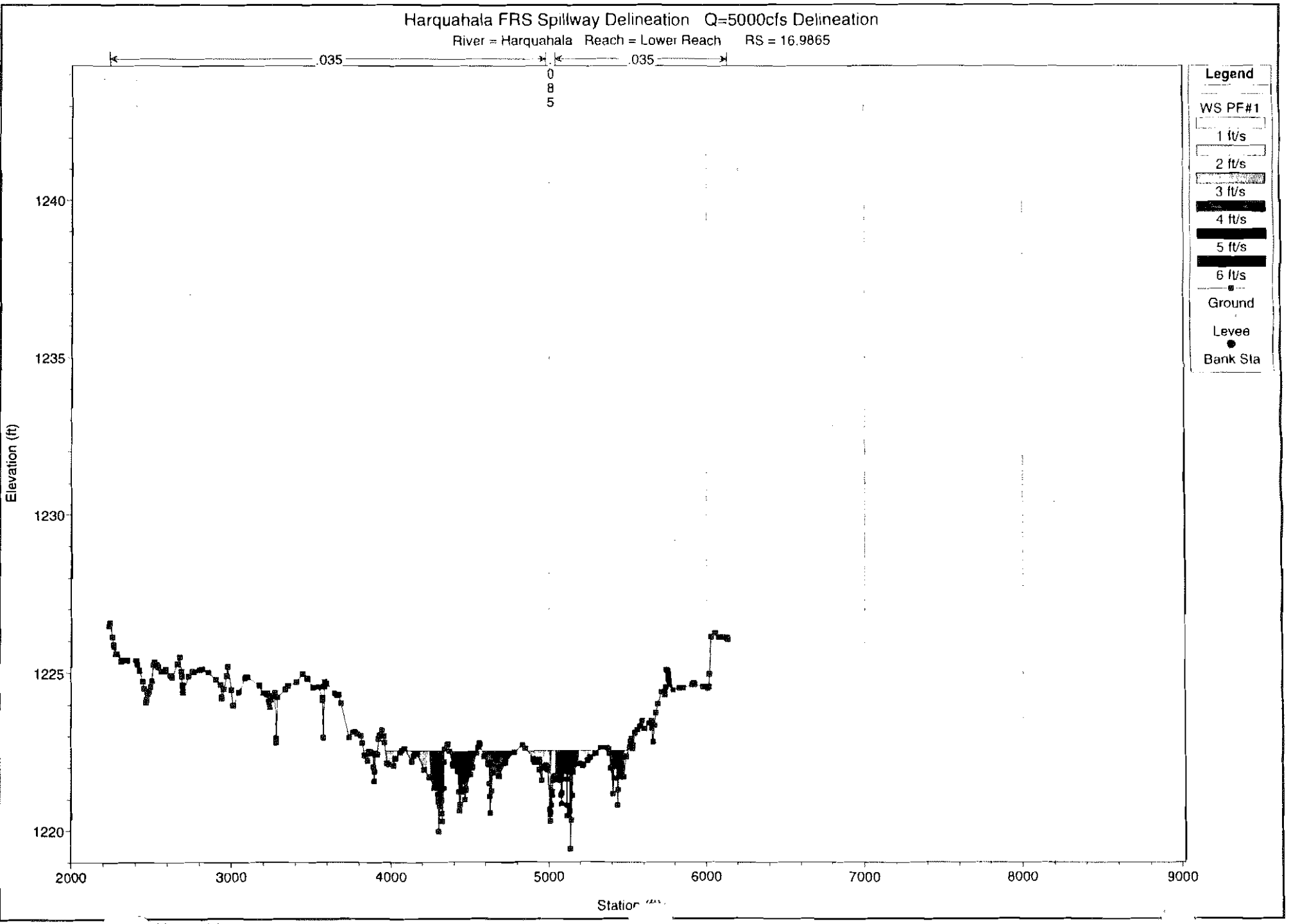
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



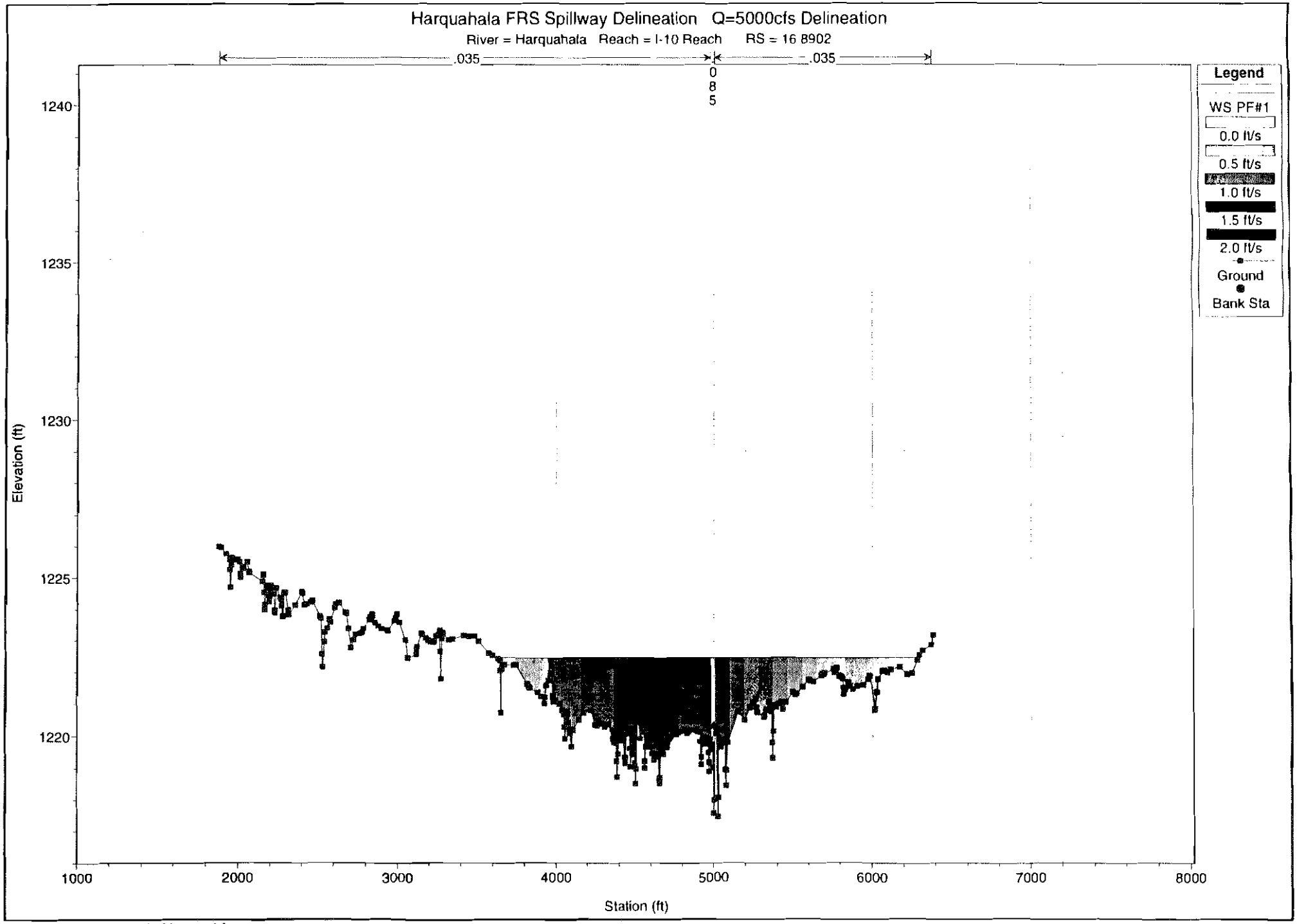
1 in Horiz. = 800 in Vert. = 4 ft



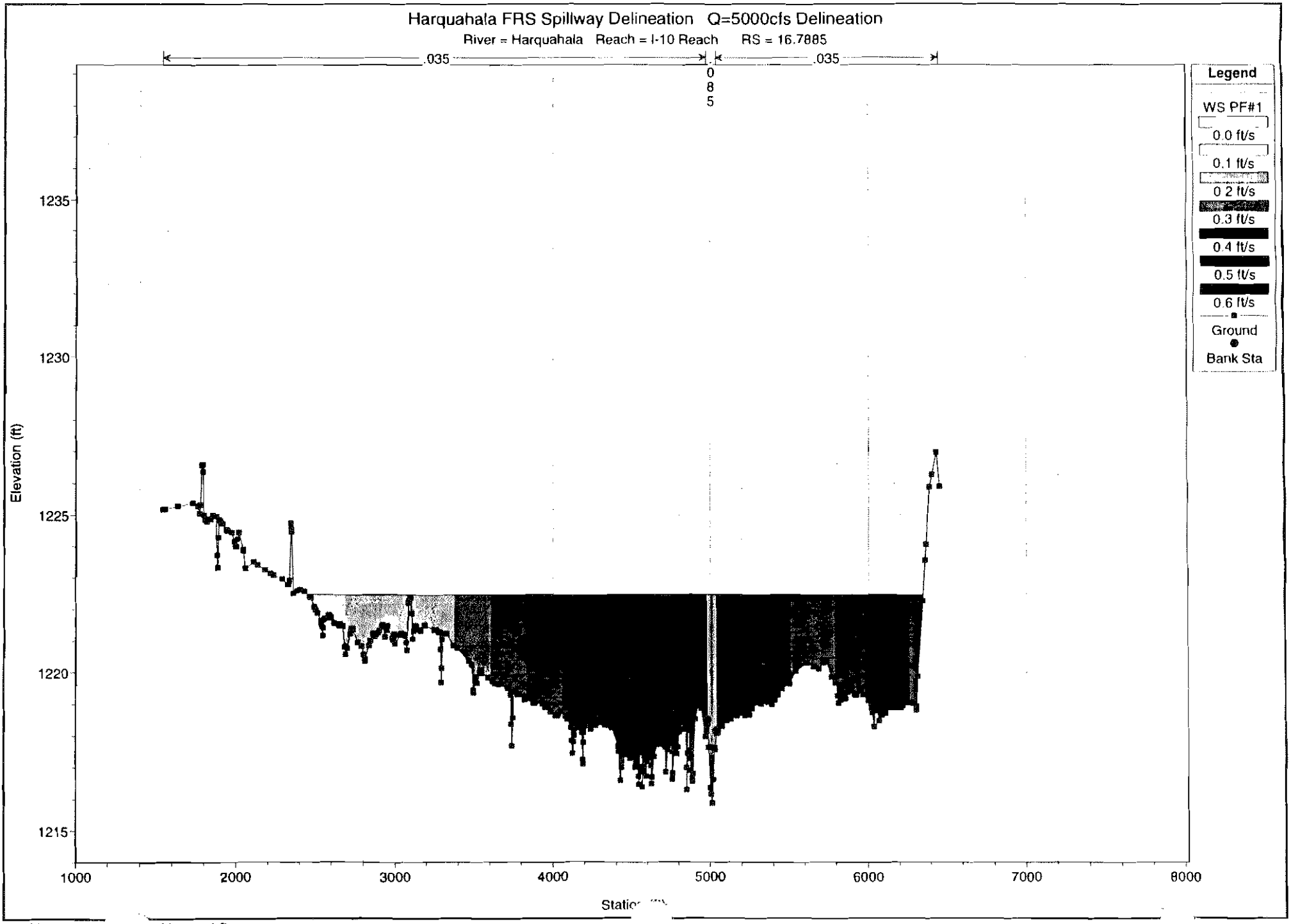
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



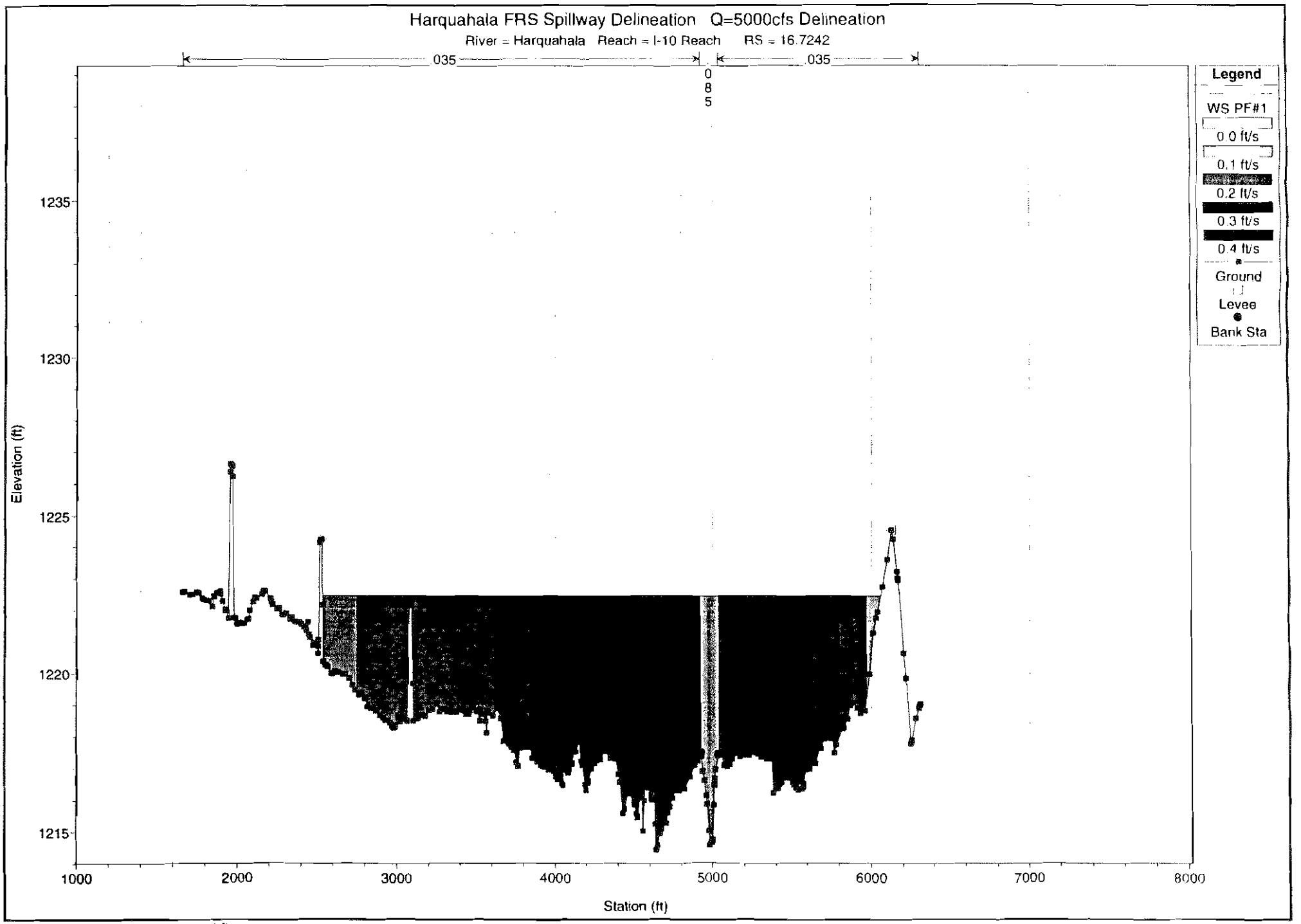
1 in Horiz. = 800 1 Vert. = 4 ft



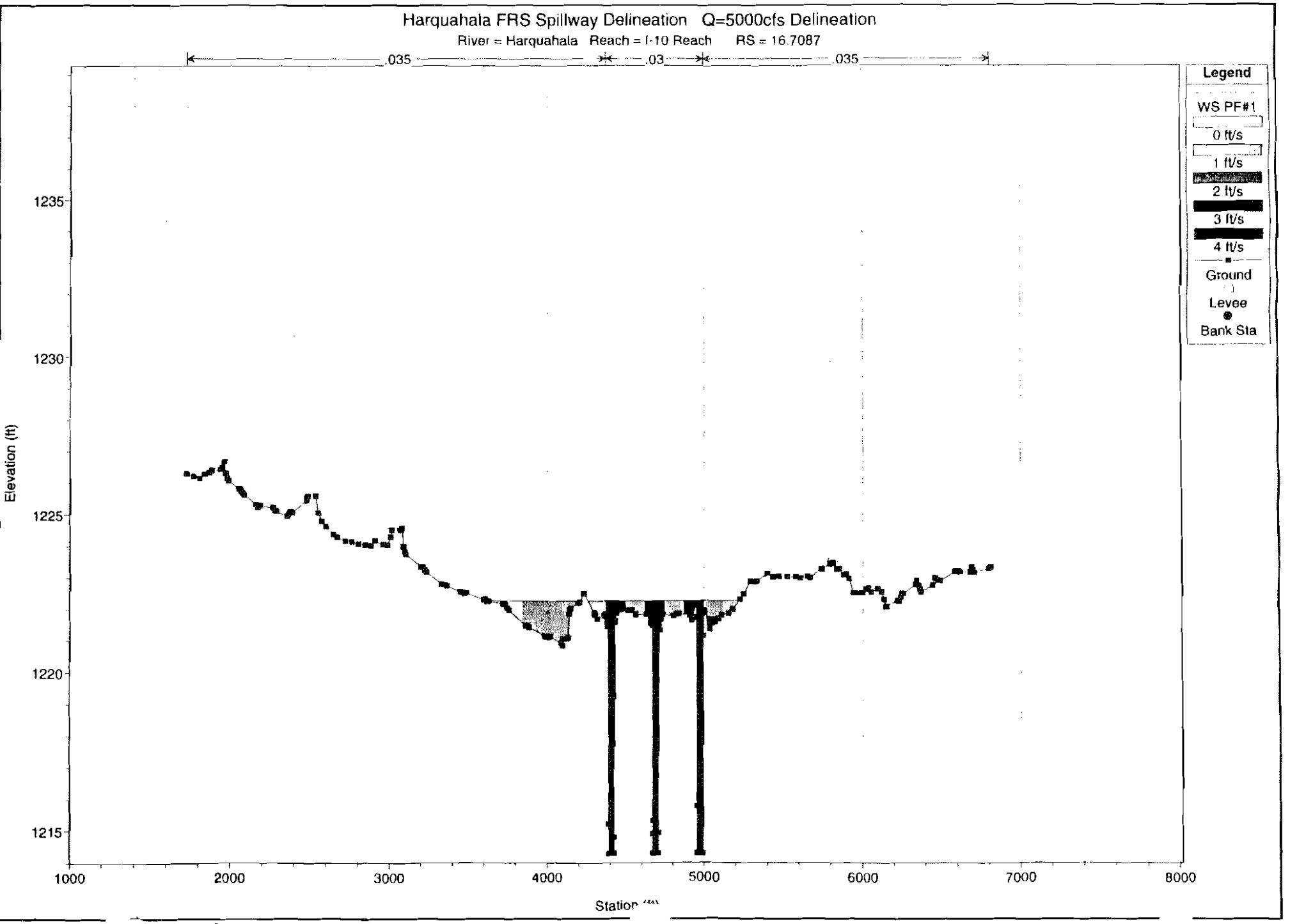
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



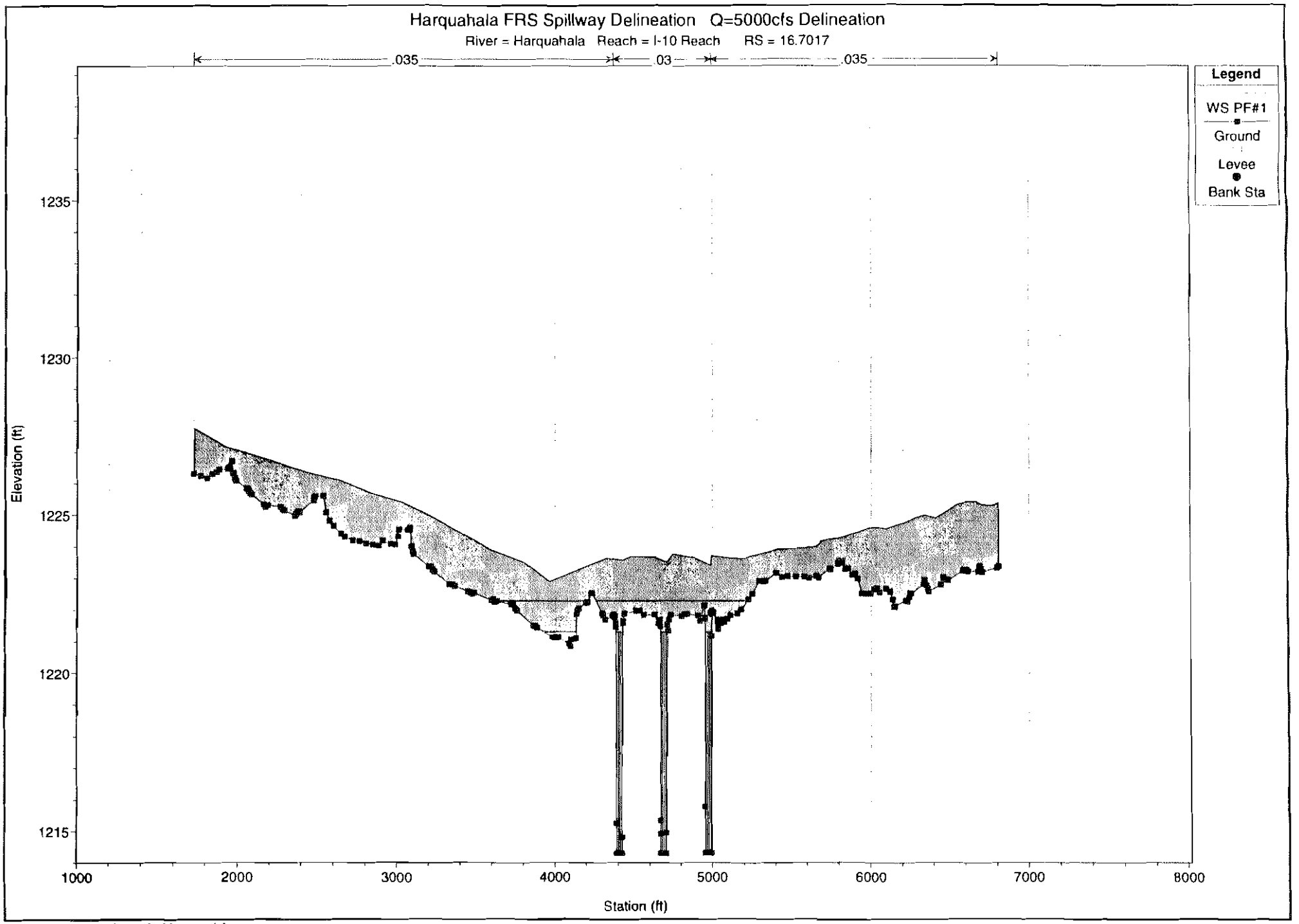
1 in Horiz. = 800 in Vert. = 4 ft



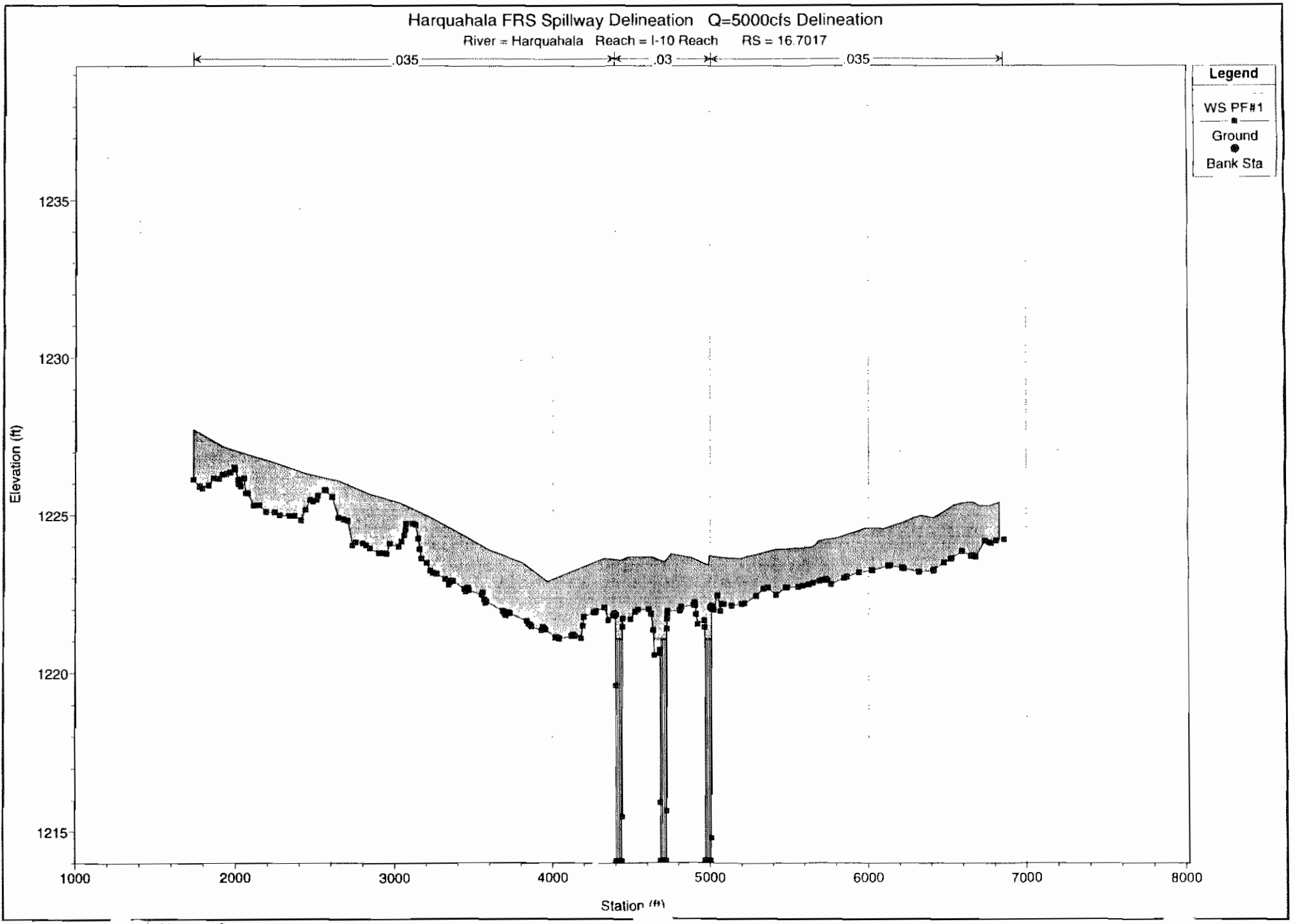
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



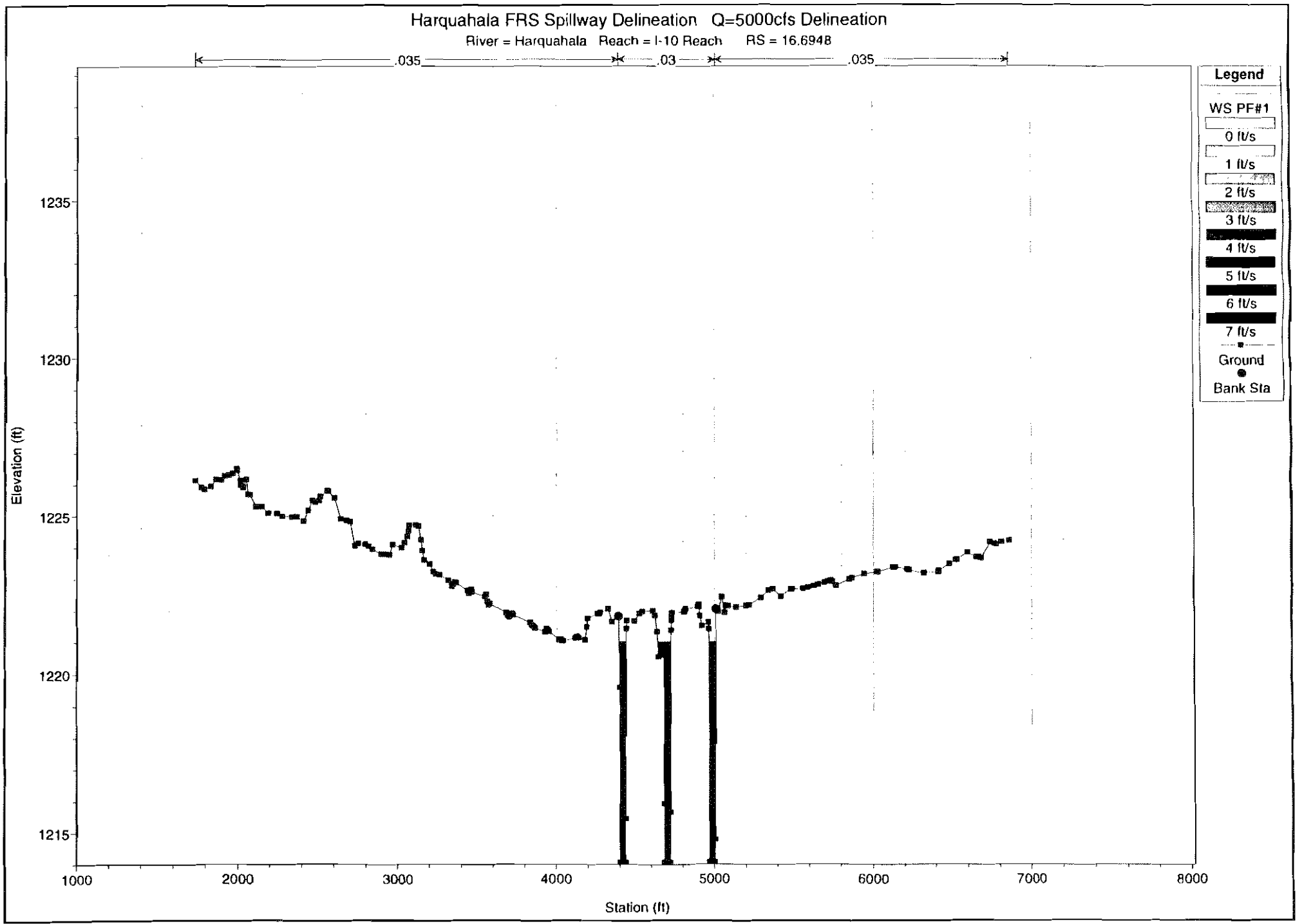
1 in Horiz. = 800 Vert. = 4 ft



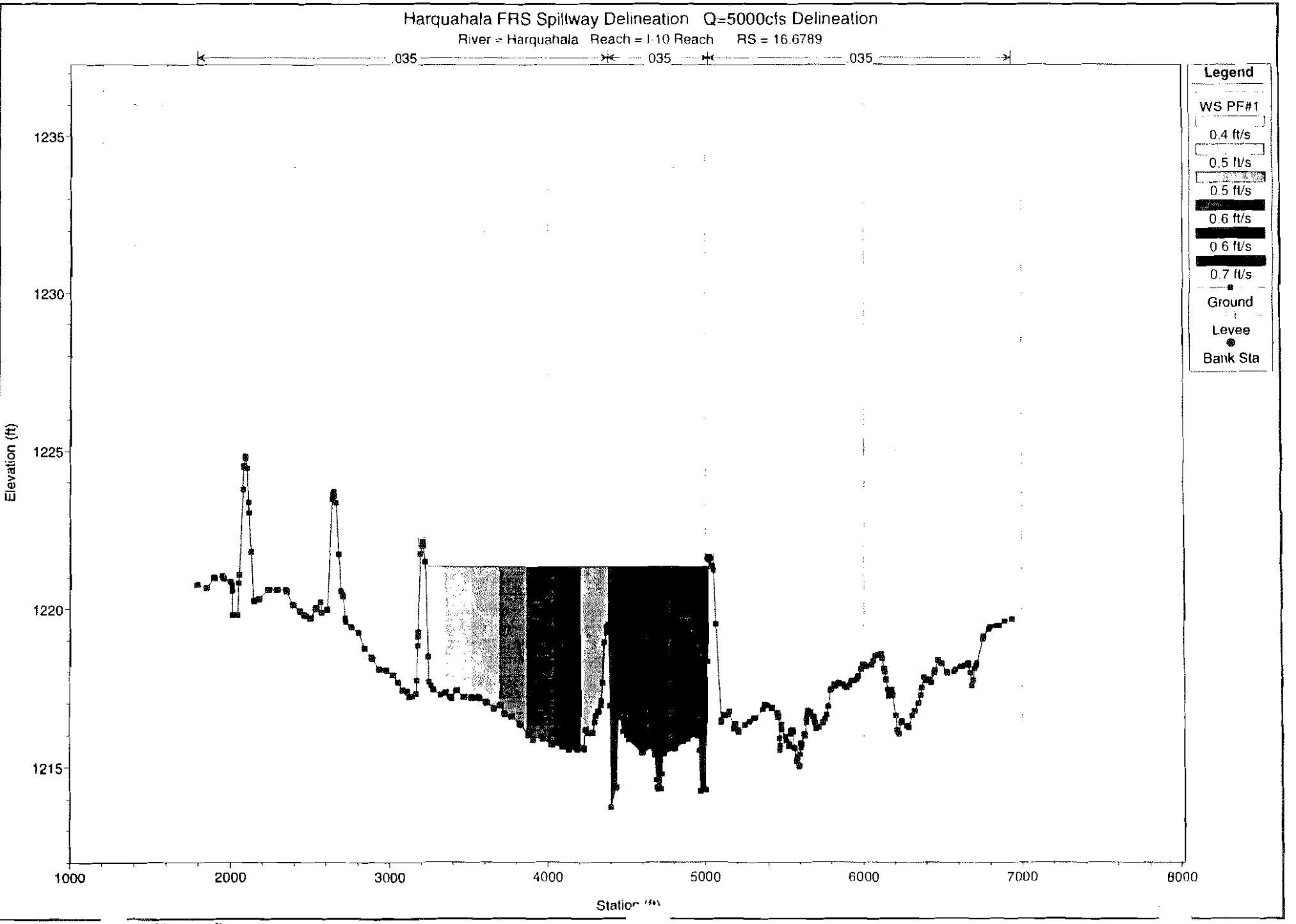
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



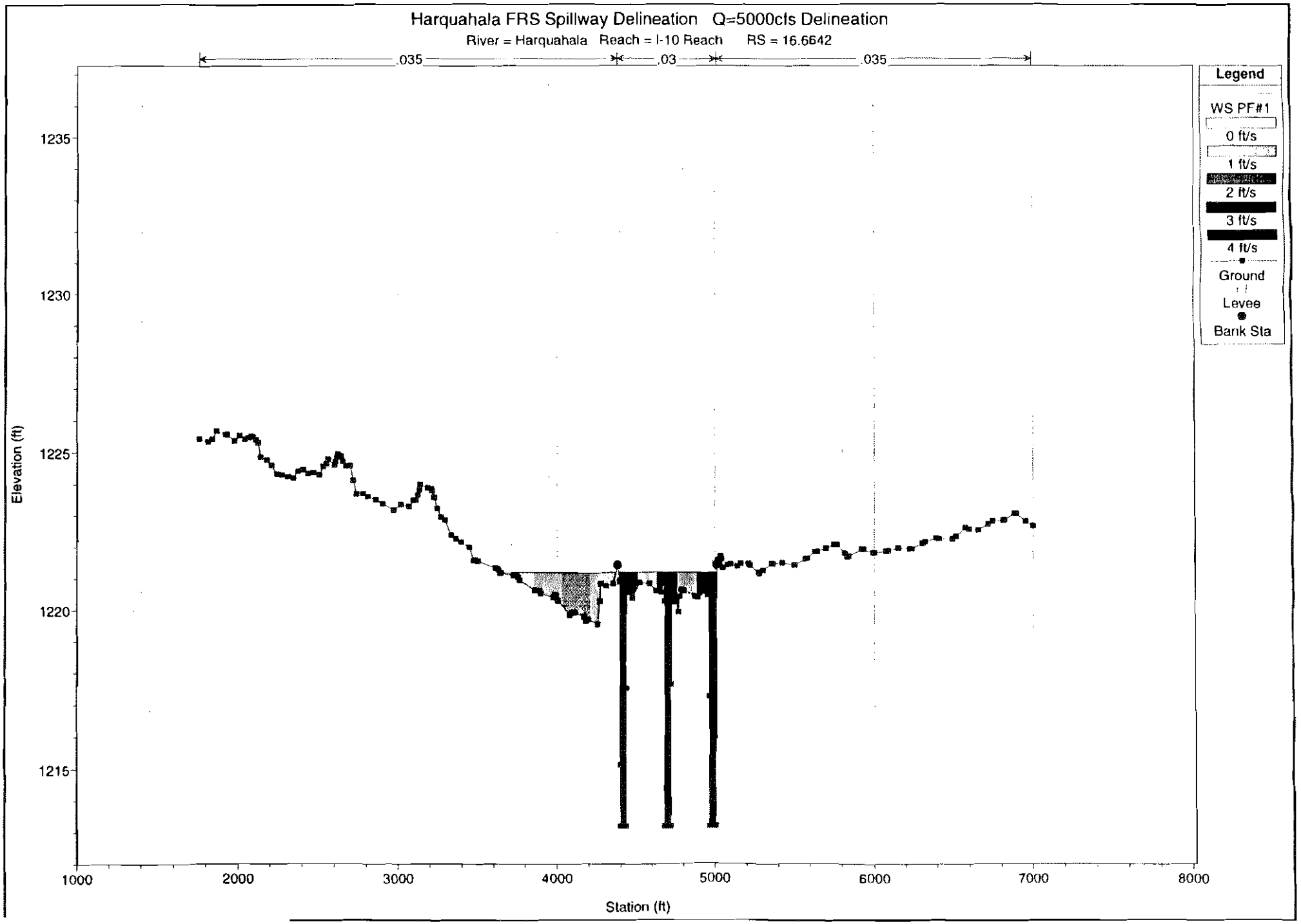
1 in Horiz. = 800 ' Vert. = 4 ft

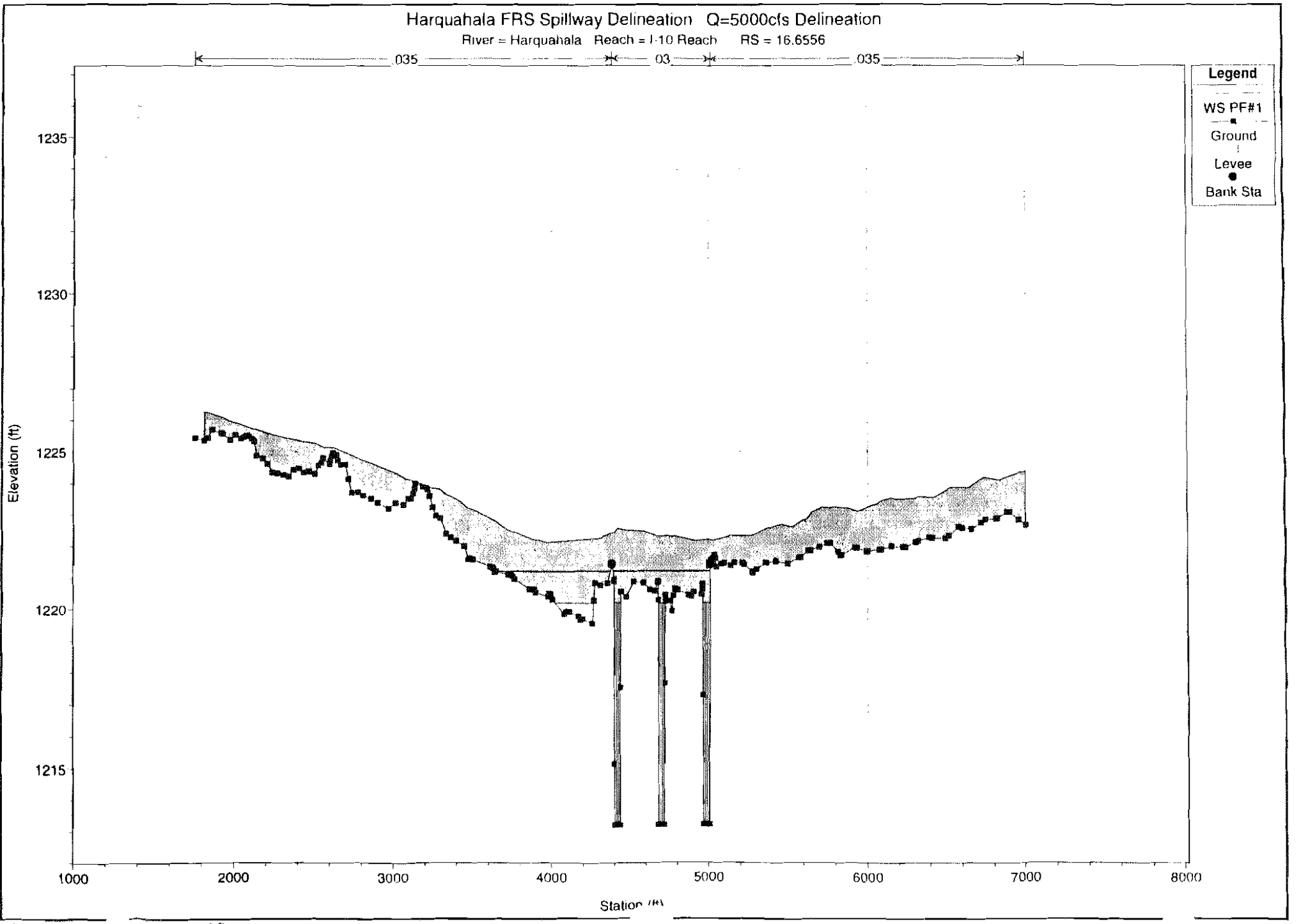


1 in Horiz. = 800 ft 1 in Vert. = 4 ft

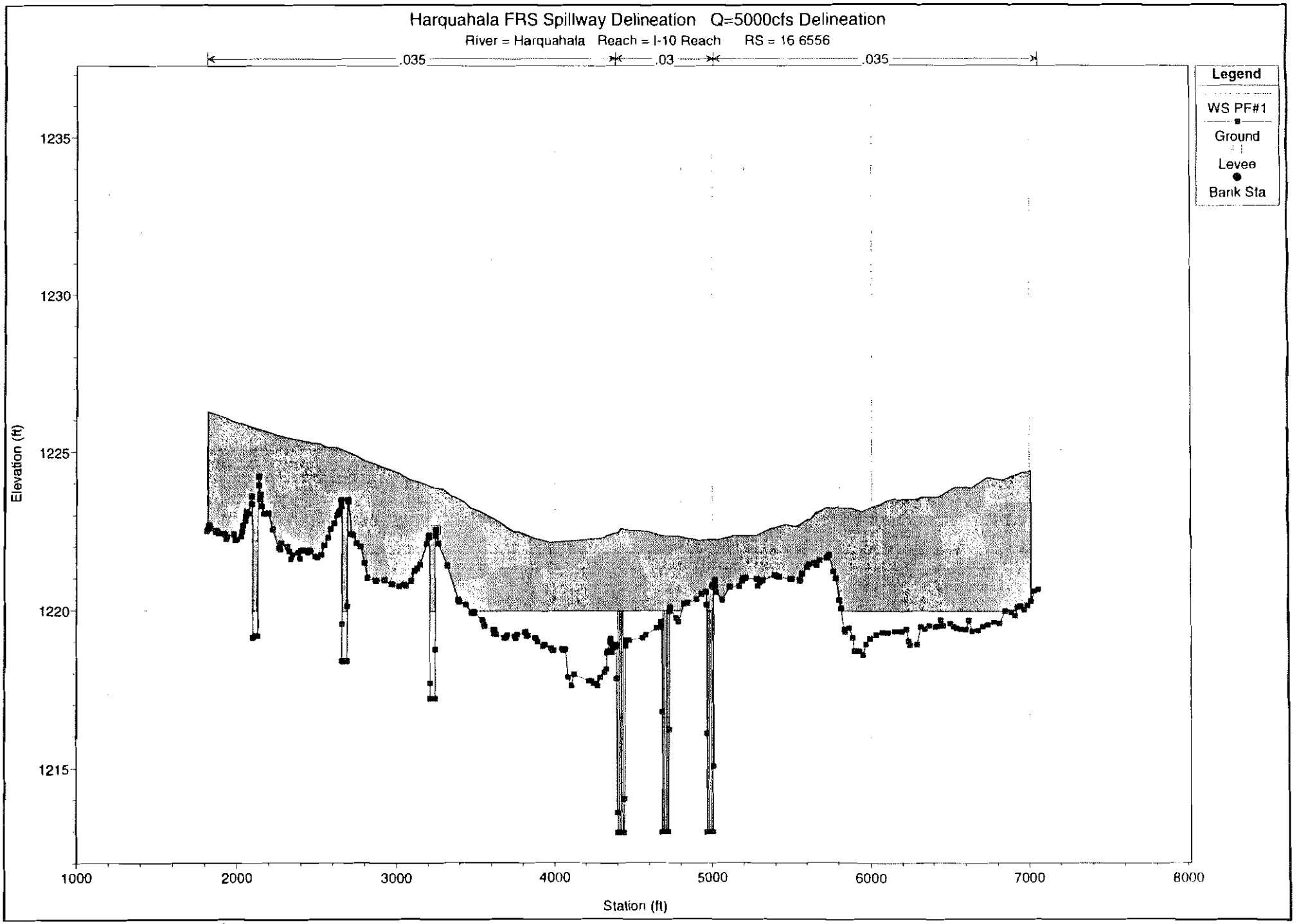


1 in Horiz. = 80( ) Vert. = 4 ft

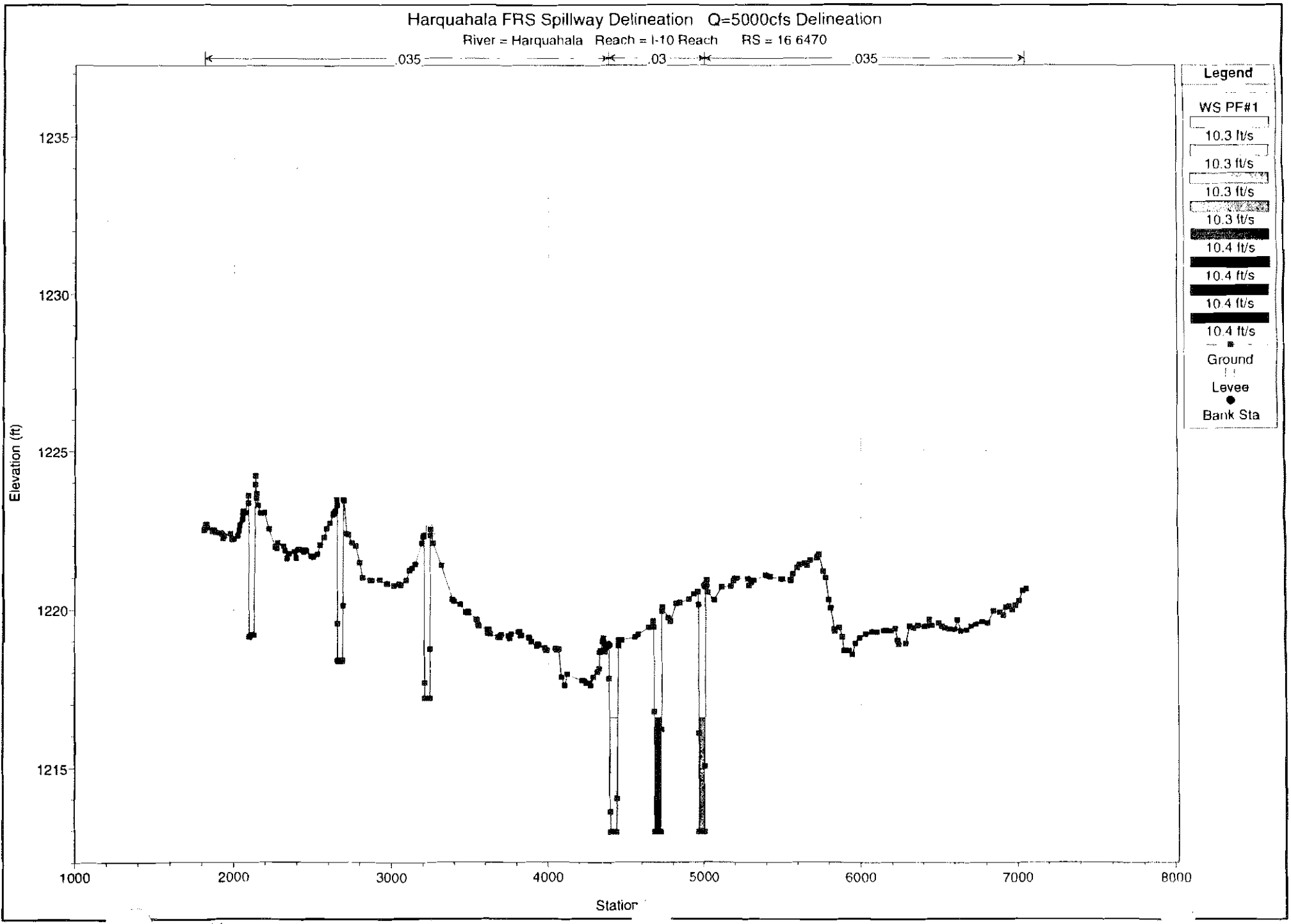

Harquahala FRS Spillway Delineation Q=5000cfs Delineation
River = Harquahala Reach = I-10 Reach RS = 16.6642
.035
.03
.035
Legend
WS PF#1
0 ft/s
1 ft/s
2 ft/s
3 ft/s
4 ft/s
Ground
Levee
Bank Sta
Elevation (ft)
1235
1230
1225
1220
1215
1000
2000
3000
4000
5000
6000
7000
8000
Station (ft)



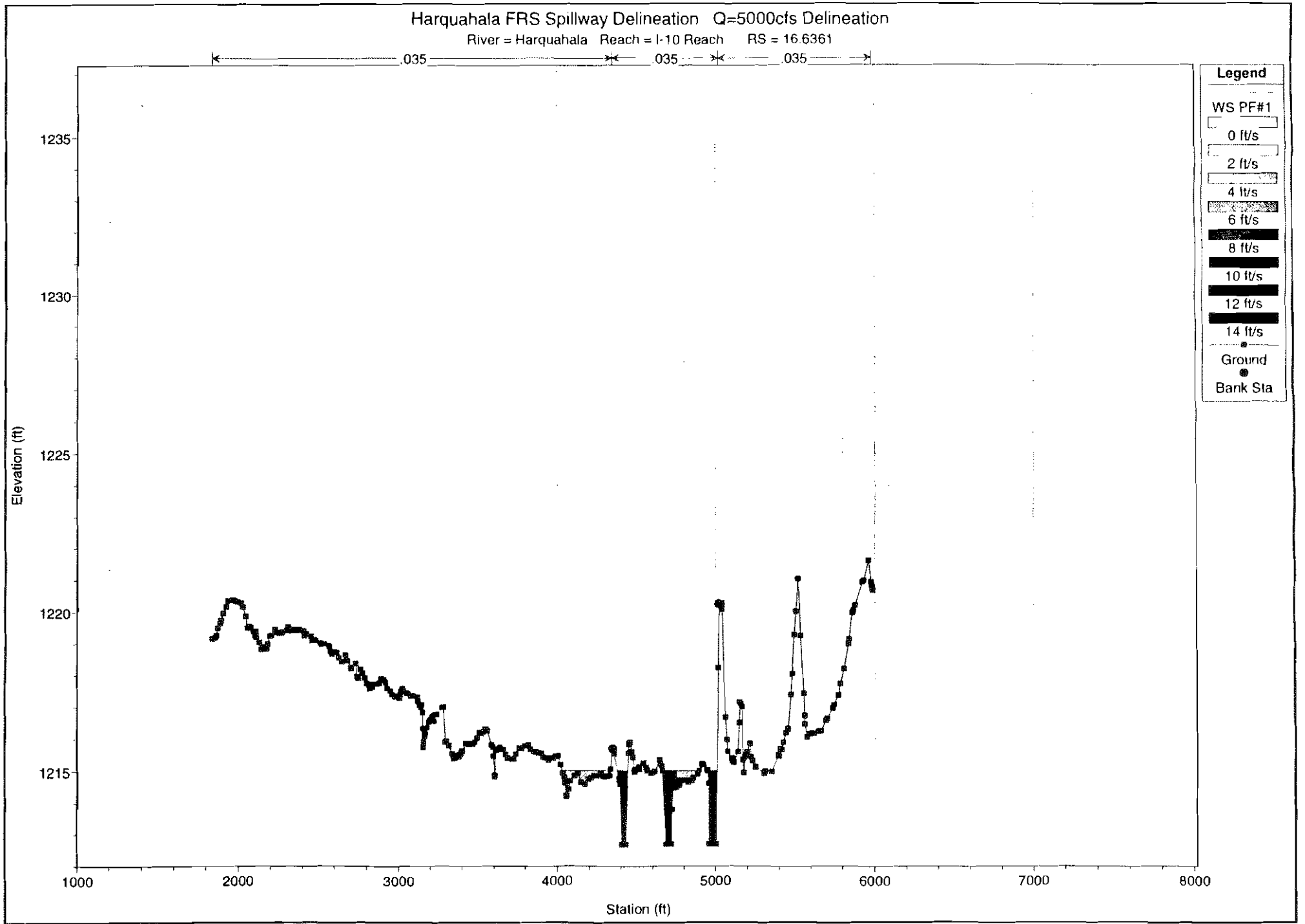
1 in Horiz. = 800) Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 800 n Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Appendix C: HEC-RAS Output for Two-Thirds Spillway Discharge

HEC-RAS Version 2.1 October 1997
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Harquahala FRS Spillway Delineation
Project File : harqua.prj
Run Date and Time: 5/25/98 9:53:32 AM

Project in English units

Project Description:
Harquahala FRS Spillway Delineation

PLAN DATA

Plan Title: Q=10000cfs Delineation
Plan File : j:\9721\hecras\harqua.p01

Geometry Title: Delineated Geometry Q=10000cfs
Geometry File : j:\9721\hecras\harqua.g10

Flow Title : Q=10000 cfs (2/3 discharge)
Flow File : j:\9721\hecras\harqua.f01

Plan Summary Information:

Number of:	Cross Sections	= 71	Mulitple Openings	=	0
	Culverts	= 2	Inline Weirs	=	0
	Bridges	= 0			

Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculaton tolerance	=	0.01
Maximum number of interations	=	20
Maximum difference tolerance	=	0.3
Flow tolerance factor	=	0.001

Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: Q=10000 cfs (2/3 discharge)
Flow File : j:\9721\hecras\harqua.f01

Flow Data (cfs)

River	Reach	RS	PF#1
Harquahala	Upper Reach A	20.0000	10000
Harquahala	Upper Reach B	19.7349	9480
Harquahala	Split1	19.6872	520
Harquahala	Split 1A	19.3216	100
Harquahala	Split 1B	19.3158	420
Harquahala	Upper Mid Reach	18.9676	9580
Harquahala	Lower Mid Reach	18.5237	10000
Harquahala	Split2	17.5883	1970
Harquahala	Lower Reach	17.5767	8030
Harquahala	I-10 Reach	16.8902	10000

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Harquahala	Upper Reach A	PF#1	Known WS = 1418.46	
Harquahala	I-10 Reach	PF#1		Critical

GEOMETRY DATA

Geometry Title: Delineated Geometry Q=10000cfs
Geometry File : j:\9721\hecras\harqua.g10

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
Harquahala	Upper Reach A		Split 1
Harquahala	Upper Reach B	Split 1	Split 1A Ret

Harquahala	Split1	Split 1	1A/1B Jnct
Harquahala	Split 1A	1A/1B Jnct	Split 1A Ret
Harquahala	Split 1B	1A/1B Jnct	Split 1B Ret
Harquahala	Upper Mid Reach	Split 1A Ret	Split 1B Ret
Harquahala	Lower Mid Reach	Split 1B Ret	Split 2
Harquahala	Split2	Split 2	Split 2 Ret
Harquahala	Lower Reach	Split 2	Split 2 Ret
Harquahala	I-10 Reach	Split 2 Ret	

```
CROSS SECTION          RIVER: Harquahala
REACH: Upper Reach A      RS: 20.0000

INPUT
Description: 20.0000 - Top of Spillway
Station Elevation Data     num=       18
     Sta    Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
    49001422.0334909.6461421.9834917.2271421.7184921.5231421.757 4922.191421.753
4924.9191421.6364925.5881415.0964926.245 1410.364996.387 1410.365008.933 1410.36
5074.394 1410.365075.4671416.8195075.9211421.7535078.7971421.7535080.0641421.796
5084.4541421.7015084.6621421.701    51001422.112

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
    4900     .034924.919     .035075.921     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4924.9195075.921               140     140     140              .1       .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1415.54   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                2.60   Wt. n-Val.                            0.030
  E.G. Elev (ft)            1418.15   Reach Len. (ft)            140.00     140.00    140.00
  Crit W.S. (ft)            1415.54   Flow Area (sq ft)                     772.16
  E.G. Slope (ft/ft)       0.008287   Area (sq ft)                          772.16
  Q Total (cfs)            10000.00   Flow (cfs)                         10000.00
  Top Width (ft)             149.71   Top Width (ft)                       149.71
  Vel Total (ft/s)            12.95   Avg. Vel. (ft/s)                      12.95
  Max Chl Dpth (ft)            5.18   Hydr. Depth (ft)                       5.16
  Conv. Total (cfs)        109847.4   Conv. (cfs)                        109847.4
  Length Wtd. (ft)            140.00   Wetted Per. (ft)                     158.64
  Min Ch El (ft)            1410.36   Shear (lb/sq ft)                       2.52
  Alpha                        1.00   Stream Power (lb/ft s)                32.61
  Frctn Loss (ft)              0.69   Cum Volume (acre-ft)         6.41      11.06     10.08
  C & E Loss (ft)              0.50   Cum SA (acres)               2.59       2.14      4.69


Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
                additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
                depth, the calculated water surface came back below critical depth.  This indicates that there is
                not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION          RIVER: Harquahala
REACH: Upper Reach A      RS: 19.9735

INPUT
Description: 19.9735
Station Elevation Data     num=       34
     Sta    Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
    48501396.7084860.8071396.463 4866.011396.5124872.9351396.5614877.426 1396.57
4887.1731395.9014888.3111395.8084899.4671394.0314903.5551393.5244910.2891391.835
4918.8191391.5414926.8831390.8664934.8381390.7214947.9131390.307 4954.231390.166
4962.4471390.1084982.0171390.1144988.2871390.0925013.0971390.1415024.0241390.162
5041.984  1390.25048.991 1390.245054.1171390.2735071.604 1390.725078.1181391.038
    50831391.4545095.1561392.3645101.8841393.2225108.2611393.7575118.371 1394.52
5128.9141395.3725136.3081396.1465145.0861396.489    51501396.706

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
    4850     .034877.426     .031     5150     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4877.426    5150               139146.2242     139              .1       .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1392.00   Element                    Left OB    Channel   Right OB
  Vel Head (ft)               20.81   Wt. n-Val.                            0.031
  E.G. Elev (ft)            1412.81   Reach Len. (ft)            139.00     146.22    139.00
  Crit W.S. (ft)            1395.04   Flow Area (sq ft)                     273.13
  E.G. Slope (ft/ft)       0.336370   Area (sq ft)                          273.13
  Q Total (cfs)            10000.00   Flow (cfs)                         10000.00
  Top Width (ft)             180.60   Top Width (ft)                       180.60
  Vel Total (ft/s)            36.61   Avg. Vel. (ft/s)                      36.61
  Max Chl Dpth (ft)            1.90   Hydr. Depth (ft)                       1.51
  Conv. Total (cfs)        17242.2   Conv. (cfs)                        17242.2
  Length Wtd. (ft)            143.30   Wetted Per. (ft)                     180.72
  Min Ch El (ft)            1390.09   Shear (lb/sq ft)                       31.74
  Alpha                        1.00   Stream Power (lb/ft s)              1162.01
  Frctn Loss (ft)              3.47   Cum Volume (acre-ft)         6.41       9.38     10.08
  C & E Loss (ft)              1.83   Cum SA (acres)               2.59       1.61      4.69
```

```
Warning - The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
                additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Harquahala
REACH: Upper Reach A      RS: 19.9458

INPUT
Description: 19.9458
Station Elevation Data    num=      46
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4848.6941394.8584852.2921394.9644862.947 1395.124867.0241395.1214873.3931395.261
4876.8031394.2474878.8011394.2474880.1881394.1434890.6351393.8384894.2291393.712
4905.4591393.1544914.7971392.7334930.189 1392.294934.9611392.2064948.0541391.732
4953.8331391.4754956.8351391.336 4971.891391.038 4977.361390.786 4984.361390.301
4991.7021390.2644993.9321389.9525002.8371389.0515005.0071389.5525012.7871390.497
5013.9781390.5635023.2091391.1655031.8681391.3225040.1971391.4785058.9541391.501
 5067.051391.6275084.4911391.6575095.3951391.7175112.1671391.803 5122.421391.823
5134.8471392.2385145.4151392.5445163.3061393.2925170.9961393.5265184.0161394.053
5200.9081394.0985210.5391394.3635234.7621394.3055238.5061394.3075241.293 1394.24
5250.4951394.125

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4848.694    .035 4971.89    .0855023.209    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       4971.895023.209              149214.1756     183            .1        .3

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1394.74   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              2.04   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)          1396.78   Reach Len. (ft)            149.00     214.18     183.00
  Crit W.S. (ft)          1395.26   Flow Area (sq ft)          209.41     229.52     460.78
  E.G. Slope (ft/ft)     0.030783   Area (sq ft)               209.41     229.52     460.78
  Q Total (cfs)          10000.00   Flow (cfs)                2607.50    1905.36    5487.14
  Top Width (ft)          375.36    Top Width (ft)             96.76      51.32     227.29
  Vel Total (ft/s)         11.11    Avg. Vel. (ft/s)           12.45       8.30      11.91
  Max Chl Dpth (ft)         5.69    Hydr. Depth (ft)            2.16       4.47       2.03
  Conv. Total (cfs)       56995.8   Conv. (cfs)               14861.6    10859.7    31274.4
  Length Wtd. (ft)         187.82   Wetted Per. (ft)           96.89      51.54     227.96
  Min Ch El (ft)          1389.05   Shear (lb/sq ft)            4.15       8.56       3.88
  Alpha                      1.06   Stream Power (lb/ft s)     51.72      71.04      46.26
  Prctn Loss (ft)           10.39   Cum Volume (acre-ft)        6.07       8.53       9.35
  C & E Loss (ft)            5.63   Cum SA (acres)              2.43       1.22       4.33


Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
                additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The cross section had to be extended vertically during the critical depth calculations.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.

CROSS SECTION          RIVER: Harquahala
REACH: Upper Reach A      RS: 19.9052

INPUT
Description: 19.9052
Station Elevation Data    num=      63
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4781.1781390.992 4800.051390.8044814.8741390.5514848.6181389.3054851.5491389.276
4869.942 1389.594881.8321389.619 4896.621389.3954903.425 1389.364921.7571389.385
 4934.631389.399 4949.951389.3724964.8291388.8214978.9421388.5174995.9941380.051
4998.0281379.2224998.5931379.0994999.3361379.2695019.0691382.1885021.8621382.926
5033.0461384.9765039.0441386.057 5041.331386.5385055.2881387.4115085.1851388.606
5088.7611388.5885100.1711388.5615112.2261388.5285120.915  1388.45119.3791388.095
5149.1951388.0825167.3541387.871 5182.971387.1475183.3251387.1235183.491 1387.13
5185.9851387.2645192.894 1387.635193.3451387.6615197.473 1387.675212.4021387.729
5231.3881387.6545235.0131387.6255238.0251387.644 5252.851388.0525254.8421388.062
5258.0211388.116 5285.821388.4875288.0371388.2245295.179 1386.825305.6081387.356
5310.9331387.6245312.6781387.788 5315.851387.8755345.1651389.1335356.3821389.521
5377.2391389.9285396.0551389.4345397.6831389.3855399.1171389.3915410.3161389.589
5415.662 1389.815435.4981390.7665446.1971390.657

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4781.178    .0354978.942    .0855055.288    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       4978.9425055.288             305351.3504     259            .1        .3
Right Levee     Station=5377.239      Elevation=1389.928

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1389.84   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              1.40   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)          1391.24   Reach Len. (ft)            305.00     351.35     259.00
  Crit W.S. (ft)          1390.11   Flow Area (sq ft)           72.25     469.22     538.96
  E.G. Slope (ft/ft)     0.026574   Area (sq ft)                72.25     469.22     538.96
  Q Total (cfs)          10000.00   Flow (cfs)                 314.63    4378.14    5307.23
  Top Width (ft)          538.34    Top Width (ft)            144.72      76.35     317.27
  Vel Total (ft/s)          9.26    Avg. Vel. (ft/s)            4.35       9.33       9.85
```

Max Chl Dpth (ft)	10.74	Hydr. Depth (ft)	0.50	6.15	1.70
Conv. Total (cfs)	61343.9	Conv. (cfs)	1930.1	26857.2	32556.6
Length Wtd. (ft)	298.79	Wetted Per. (ft)	144.75	79.20	317.56
Min Ch El (ft)	1379.10	Shear (lb/sq ft)	0.83	9.83	2.82
Alpha	1.05	Stream Power (lb/ft s)	3.61	91.71	27.73
Frctn Loss (ft)	5.36	Cum Volume (acre-ft)	5.59	6.81	7.25
C & E Loss (ft)	0.19	Cum SA (acres)	2.02	0.91	3.19

Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The cross section had to be extended vertically during the critical depth calculations.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach A RS: 19.8387

INPUT
Description: 19.8387
Station Elevation Data num= 92

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4506.275 1383.274511.3831383.1684527.745 1382.864532.9791382.7024549.3071382.453
4561.0871382.2524562.3551382.338 4573.781382.9014587.8421382.6394588.4841382.615
4589.761 1382.624625.9551382.5854640.7881382.2384649.7731382.0674658.8991381.643
4663.297 1381.49  4675.21380.4474681.1141379.9224682.5461380.0434693.0241380.645
4712.1731381.522 4732.471382.3984761.7841382.3234770.5831382.4044791.0641382.433
4807.4161382.4244815.2761382.4214840.3121382.2554853.5911381.8564864.7291381.429
4880.9171381.5984891.7031381.7394893.1411381.7294895.8791381.7274904.4341381.463
4909.461  1381.34921.1281381.1884930.1361381.2014941.6251381.185 4952.23 1380.62
4969.7471379.5144979.3281377.4614990.311  1374.74992.2211374.6385000.389  1374.3
5012.8841376.8995025.1571379.6095055.1551380.2435071.4571380.5235077.8871380.452
5083.3021380.4385115.5231380.5175115.908 1380.525116.037 1380.525117.0291380.545
 5165.441381.5535183.9211380.1675188.2221379.9765202.0931380.6695209.951 1381.04
5220.9231381.197  5234.61381.4165236.4331381.3525268.2011380.7525294.8771380.896
5322.2191381.2535336.2781381.4875344.0951381.7655353.0861381.7335370.3411381.706
5390.6761381.5735404.3821381.5955411.5641381.8055439.6671381.7995474.866 1382.06
5488.6031381.266 5493.981380.7495497.641 1381.235507.6751382.189  5508.6 1382.21
5525.1451383.1225527.2671383.3385557.3341382.2215557.8051382.2415559.3111382.398
5574.8581383.9755582.2671384.4435594.6891384.6065604.142 1384.815627.1251385.542
5627.3991385.5495639.1351384.895
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4506.275    .035 4952.23    .0855055.155    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       4952.235055.155               100 113.028     166          .1          .3
Left Levee       Station= 4573.78       Elevation=1382.901
Right Levee      Station=5527.267       Elevation=1383.138
```

CROSS SECTION OUTPUT Profile #PP#1

W.S. Elev (ft)	1382.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1383.46	Reach Len. (ft)	100.00	113.03	166.00
Crit W.S. (ft)	1382.69	Flow Area (sq ft)	263.88	455.59	631.92
E.G. Slope (ft/ft)	0.024285	Area (sq ft)	263.88	455.59	631.92
Q Total (cfs)	10000.00	Flow (cfs)	1515.91	3320.88	5163.21
Top Width (ft)	889.05	Top Width (ft)	325.94	102.92	460.19
Vel Total (ft/s)	7.40	Avg. Vel. (ft/s)	5.74	7.29	8.17
Max Chl Dpth (ft)	8.28	Hydr. Depth (ft)	0.81	4.43	1.37
Conv. Total (cfs)	64169.6	Conv. (cfs)	9727.6	21310.0	33132.1
Length Wtd. (ft)	145.96	Wetted Per. (ft)	326.12	104.10	460.44
Min Ch El (ft)	1374.30	Shear (lb/sq ft)	1.23	6.64	2.08
Alpha	1.04	Stream Power (lb/ft s)	7.05	48.37	17.00
Frctn Loss (ft)	7.62	Cum Volume (acre-ft)	4.42	3.09	3.77
C & E Loss (ft)	0.15	Cum SA (acres)	0.37	0.18	0.88

Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach A RS: 19.8173

INPUT
Description: 19.8173
Station Elevation Data num= 128

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4341.9341381.1164345.682 1381.344354.8281381.1734362.2711381.0694375.6361380.535
4379.2681380.3434391.2531378.7594395.5471378.1414396.4971378.2894400.5021378.608
 4412.651379.8924415.7011379.5844421.1091379.1874427.0451379.3614433.1121379.544
4440.8621379.1774446.5051378.5844452.5571379.3364460.0851380.2754487.7541380.526
4493.5351380.536 4499.691380.5034521.3641380.4914529.9141380.4714546.0751380.314
4556.6521380.1394571.5171379.8294577.6861379.875 4586.021379.9744603.1351380.204
 4609.721380.2924614.139  1380.24636.5271379.8944649.4091379.9684658.0271380.143
4664.9491379.6364672.9831378.9564687.3881377.763 4694.381377.1314699.6631377.583
4707.2861378.1194729.4391379.1434732.2611379.2824734.8611379.3274767.9741380.002
4784.2921379.9964799.4091379.8444812.0571379.7474816.5131379.808 4841.191379.435
4843.8141379.3754845.4961379.3864868.1881379.5844871.1091379.4854876.109 1379.31
4883.2351379.2044889.7761379.0994890.2981379.0964890.9551379.0844907.9921378.791
4929.2711378.4284930.3081378.3974930.6241378.3934932.9671378.2434952.8491377.033
```

4959.2971377.422 4968.261377.9464974.3361377.6424960.2381377.3544985.7061375.696
5000.2891372.5455026.003 1375.855035.1571376.982 5036.451377.1565037.804 1377.436
5045.791377.4935073.6461377.7475073.7271377.7445090.7881377.1815115.2041376.629
5122.5561376.212 5138.31376.7975138.6731376.8165140.3751376.7235149.3361376.211
5149.8241376.1715152.5861376.3075169.0921377.5825196.7041377.6655205.421 1377.65
5213.8991377.782 5242.371377.7135261.7511376.9695266.8151376.6695300.7141377.215
5308.3961377.3225328.654 1376.885352.1691376.8825360.8561377.4295369.6361377.545
5394.5131377.187 5416.811377.4775434.3491377.4355435.1261377.459 5438.251377.406
5454.811 1377.065473.1561377.3455485.9291377.5725493.9041377.4695516.2931377.522
5544.631377.7895555.9971377.953 5560.311377.5555572.1031376.5635590.6251377.934
5597.829 1378.63 5603.831378.5895619.8931378.7225628.3441378.8465651.7711378.925
5658.3521378.9915663.336 1379.175685.2291379.3995700.9771378.7865709.7341379.364
5733.6331380.2945756.3061380.5425762.2421380.612

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4341.934	.035	4968.26	.085	5073.737	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4968.265	073.737	347435.1131		500	.1	.3

Left Levee Station=4658.027 Elevation=1380.143
Right Levee Station=5685.229 Elevation=1379.399

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1378.97	Element			
Vel Head (ft)	1.01	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1379.98	Reach Len. (ft)	400.00	400.00	400.00
Crit W.S. (ft)	1379.09	Flow Area (sq ft)	104.48	300.52	899.63
E.G. Slope (ft/ft)	0.023330	Area (sq ft)	104.48	300.52	899.63
Q Total (cfs)	10000.00	Flow (cfs)	605.13	1603.40	7791.47
Top Width (ft)	811.57	Top Width (ft)	123.56	105.48	582.53
Vel Total (ft/s)	7.67	Avg. Vel. (ft/s)	5.79	5.34	8.66
Max Chl Dpth (ft)	6.43	Hydr. Depth (ft)	0.85	2.85	1.54
Conv. Total (cfs)	65469.5	Conv. (cfs)	3961.7	10497.4	51010.3
Length Wtd. (ft)	400.00	Wetted Per. (ft)	123.77	106.40	582.86
Min Ch El (ft)	1372.55	Shear (lb/sq ft)	1.23	4.11	2.25
Alpha	1.11	Stream Power (lb/ft s)	7.12	21.95	19.47
Frctn Loss (ft)	3.47	Cum Volume (acre-ft)	4.11	2.46	2.56
C & E Loss (ft)	0.01	Cum SA (acres)			

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Marquahala
REACH: Upper Reach B RS: 19.7349

INPUT
Description: 19.7349
Station Elevation Data num= 110

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4357.5961374.4234358.7851374.3554367.9631374.0144376.0431373.615								4385.1	1373.23
4393.0021373.4454401.9521373.4054405.4271373.0924408.3761372.9624413.6721372.953									
4423.0071373.1854427.8021373.4444429.8711373.0894437.3591372.2454443.7971373.298									
4445.3121373.6114453.2291373.7574458.6271373.2894474.853 1372.294475.885 1372.22									
4476.4231372.1724483.7221372.2544499.7791372.1284503.9521371.759 4505.941371.467									
4510.4161371.6224524.9341371.479 4526.111371.3714528.203 1371.3 4541.38 1370.43									
4547.6391370.9854561.1161372.531 4568.52 1372.684593.3091372.5044595.7531372.439									
4617.2661371.863 4620.891371.7414626.8351371.5164632.1021371.2494636.3211371.272									
4642.1881371.8234663.9391371.945 4673.071371.9514687.6871371.4124691.7081371.383									
4722.9611371.7394728.1021371.7924728.8681371.7384729.9641371.6344734.4241371.276									
4758.8831369.193 4762.051368.9874779.3151367.6084788.6151366.9024801.346 1368.29									
4810.289 1368.954815.6521369.0274837.6251369.9364838.3941369.9654838.535 1369.97									
4838.692 1369.984860.8251370.2914863.2561370.2624878.0221369.8444899.068 1369.36									
4900.8471369.3154902.2751369.2624913.9411368.6584919.9991368.3524924.8451368.401									
4935.6191368.572 4938.11368.5784955.3031368.8754959.685 1368.854967.0491368.706									
4974.3341367.6964975.8391367.4544978.2441367.2394985.7611366.1284991.8371366.392									
4999.951366.3315007.5211366.6965012.7381367.0535018.1351366.6865023.3061366.535									
5031.8661368.185 5032.71368.3345033.1521368.4115034.6431368.6055049.4061370.597									
5059.61372.0565064.2151372.3515081.2391373.6285097.1941373.9525102.8351374.139									
5109.0861375.0075109.7761375.0745112.2861375.1485123.8351375.257 5127.531375.433									
5129.3011375.457 5130.821375.0765140.4571375.6485145.7631375.6735147.1481375.555									
5150.5391375.9325159.0581376.8895169.6111378.2175182.0261379.6895182.9421379.757									

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4357.596	.035	4967.049	.085	5034.643	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4967.049	5034.643	398466.6451		399	.1	.3

Left Levee Station= 4568.52 Elevation= 1372.68

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1372.36	Element			
Vel Head (ft)	0.94	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1373.29	Reach Len. (ft)	398.00	466.65	399.00
Crit W.S. (ft)	1371.96	Flow Area (sq ft)	837.09	362.35	51.88
E.G. Slope (ft/ft)	0.012764	Area (sq ft)	837.09	362.35	51.88
Q Total (cfs)	9480.00	Flow (cfs)	6936.74	2183.90	359.36
Top Width (ft)	465.44	Top Width (ft)	368.20	67.59	29.64
Vel Total (ft/s)	7.58	Avg. Vel. (ft/s)	8.29	6.03	6.93
Max Chl Dpth (ft)	6.03	Hydr. Depth (ft)	2.27	5.36	1.75
Conv. Total (cfs)	83908.7	Conv. (cfs)	61398.0	19330.0	3180.7
Length Wtd. (ft)	412.78	Wetted Per. (ft)	368.63	67.97	29.89

Min Ch El (ft)	1366.33	Shear (lb/sq ft)	1.81	4.25	1.38
Alpha	1.05	Stream Power (lb/ft s)	15.00	25.60	9.58
Frctn Loss (ft)	6.37	Cum Volume (acre-ft)	64.18	8.82	43.01
C & E Loss (ft)	0.02	Cum SA (acres)	39.34	3.12	23.85

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.6465

INPUT
Description: 19.6465
Station Elevation Data num= 81
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
4438.7591367.868 4452.451367.7714452.8211367.7564452.9811367.7494484.7541366.369
4486.586 1366.094489.842 1365.374494.4051364.4824497.811 1364.664515.1811366.064
4525.291365.5994526.9861365.5714546.3121365.1524551.2761365.0694552.0041365.052
4552.4551365.007 4564.271364.4794578.4171365.8174581.1231366.0894590.7991366.262
4621.4911366.6654628.5971366.3694644.1981365.3884654.4851365.3014673.4191365.365
4686.1381365.2514692.9391365.2014698.4721365.1354715.6431365.0884718.8471365.111
4730.7991365.1394740.5321364.8624750.7211363.9424770.1081362.9974772.7471362.995
4774.4651363.0644776.3271363.1084791.2741363.2374803.492 1363.794805.3631363.763
4806.989 1363.754813.1641363.6294817.7971363.661 4834.841363.0764836.0671362.976
4837.2921362.8874842.2691362.533 4845.581362.849 4858.321363.597 4862.011363.499
4879.7711363.459 4884.761363.5144912.2171363.1834913.0351363.1764913.2071363.173
4930.2041362.6864938.607 1362.324957.0451362.4194969.3921362.2774976.2871362.092
4984.9221361.2654999.5821359.8545000.4771359.8955001.2071359.9755016.4621361.383
5019.4351361.3765033.7871361.2775046.8091362.2075054.0681362.7415058.8661363.131
5076.333 1364.575104.8641364.7555107.3341364.7555108.7041364.836 5118.681364.666
5130.4961364.4875132.3981364.7315156.6131368.1155161.7711368.5165166.5991369.051
5175.6631369.887

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
4438.759 .0354976.287 .0855033.787 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4976.2875033.787 523455.3716 397 .1 .3
Left Levee Station=4621.491 Elevation=1366.665

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1365.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1366.90	Reach Len. (ft)	523.00	455.37	397.00
Crit W.S. (ft)	1365.72	Flow Area (sq ft)	658.29	274.19	186.43
E.G. Slope (ft/ft)	0.019058	Area (sq ft)	658.29	274.19	186.43
Q Total (cfs)	9480.00	Flow (cfs)	6017.94	1870.80	1591.26
Top Width (ft)	501.09	Top Width (ft)	337.74	57.50	105.85
Vel Total (ft/s)	8.47	Avg. Vel. (ft/s)	9.14	6.82	8.54
Max Chl Dpth (ft)	5.89	Hydr. Depth (ft)	1.95	4.77	1.76
Conv. Total (cfs)	68671.0	Conv. (cfs)	43592.6	13551.7	11526.7
Length Wtd. (ft)	496.90	Wetted Per. (ft)	337.92	57.68	106.07
Min Ch El (ft)	1359.85	Shear (lb/sq ft)	2.32	5.66	2.09
Alpha	1.04	Stream Power (lb/ft s)	21.19	38.59	17.85
Frctn Loss (ft)	7.84	Cum Volume (acre-ft)	57.35	5.41	41.92
C & E Loss (ft)	0.01	Cum SA (acres)	36.12	2.45	23.23

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.5602

INPUT
Description: 19.5602
Station Elevation Data num= 82
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
4645.9361358.6584662.5781358.2214669.0461358.0544670.2051358.0134681.5441357.748
4696.2521357.4664706.6151357.3144716.3331356.8134717.6541356.7854723.4611356.484
4727.9181356.1744732.4551355.7544736.7071355.861 4749.581356.0384766.377 1354.68
4775.363 1353.964791.8661354.591 4805.31355.0924808.2091355.2034817.1761355.064
4821.2841355.0324824.4561355.0394841.8821354.9864860.6471354.5124863.826 1354.4
4867.4671354.3294880.3821353.9274898.7881354.7314898.8921354.7364905.0691354.631
4912.7771353.7184913.2181353.6584915.5031353.8054923.6521354.3514926.0031354.456
4930.8521354.3194934.6851354.1934939.4571354.4314947.3351354.8174954.3071354.783
4959.2651354.7154961.4661354.7554964.9981354.7344974.6121354.9144985.9151355.264
4999.1371353.6494999.6941353.5825007.1931354.3145012.3811354.6835015.4031354.236
5018.9941353.9395024.8611353.6785029.1521354.3915036.1561355.3955053.4811355.795
5063.3821356.3695071.9671356.5935079.5381356.6045088.5621356.6545101.8151356.023
5104.0521356.1445115.7581356.4625121.4611357.235 5130.541358.8715145.1421360.807
5149.9251361.2885157.983 1361.745162.5091361.8875180.4271363.2395180.9351363.226
5181.3751363.244 51991363.1865208.7651363.7065210.0371363.7875214.092 1364.51
5216.3991364.9825217.0771365.1075222.9541365.4345233.0281367.0945240.0061368.034
5249.1531369.5495250.0531369.725

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
4645.936 .0354985.915 .0855036.156 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4985.9155036.156 375377.9404 331 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1357.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.22	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1359.06	Reach Len. (ft)	375.00	377.94	331.00

Crit W.S. (ft)	1357.84	Flow Area (sq ft)	824.32	177.71	136.41
E.G. Slope (ft/ft)	0.013272	Area (sq ft)	824.32	177.71	136.41
Q Total (cfs)	9480.00	Flow (cfs)	7764.42	827.25	888.33
Top Width (ft)	447.01	Top Width (ft)	308.15	50.24	88.64
Vel Total (ft/s)	8.33	Avg. Vel. (ft/s)	9.42	4.65	6.51
Max Chl Dpth (ft)	4.25	Hydr. Depth (ft)	2.68	3.54	1.54
Conv. Total (cfs)	82288.1	Conv. (cfs)	67396.7	7180.7	7710.9
Length Wtd. (ft)	370.56	Wetted Per. (ft)	308.44	50.57	88.79
Min Ch El (ft)	1353.58	Shear (lb/sq ft)	2.21	2.91	1.27
Alpha	1.13	Stream Power (lb/ft s)	20.86	13.55	8.29
Frctn Loss (ft)	5.10	Cum Volume (acre-ft)	48.45	3.04	40.45
C & E Loss (ft)	0.02	Cum SA (acres)	32.24	1.88	22.34

Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.4887

INPUT
Description: 19.4887
Station Elevation Data num= 84

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4506.2941353.9824518.0271353.8344539.6051353.4964543.1791353.3594568.4991352.712
4569.7141352.6234574.937 1352.384589.562 1352.284599.0711352.1474617.933 1350.31
4618.7061350.2344619.321 1350.244643.0061350.3964643.1961350.3984643.4961350.394
4666.9671350.0844676.5631349.8524697.2271349.9384705.5511349.8034714.8231349.439
4725.6561349.0524730.5421348.9134739.0451349.1924760.5591349.6034770.3381349.548
4794.9011349.7024815.1511348.9274817.5091348.8284821.2561348.2854827.366 1347.33
4834.3941348.2454843.5271349.4824847.7581349.391 4859.041349.1274866.277 1349.37
4872.0251349.7114883.6471349.7314887.5881349.7924890.0551349.6324900.1021348.958
4912.2581349.1954914.309 1349.224917.2221349.1364929.9431348.941 4952.431349.365
4954.1221349.4024955.3131349.3184970.9231348.6724978.253 1348.964989.6621349.224
4994.4071348.4544998.9011347.8715005.315 1348.655006.479 1348.685011.3011348.285
5019.1281348.6025026.8331349.1465034.1461349.5765044.7431349.9865053.4951350.279
5059.2711350.4895067.5931350.6585071.9481350.8095080.7581350.9715094.0571351.431
5099.5041351.5565108.3521352.0295116.0271352.4655120.529 1352.56 5128.681352.379
5133.6541352.201 5135.081352.2375143.1951352.2585145.508 1352.475154.6821353.555
5164.8361354.874 5166.251354.9015170.5681355.0385175.5991355.1575183.3921355.929
5190.7881357.1595191.9421357.3525193.8891357.696 5209.881359.748
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4506.294    .035989.662    .0855006.479    .035
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4989.662	5006.479		570594.3238	517	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1351.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.45	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1353.03	Reach Len. (ft)	570.00	594.32	517.00
Crit W.S. (ft)	1351.82	Flow Area (sq ft)	810.48	52.99	138.51
E.G. Slope (ft/ft)	0.020555	Area (sq ft)	810.48	52.99	138.51
Q Total (cfs)	9480.00	Flow (cfs)	8100.51	283.76	1095.73
Top Width (ft)	494.95	Top Width (ft)	384.73	16.82	93.40
Vel Total (ft/s)	9.46	Avg. Vel. (ft/s)	9.99	5.36	7.91
Max Chl Dpth (ft)	4.25	Hydr. Depth (ft)	2.11	3.15	1.48
Conv. Total (cfs)	66122.3	Conv. (cfs)	56500.4	1979.2	7642.6
Length Wtd. (ft)	559.06	Wetted Per. (ft)	385.18	16.96	93.49
Min Ch El (ft)	1347.87	Shear (lb/sq ft)	2.70	4.01	1.90
Alpha	1.04	Stream Power (lb/ft s)	26.99	21.47	15.04
Frctn Loss (ft)	6.02	Cum Volume (acre-ft)	41.41	2.04	39.40
C & E Loss (ft)	0.02	Cum SA (acres)	29.26	1.59	21.65

Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Program found supercritical flow starting at this cross section.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.3761

INPUT
Description: 19.3761
Station Elevation Data num= 156

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
3863.9451345.8443881.334 1345.683902.8121345.8723914.9041345.8643915.9711346.024
3927.0741345.3683952.3731344.476    3971344.1264025.7031342.867 4031.851342.702
4033.9121342.7214040.4061342.6694065.8221342.5914069.3041342.7794118.7381343.297
4124.9991343.055 4134.531343.0574151.6171342.8784186.8441343.2394192.8211343.052
4216.2121341.3914231.0111339.9134231.1051339.9034231.2211339.9114231.5931339.948
 4251.981342.0434267.5771341.9394277.5741341.7694291.9041342.3934303.5041342.999
 4310.85  1342.84333.8391342.1054338.6551341.8894354.2261341.1254356.7781340.988
4366.5981340.3974372.6311339.5414376.9821339.041 4383.071339.6274391.4611340.107
4398.8431340.2244414.3381340.3954435.2891340.5754438.7491340.5794439.5331340.632
4440.1841340.546 4455.321339.9974464.7831339.3364470.7961339.767 4489.921342.642
4493.0381342.5764515.1451341.8584541.0481342.438 4542.961342.4664547.891 1341.97
4551.6731341.6094552.9181341.6114583.1681341.5184584.853 1341.444596.9961340.997
4603.7681340.7774610.0921340.6014615.9991340.4724616.7771340.5534618.8391340.742
4630.9851341.8264636.5111342.3984642.9941342.1714652.1611341.9354656.7251341.918
4669.1811342.011    46911342.474 4699.05 1342.654710.8381343.2434717.8751343.547
4724.4111343.6634733.9251343.5434740.9161343.3924747.8991342.5154757.5261341.728
```

```
4767.3411341.7894784.2321342.5374784.8041342.6014785.8641342.3494796.8521340.118
4804.043 1340.614811.8261341.1384816.0191341.1264815.2451341.1714821.9211341.216
4830.2111340.3864836.0781339.7514841.9161341.314 4844.991341.7734846.6161341.743
4855.0491341.681 4887.871341.6624900.0831341.4964912.3131341.5694932.6761340.985
4941.8491340.8514957.1221341.2074972.9411341.4394980.9031341.5544989.2911341.799
    49971341.1615000.4461340.8145007.8391341.3295014.078 1341.985016.574  1341.7
5025.4111341.7215028.8831341.6665034.8481341.6325047.697 1340.975053.7041340.616
5061.4841340.5935075.276 1340.815077.7191340.8385079.103 1340.895089.996 1340.89
5097.9441341.2995110.8951341.5935126.9391341.8035143.431 1342.365155.0561342.689
5175.7151342.9665181.6361342.8695182.8391342.6965216.1771341.7025220.0681341.787
5220.3221341.7835273.9211341.7035275.7951341.6985287.5381341.5425300.4531341.401
5301.8971341.3675311.9861341.3525318.9741341.3295319.4711341.2895329.808 1340.38
5337.9491340.7955344.4931341.0135350.0831341.1295372.354 1341.415391.867 1341.82
5402.9081342.1815414.6811342.6965453.6541344.2595455.8371344.3535456.2081344.375
5459.2071344.6195475.4841346.0135484.6771346.7675496.9941347.983 5510.241349.263
5513.729 1349.52

Manning's n Values          num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
3863.945    .0354989.291    .0855014.078    .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
     4989.2915014.078                578  578.96     500            .1          .3
Left Levee      Station=4303.504      Elevation=1342.999
Right Levee     Station=5175.715      Elevation=1342.966

CROSS SECTION OUTPUT     Profile #FF#1
```

W.S. Elev (ft)	1342.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.56	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1343.53	Reach Len. (ft)	578.00	578.96	500.00
Crit W.S. (ft)	1342.97	Flow Area (sq ft)	1028.68	40.68	534.23
E.G. Slope (ft/ft)	0.011709	Area (sq ft)	1028.68	40.68	534.23
Q Total (cfs)	9480.00	Flow (cfs)	6434.64	106.80	2938.56
Top Width (ft)	1078.51	Top Width (ft)	646.16	24.79	407.56
Vel Total (ft/s)	5.91	Avg. Vel. (ft/s)	6.26	2.63	5.50
Max Chl Dpth (ft)	3.93	Hydr. Depth (ft)	1.59	1.64	1.31
Conv. Total (cfs)	87609.7	Conv. (cfs)	59465.9	987.0	27156.8
Length Wtd. (ft)	532.41	Wetted Per. (ft)	647.53	24.88	407.75
Min Ch El (ft)	1340.81	Shear (lb/sq ft)	1.16	1.20	0.96
Alpha	1.03	Stream Power (lb/ft s)	7.26	3.14	5.27
Frctn Loss (ft)	5.30	Cum Volume (acre-ft)	29.38	1.40	35.41
C & E Loss (ft)	0.01	Cum SA (acres)	22.52	1.31	18.68

```
Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
                depth, the calculated water surface came back below critical depth.  This indicates that there is
                not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION            RIVER: Harquahala
REACH: Upper Reach B       RS: 19.2665

INPUT
Description: 19.2665
Station Elevation Data     num=      233
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 3618.331336.7363645.6921336.7283662.5661336.228366B.6861335.9853684.5411336.024
3710.3031336.3113714.1361336.3413715.2011336.3293716.9581336.299 3741.061335.771
3769.305 1335.543770.5041335.5323774.3961335.4373796.1771334.1553812.8221334.139
3821.5551333.8823833.3971333.4313838.4241333.1833854.9981334.1423856.124 1334.25
3870.5931334.173 3880.691334.1873885.7361334.1833888.197 1333.743892.2221333.228
3895.058 1333.353904.3561333.8953915.4561333.7133915.8751333.7033936.4711333.272
3960.4581333.0343966.9791332.8963973.1971332.2513975.4991331.9343977.1621332.103
 3984.48 1332.97 4005.85 1332.264009.1571332.1594012.1711332.2064014.8791332.255
4042.3781333.0094045.7471331.9844048.4381331.4424055.4851332.5154056.4321332.692
  4085.11332.314 4089.511332.2124090.3411332.2694096.0421332.2564096.3091332.259
4099.6191332.3394103.8411332.4254105.1241332.4194112.6371332.1444113.5631332.108
4119.4721332.4394124.7451332.6924129.2411332.7044156.913  1332.74170.2971332.705
4170.8771332.7044171.7321332.6774186.3051332.1824193.8891331.8634197.6041331.627
4202.2781331.9354216.6311332.5214229.4131332.8434235.3831333.1514264.3721333.806
  4273.81333.8624288.8841333.6094302.1811333.6724313.136 1333.684326.4271333.726
4335.9131333.3224336.5791333.2994340.0491333.1874361.7541332.7014368.425 1332.89
4389.8751333.3584402.8521333.2284403.3721333.2244405.1671333.2534429.0731333.754
4434.7241333.7354455.0961333.3994456.0771333.236 4459.53 1332.784465.483 1331.78
4466.4581331.6694467.0391331.5764476.4941329.5114480.7121330.3844493.1621332.188
4493.4021332.2314493.5521332.2384517.3031333.1034524.5121333.2984526.6951333.214
4532.5951332.9154538.6291332.784 4545.751330.2724546.4331330.0254548.3181330.434
4553.4811331.2584555.3611331.6314557.8121331.8854559.008 1331.924578.597 1332.58
4587.3591332.7054595.9871332.793  4609.21332.8944624.065  1333.14636.9831333.269
4655.5531333.5124680.863 1333.83  4684.31333.8884689.2871334.0044693.9171333.552
4700.5991333.0464703.3591333.4144716.4881334.5034722.5871335.042 4724.481335.201
4748.7991334.4184771.8461335.0844778.9481335.1234782.2341334.9774799.6951334.482
4804.5641333.8724806.4791333.7034819.3051334.3114822.2431334.4544826.5761333.946
4834.0981332.8154837.2071333.2234842.2011333.5914851.0421333.4734855.5921333.438
4858.066 1333.654859.2831333.8394860.283 1333.884867.3581334.6084880.6571334.854
4889.7041334.9644892.1171335.1384908.6751334.2244919.1671333.859 4920.261333.843
4925.0071333.2324932.4371332.2314934.9891332.7864941.9381333.9864948.6341334.184
4957.7641334.5764966.578 1334.224977.9861333.9444979.0011333.9354987.803 1332.54
4999.5881331.0565001.392 1331.315009.0281332.3445015.8871333.2185016.3611333.292
5032.2281333.2085042.1041334.2645058.4021334.2925066.7521334.3275091.935 1334.21
5101.2721334.5085108.9321334.4225117.0391334.1525122.5421333.5145128.1241332.366
5133.5391333.0635136.8961333.7775151.0771333.5985159.2361333.8245167.849 1333.76
```

```
5174.3761334.3495192.7321334.3175200.938 1334.545221.037 1334.275224.746 1334.18
5232.0541333.426 5240.371334.5645246.2571334.7145263.8491334.7135285.6271334.172
5312.8291334.579 5333.981334.5495259.3251334.3995376.2921334.2775389.7921334.081
5424.6311333.1245451.5931332.6175469.7011332.1575469.7191332.1515481.615 1331.86
5484.1461331.6085501.3291331.9915504.2111332.1665558.0641332.1875560.5411332.263
5593.9721330.8195628.6221329.3325640.0251328.9555641.8131329.0835646.9311329.758
5651.0111329.2475657.1571328.6345662.8231328.6965670.7551328.9915694.8641330.259
5704.9881330.9415717.8931330.685 5742.531330.9975752.059  1331.45753.0581331.452
5757.9811331.5375790.3151332.4345803.5011332.6615841.271 1333.395852.0591333.656
5883.9571334.265 5903.661334.5975908.6731334.6435941.818 1335.195954.6361335.353
5964.8341335.6465990.521 1336.126000.081  1336.4
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
 3618.33    .0354966.578    .0855042.104    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4966.5785042.104              534558.4567     540            .1          .3
Left Levee       Station=4429.073       Elevation=1333.754
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1333.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.45	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1334.77	Reach Len. (ft)	534.00	558.46	540.00
Crit W.S. (ft)	1333.76	Flow Area (sq ft)	193.86	39.95	805.85
E.G. Slope (ft/ft)	0.024226	Area (sq ft)	193.86	39.95	805.85
Q Total (cfs)	9480.00	Flow (cfs)	1241.96	92.75	8145.29
Top Width (ft)	694.04	Top Width (ft)	212.36	50.38	431.30
Vel Total (ft/s)	9.12	Avg. Vel. (ft/s)	6.41	2.32	10.11
Max Chl Dpth (ft)	4.68	Hydr. Depth (ft)	0.91	0.79	1.87
Conv. Total (cfs)	60906.8	Conv. (cfs)	7979.3	595.9	52331.6
Length Wtd. (ft)	537.39	Wetted Per. (ft)	213.90	50.68	431.78
Min Ch El (ft)	1331.06	Shear (lb/sq ft)	1.37	1.19	2.82
Alpha	1.12	Stream Power (lb/ft s)	8.78	2.77	28.53
Frctn Loss (ft)	8.68	Cum Volume (acre-ft)	21.27	0.87	27.72
C & E Loss (ft)	0.09	Cum SA (acres)	16.82	0.81	13.87

```
Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
                additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional croas sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
```

```
CROSS SECTION          RIVER: Harquahale
REACH: Upper Reach B      RS: 19.1607

INPUT
Description: 19.1607
Station Elevation Data    num=      263
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
3547.9281328.2583566.8691328.1313582.318 1328.023596.8171327.9243618.4231327.682
 3641.431327.4283643.8711327.1093649.5641326.2673650.3281326.3133660.8561326.884
 3662.131327.0263703.0061326.7663718.4931326.6043726.414 1326.57 3743.951326.585
3803.0211325.919 3836.591325.1363846.173 1324.953848.8341324.9293858.2791325.092
3879.4441324.8113887.5761324.7313894.4271323.7323896.4451323.3213899.9641323.861
3903.2471324.5163933.4711324.5483950.9861324.6193957.193 1323.953959.6671323.563
3968.2771324.018 3972.141324.3513979.2571324.8373982.6141325.2553986.191 1325.09
3995.0021324.6713999.5751323.5734003.9771322.5764008.1271324.1054011.324 1324.75
4028.542 1324.634040.5511324.5434045.8271324.5184047.4681324.5044051.8461324.375
4058.5311324.1284060.0591324.0394062.0581324.1174075.047 1324.134090.0371324.793
4094.0951324.8494100.8991325.0894109.4341325.3514115.2251325.4224129.7191325.141
4140.5741324.8454141.9931324.6814146.2991324.6664150.4161324.4714159.8041324.693
4161.5241324.8224162.0971324.7334170.4291323.129 4171.321323.2884178.8621324.819
4180.913 1324.694185.5831324.2664194.1821323.7314195.5411323.6654223.3251324.562
4225.9511324.6514226.1461324.649 4247.461324.8014264.4321324.6924273.5771324.564
4277.5031324.5484288.3941324.4724300.4671324.314    43061323.935 4309.881323.573
4328.1161324.6054328.5821324.6314329.0671324.6454354.8321325.1884363.5261325.122
4366.6591324.9324380.9141324.619  4384.61323.732 4390.141322.6234397.9251324.154
  4399.41324.455  4403.41324.6854422.3131325.5864441.6461325.9554454.4131326.118
4472.1281325.6084476.7771325.4664482.856    13244489.8091322.7234494.1281323.454
4499.2711324.1474513.1631323.5374513.2221323.5384530.1271325.4894533.4041325.783
4538.2951325.8954567.0171325.9764573.0591326.0124581.4091325.4764592.3241324.757
4600.7811322.6124602.5651322.063 4605.391322.561 4614.66 1324.354619.3091323.672
4621.324 1323.844629.0611324.6044630.0241324.5984632.8861324.5764634.2761324.564
4639.8441324.4544646.1231324.2754652.5081324.1234657.9241323.5564659.896 1323.28
4691.7491325.9774695.0271326.2214700.2641326.4474706.6531326.5334741.3921326.318
4767.8561325.8964792.3271325.6824808.1111325.3924819.6111325.239 4837.571325.066
4845.9191324.8784857.489 1325.584858.0991325.6244873.9411325.9074898.7321326.344
 4898.931326.3454901.2531326.3664917.2731326.7674924.201 1326.924934.4541325.714
4935.3571325.6234936.2061325.676 4943.881326.2484948.1811326.4364952.572 1326.68
4965.5131326.7084966.2151326.706  4966.71326.6364974.9181325.5554977.0431326.052
4980.5191326.3794986.2781326.3324991.5421326.286  4992.91326.1624996.5941325.387
5001.0531324.6075003.5211325.0755008.8811326.3295026.1631326.0625034.2071325.932
5047.2081326.1095050.5781326.1515054.0251325.9195057.9861325.7155062.1321326.318
5065.8961326.6815073.9051326.6785089.0921326.635 5110.921326.6435123.305 1326.72
5141.8471326.2265145.0971325.9325162.4661326.4375172.3311326.9085179.0651326.931
5190.6051326.9295205.8961326.8085228.662  1326.65236.6771326.0185241.7321325.457
5246.8751325.9055256.1281326.3665260.4871326.4385262.6611326.5095295.6841326.938
5314.6661327.142 5317.681327.1835334.5731327.2115344.8111326.9625367.9851326.376
5374.0541326.189 5375.841325.8755387.0571323.5375391.3441324.4145397.7571324.968
5403.9331324.8095412.8191324.628  5433.11325.8515436.8841326.0185464.2921326.295
5491.4351326.5655498.479 1326.475527.6721325.7425559.8341324.3585567.2121324.174
 5570.711323.9895582.8041323.0355588.3051322.1685592.8021322.5135597.2341323.085
5599.104 1322.945599.6981322.9075606.187 1322.985608.7171322.9855614.8151321.451
 5617.451320.7675621.6891321.5485628.4661322.8385632.9381323.2925641.195  1323.6
```

```
5652.2341323.4135657.7651323.3185666.3731323.6985673.7421323.6555683.9561323.818
5693.3721323.8815697.4361323.8855706.4521323.4795707.3461323.4615716.4741324.174
5719.0191324.3285722.7851324.3135733.4511324.3815767.0861324.649 5785.96 1324.79
5793.2281324.5055803.555 1324.345809.7461324.5635821.3191324.9325849.0661325.715
  5850.61325.7395875.1271325.9535890.9411326.1855897.3861326.3065910.9311326.604
5931.8671326.962 5951.671326.9565954.5331326.8755963.2981326.7455969.3421326.985
5994.8141327.8126017.9381328.1986053.0381328.7076104.1071329.6186107.6361329.657
6108.425 1329.646110.797 1329.65 6140.491329.791

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
3547.928    .0354991.542    .0855008.881    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4991.5425008.881              422554.2729     519              .1        .3
Left Levee       Station=4454.413       Elevation=1326.118

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1326.12   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.31   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)          1326.43   Reach Len. (ft)            422.00     554.27     519.00
  Crit W.S. (ft)          1326.12   Flow Area (sq ft)        1371.48      11.75     760.32
  E.G. Slope (ft/ft)     0.006491   Area (sq ft)             1371.48      11.75     760.32
  Q Total (cfs)           9480.00   Flow (cfs)               5765.47      13.95    3700.58
  Top Width (ft)          1578.95   Top Width (ft)           1058.52      14.87     505.56
  Vel Total (ft/s)           4.42   Avg. Vel. (ft/s)            4.20       1.19       4.87
  Max Chl Dpth (ft)          5.35   Hydr. Depth (ft)            1.30       0.79       1.50
  Conv. Total (cfs)       117664.8  Conv. (cfs)              71560.4      173.2    45931.2
  Length Wtd. (ft)         481.09   Wetted Per. (ft)         1062.04      15.18     506.88
  Min Ch El (ft)          1324.61   Shear (lb/sq ft)            0.52       0.31       0.61
  Alpha                      1.02   Stream Power (lb/ft s)      2.20       0.37       2.96
  Frctn Loss (ft)            3.86   Cum Volume (acre-ft)       11.68       0.54      18.01
  C & E Loss (ft)            0.02   Cum SA (acres)              9.03       0.39       8.06


Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
                depth, the calculated water surface came back below critical depth.  This indicates that there is
                not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.

CROSS SECTION           RIVER: Harquahala
REACH: Upper Reach B       RS: 19.0557

INPUT
Description: 19.0557
Station Elevation Data     num=      249
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
3277.6671320.2213281.2851320.1893315.3191319.9143325.4761319.9563339.5411319.917
3373.1041319.8623376.6661319.715 3380.61 1319.783388.7311319.7023407.4911319.745
3431.7621319.3283465.2641319.2633506.4571319.3473520.9491319.0583575.874 1317.81
3579.5081317.1523584.7391316.1553592.823  1317.63594.6461317.947 3635.041318.106
3636.2631318.1163638.5121318.0993661.7681318.0473691.5871318.0543693.7731317.561
3699.4811317.0333704.5321316.2973711.4261317.5553714.7321318.3773738.5131318.708
3749.3961318.8783751.7441318.8073764.4911318.3823774.8691318.1363800.2641317.919
3801.3981317.9093801.8871317.8563805.4581317.5073814.1681316.5733816.3331316.765
3825.798 1317.643840.7871318.1013844.5591318.2143867.4221318.5443884.903 1318.78
3885.1451318.773 3886.051318.7393893.4091318.4213919.8221318.0063943.4561317.758
3946.4251317.7173948.8021317.3513952.2851316.9833956.2981316.4673974.3811317.115
3976.5561317.224  3995.11317.9284003.2171318.1914025.0671317.9134037.0311317.601
4048.4181317.5194060.9191317.4824073.7651317.6094077.9191317.6514081.3221317.707
4094.1891318.2114114.1631317.7274128.5831317.5864137.155 1316.554137.1671316.548
4137.1731316.5494144.9981317.2634158.6261317.3034159.0021317.2974159.8161317.279
4172.0381317.0584174.5491317.0414174.7891316.893 4179.66  1315.64180.0611315.525
4183.1981317.2364187.5481317.2654193.6271317.1114206.171 1317.944207.8551317.365
4211.6681316.4334220.3491314.5014224.6381315.2434244.2831317.5024251.5231317.502
4257.1211317.527 4261.381317.6754274.7311317.955  4281.71318.1634287.4981318.051
4293.9431317.7444306.3191317.467 4318.721317.8314340.2461318.6514350.8091318.668
4372.4181318.8384375.9411318.8484383.473 1318.854386.0561318.846 4391.961318.474
4403.4121318.4454407.7911318.4824410.3131318.5394417.0621318.575 4428.771319.289
4439.7631319.9484449.0281319.7774471.8571319.1154488.151 1318.72 4496.091318.399
 4510.241318.0384529.1381317.8274546.1731317.6854549.2481317.3084556.7071316.954
4559.6121317.1374568.0261317.5144570.1161317.6774580.648 1317.814587.1041318.024
4598.5561318.356  4604.11318.3844625.054 1318.674634.323 1318.714637.073 1318.71
4642.0991318.734 4651.081318.2744656.4521318.648  4662.31318.6584680.6371318.145
4695.689 1317.924708.0371317.7344737.1671317.888 4752 321318.0654754.1051317.915
 4759.041317.3744763.6091318.0164766.207 1318.164775.6521318.4334793.1761318.658
 4812.561318.5834823.625 1318.574862.2521317.7384864.655 1317.654870.4081317.571
4873.1811317.6634880.6641318.1864891.9381318.3544897.0531318.4844904.5171318.659
4905.6681318.7014906.9831318.6634912.0421318.4344922.6911318.0144925.3011317.272
4928.371 1316.324932.1781317.0934935.0781317.4144936.4461317.7674944.178  1318.4
4953.573 1318.544964.7211318.691    49871318.3554991.9681318.2464993.7971317.675
4999.8141315.7865006.4281316.9325010.8011318.1915018.337 1318.175033.0291318.262
5038.2011318.1885050.459 1317.595059.734 1317.235066.1121317.5435077.937 1318.03
5101.3471318.3465103.0121318.4065105.5461318.4635121.7681318.9885129.1171318.892
5138.6581318.7255160.5341318.4885175.9721318.3055180.6351318.1225184.7391317.827
5205.2511316.4645208.2621316.4395214.7361316.4875223.7611315.6435224.1111315.615
5224.277 1315.625225.3511315.677 5231.411315.9875232.2581316.0665236.3521315.829
5245.6631315.4575251.0671315.7785259.5911316.5015270.2421317.4395285.2541317.463
5296.1851317.4485300.7781317.351 5326.241316.3725336.494 1316.235339.178 1316.06
 5357.031315.4575360.2841315.0085366.0491314.3085375.1581315.3715380.3941316.058
5385.9051316.0785405.7191316.1475419.2641315.8025419.3781315.8015419.549  1315.8
5443.7671315.5915447.1441315.8365449.6671315.9855454.6961315.8465469.3251316.042
5496.5681316.609  5536.51317.0635551.9561317.0935575.4011315.5255577.3321315.418
5579.5261315.3035587.4961316.2345589.0391316.4125589.3081316.4115592.3661316.431
```

```
5632.9961316.6935636.1081316.6935639.7221316.7645671.7341317.5355673.8321317.598
5711.6531318.4635714.9181318.509  5722.81318.6495750.1691319.1035760.7161319.074
5795.7931319.7215819.9571320.0945842.8151320.2765854.8981320.471

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
3277.667    .0354991.968    .0855010.801    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4991.9685010.801              446465.0548     437              .1        .3
Left Levee       Station=3636.263       Elevation=1318.116

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1317.79   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                1.78   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)            1319.56   Reach Len. (ft)              50.00      50.00      50.00
  Crit W.S. (ft)            1318.44   Flow Area (sq ft)           228.37      17.11     683.01
  E.G. Slope (ft/ft)       0.047943   Area (sq ft)                228.37      17.11     683.01
  Q Total (cfs)             9480.00   Flow (cfs)                 1677.63      67.12    7735.25
  Top Width (ft)             957.67   Top Width (ft)              419.21      15.97     522.50
  Vel Total (ft/s)            10.21   Avg. Vel. (ft/s)              7.35       3.92      11.33
  Max Chl Dpth (ft)            3.48   Hydr. Depth (ft)              0.54       1.07       1.31
  Conv. Total (cfs)        43295.8    Conv. (cfs)                 7661.8      306.5    35327.4
  Length Wtd. (ft)            50.00   Wetted Per. (ft)            421.30      16.49     522.10
  Min Ch El (ft)            1315.79   Shear (lb/sq ft)              1.62       3.11       3.91
  Alpha                        1.10   Stream Power (lb/ft s)       11.92      12.18      44.26
  Frctn Loss (ft)              6.70   Cum Volume (acre-ft)          2.57       0.20       6.69
  C & E Loss (ft)              0.15   Cum SA (acres)

Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
               additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
               than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
               section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
               cross section slice/secant method to find critical depth.

CROSS SECTION          RIVER: Harquahala
REACH: Split1             RS: 19.6872

INPUT
Description: 19.6872
Station Elevation Data     num=       55
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
4757.0631387.2644762.4581386.4424778.2671384.662 4797.351382.6754817.9481379.932
4825.3211378.9554868.6181374.7994879.3341374.1034900.6831373.9334952.2171373.623
4960.4241373.0224969.5121372.0034979.943 1372.344980.2271372.3514980.4761372.359
4981.3621372.4285004.8841374.2595014.0331374.6125020.6681374.8255046.3211375.975
5079.9811376.6955087.596 1376.835092.5971376.9645121.5141377.8065121.8431377.817
5122.7871377.8455149.8231378.2195164.7311378.647  5177.41378.809  5190.51377.195
5200.8591375.6495214.039 1377.275221.0381378.312  5238.61379.0615242.9371379.212
5259.0391379.7075267.7211380.0015283.875 1380.62 5290.661380.8055302.9641381.423
5309.3821381.661 5331.661382.1665336.081  1382.35360.2741383.0245361.7451383.086
5363.0591383.1285377.8951383.7135400.5481384.3515403.6131384.4955420.2491385.313
5427.0081385.5385441.6251385.7495460.6931386.2485469.2241386.3575484.2871386.737

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4757.063    .0354757.063    .0555484.287    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4757.0635484.287              167189.4667     230              .1        .3
Right Levee      Station=  5177.4       Elevation=1378.809

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1373.39   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                5.01   Wt. n-Val.                            0.055
  E.G. Elev (ft)            1378.40   Reach Len. (ft)             167.00     189.47     230.00
  Crit W.S. (ft)            1374.28   Flow Area (sq ft)                      28.95
  E.G. Slope (ft/ft)       0.644164   Area (sq ft)                           28.95
  Q Total (cfs)              520.00   Flow (cfs)                            520.00
  Top Width (ft)              38.30   Top Width (ft)                         38.30
  Vel Total (ft/s)            17.96   Avg. Vel. (ft/s)                       17.96
  Max Chl Dpth (ft)            1.39   Hydr. Depth (ft)                        0.76
  Conv. Total (cfs)           647.9   Conv. (cfs)                            647.9
  Length Wtd. (ft)           189.47   Wetted Per. (ft)                       38.41
  Min Ch El (ft)            1372.00   Shear (lb/sq ft)                       30.31
  Alpha                        1.00   Stream Power (lb/ft s)                544.42
  Frctn Loss (ft)              1.27   Cum Volume (acre-ft)          0.12      5.35
  C & E Loss (ft)              0.39   Cum SA (acres)                          3.62

Warning - The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
               additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
               than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
               section.  This may indicate the need for additional cross sections.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
               surface was used.

CROSS SECTION          RIVER: Harquahala
REACH: Split1             RS: 19.6513

INPUT
Description: 19.6513
```

```
Station Elevation Data     num=       60
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4813.5331385.0414821.8551383.7174840.9921380.6774841.7651380.6094867.796 1377.58
4868.7771377.4344889.9721375.5614897.8661375.2064917.9621373.9244933.1861373.012
4945.0761372.5084963.0051371.5474971.8931371.3584985.5371370.2114996.1631369.562
4999.0551369.2275000.2481369.1685000.8881369.2145002.8051369.3255011.1071369.967
5016.5811370.2015023.0581370.5315049.4451370.8995051.2631370.9115060.7471371.038
5082.2331371.4495087.8911371.386  5103.91370.2655107.5631369.9955109.2761370.106
5111.0191370.1865151.9611372.0565166.002 1372.565177.7851373.0825197.4611373.572
5202.6471373.7385213.959 1374.355234.1571375.1575251.3361375.6775272.197 1376.29
5287.7891376.8735308.415  1377.55328.9541378.3615345.3081378.9245357.7881379.135
5367.8731379.448 5386.311380.1465391.1071380.2665402.4441380.8655414.1591381.278
5432.4171381.6945443.5671381.9535460.7071382.1995480.5311382.8345484.7351382.971
5494.335 1383.415521.0471384.4285545.9991385.0675547.2931385.0875551.2821385.063

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4813.533    .0354813.533    .0655551.282    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4813.5335551.282              194272.8115     298            .1          .3
Right Levee      Station=5082.233      Elevation=1371.449

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1371.45   Element                    Left OB    Channel    Right OB
  Vel Head (ft)              0.23   Wt. n-Val.                            0.065
  E.G. Elev (ft)          1371.68   Reach Len. (ft)             194.00    272.81     298.00
  Crit W.S. (ft)          1371.45   Flow Area (sq ft)                     136.01
  E.G. Slope (ft/ft)     0.038044   Area (sq ft)                          136.01
  Q Total (cfs)            520.00   Flow (cfs)                            520.00
  Top Width (ft)           171.07   Top Width (ft)                        171.07
  Vel Total (ft/s)           3.82   Avg. Vel. (ft/s)                        3.82
  Max Chl Dpth (ft)          2.28   Hydr. Depth (ft)                        0.80
  Conv. Total (cfs)        2666.0   Conv. (cfs)                          2666.0
  Length Wtd. (ft)         272.81   Wetted Per. (ft)                     171.30
  Min Ch El (ft)          1369.17   Shear (lb/sq ft)                        1.89
  Alpha                      1.00   Stream Power (lb/ft s)                  7.21
  Frctn Loss (ft)            3.07   Cum Volume (acre-ft)          0.12      4.99
  C & E Loss (ft)            0.04   Cum SA (acres)                          3.16


Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program selected the water surface that had the least amount of error between computed and
                assumed values.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
                depth, the calculated water surface came back below critical depth.  This indicates that there is
                not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.

CROSS SECTION            RIVER: Harquahala
REACH: Split1               RS: 19.5997

INPUT
Description: 19.5997
Station Elevation Data     num=       68
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4856.8951385.7894858.9931385.4084869.3451383.5244885.5941380.7624897.7841377.929
4899.3451377.594 4909.081376.5944925.3781374.8894932.7841374.2444940.6861373.446
4955.3451370.4354967.5731366.4474975.0111366.9734979.0991365.7234984.587 1365.61
4997.2611365.1355004.576 1365.835019.2681366.508 5028.761367.0265043.2211367.173
 5060.571367.5535071.9961367.1365080.8641367.7485090.6191368.8035093.4691368.841
5098.1961368.8965123.0521369.073 5147.141369.7275163.6691369.716 5178.281369.995
5192.403 1370.21  5214.11370.3565222.1861370.2165233.7321369.6815254.1921369.845
5255.5641369.9155256.8531369.9085293.9481371.8335299.9241372.0315326.7071372.505
5327.4541372.5465328.1691372.5585356.4691373.4165377.4491374.1055379.1811374.176
5386.6971374.3135403.3351374.559 5407.051374.6175412.2521374.7825421.5231374.863
5438.4371374.892  5470.8 1375.865475.2831375.9635491.1371376.2515511.6941376.892
 5528.121377.4125540.0391377.6285561.8381378.0295576.056 1378.155581.4261378.133
5608.006 1378.075621.5341378.6055630.0041378.9295646.1171379.651 5648.741379.753
5649.4921379.7725685.579 1380.355688.1841380.406

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4856.895    .0354856.895    .0655688.184    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4856.8955688.184              166200.6815     260            .1          .3
Right Levee      Station=  5214.1      Elevation=1370.356

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1368.47   Element                    Left OB    Channel    Right OB
  Vel Head (ft)              0.09   Wt. n-Val.                            0.065
  E.G. Elev (ft)          1368.56   Reach Len. (ft)             166.00    200.68     260.00
  Crit W.S. (ft)          1367.44   Flow Area (sq ft)                     217.91
  E.G. Slope (ft/ft)     0.005296   Area (sq ft)                          217.91
  Q Total (cfs)            520.00   Flow (cfs)                            520.00
  Top Width (ft)           126.17   Top Width (ft)                        126.17
  Vel Total (ft/s)           2.39   Avg. Vel. (ft/s)                        2.39
  Max Chl Dpth (ft)          3.33   Hydr. Depth (ft)                        1.73
  Conv. Total (cfs)        7145.8   Conv. (cfs)                          7145.8
  Length Wtd. (ft)         200.68   Wetted Per. (ft)                     126.84
  Min Ch El (ft)          1365.14   Shear (lb/sq ft)                        0.57
  Alpha                      1.00   Stream Power (lb/ft s)                  1.36
  Frctn Loss (ft)            1.82   Cum Volume (acre-ft)          0.12      3.89
```

C & E Loss (ft) 0.02 Cum SA (acres) 2.23

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION RIVER: Harquahala
REACH: Split1 RS: 19.5616

INPUT
Description: 19.5616
Station Elevation Data num= 68

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4913.406 1377.594930.4911373.3154944.194 1370.824984.369 1365.464985.9691365.231
4986.5171365.1964987.5691365.0685003.8371363.2685009.6991363.6615019.1561364.323
5025.8961364.2285046.7181367.0655048.718 1367.325052.308 1367.355062.1261367.284
5085.3631367.144 5097.97 1366.955114.0821366.562 5137.13 1366.625141.8471366.507
 5158.031366.2365175.1791366.3385190.4221366.0565201.2621366.5045222.8181366.981
5224.4111367.0295225.2391367.0485242.3931368.4065252.4561368.6865262.1811368.849
5274.9511369.1855292.4771368.5825293.7821368.4925294.9741368.4385309.4441369.716
5326.9161369.8435337.4951369.8725349.2351370.1285355.5251370.1135404.0841370.944
5404.2161370.9455404.3661370.9455405.8671370.7595422.5581368.7135423.8661368.959
5425.829 1369.215443.1421371.1875460.7311373.1745461.8151373.2225462.3271373.235
5465.0421373.3525495.5771374.3825509.612 1374.64 5521.66 1374.595545.781 1374.75
5547.4061374.7215553.489 1374.895565.4691375.1495587.8241375.7585599.3211375.918
5621.583 1376.245648.7121376.5535666.5531376.8515692.2331377.1435692.5251377.147
5712.1841376.344 5715.341376.3025737.4361377.364
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4913.406    .0354913.406    .0655737.436    .035
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
      4913.4065737.436              175207.8089     272            .1       .3
```

Right Levee Station=5052.308 Elevation= 1367.35

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1366.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.		0.065	
E.G. Elev (ft)	1366.71	Reach Len. (ft)	175.00	207.81	272.00
Crit W.S. (ft)	1365.77	Flow Area (sq ft)		114.51	
E.G. Slope (ft/ft)	0.018469	Area (sq ft)		114.51	
Q Total (cfs)	520.00	Flow (cfs)		520.00	
Top Width (ft)	64.42	Top Width (ft)		64.42	
Vel Total (ft/s)	4.54	Avg. Vel. (ft/s)		4.54	
Max Chl Dpth (ft)	3.13	Hydr. Depth (ft)		1.78	
Conv. Total (cfs)	3826.3	Conv. (cfs)		3826.3	
Length Wtd. (ft)	207.81	Wetted Per. (ft)		64.79	
Min Ch El (ft)	1363.27	Shear (lb/sq ft)		2.04	
Alpha	1.00	Stream Power (lb/ft s)		9.25	
Frctn Loss (ft)	2.73	Cum Volume (acre-ft)	0.12	3.12	
C & E Loss (ft)	0.06	Cum SA (acres)		1.79	

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split1 RS: 19.5223

INPUT
Description: 19.5223
Station Elevation Data num= 62

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4942.6591377.0224947.9661374.4494986.7251362.1774987.665 1361.884987.8131361.863
4988.2251361.8315002.0321360.6795009.836 1361.46 5021.731362.4955036.0511362.711
5060.9951363.054 5073.971362.648 5080.421362.9165098.3761362.8475098.6071362.854
5120.6171362.9465127.1011363.0115141.0851363.8335147.8141364.9955156.9321365.709
5169.8461365.7445190.3681366.0165224.9771365.9235226.4951365.9055229.4371366.137
5237.1861366.7265261.9571368.3995270.8351368.9725281.6571369.1185289.6211369.173
5307.7091369.1385336.1931370.3975341.2781370.5295369.5961371.088  5384.71371.143
5386.2751371.1525404.7391371.3595407.4831371.4195419.1571371.6215427.3251371.689
5456.1891371.8225460.722 1371.855484.6981372.416  5507.11372.9495508.5251372.974
5547.1941372.3815552.8151372.4515573.7911372.7295585.2661373.1985594.2191373.408
5616.5671374.0175638.058 1374.435653.114 1374.755672.3951375.1025685.2271375.461
5707.1851375.7195714.3341375.5385722.9521375.6425756.2541376.0865773.5771376.418
5794.3161376.7255823.2421376.313
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4942.659    .0354942.659    .0655823.242    .035
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
      4942.6595823.242              178186.7914     295            .1       .3
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1363.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.065	
E.G. Elev (ft)	1363.92	Reach Len. (ft)	178.00	186.79	295.00
Crit W.S. (ft)		Flow Area (sq ft)		198.04	
E.G. Slope (ft/ft)	0.009900	Area (sq ft)		198.04	
Q Total (cfs)	520.00	Flow (cfs)		520.00	
Top Width (ft)	159.19	Top Width (ft)		159.19	
Vel Total (ft/s)	2.63	Avg. Vel. (ft/s)		2.63	
Max Chl Dpth (ft)	3.13	Hydr. Depth (ft)		1.24	
Conv. Total (cfs)	5226.3	Conv. (cfs)		5226.3	

Length Wtd. (ft)	186.79	Wetted Per. (ft)		159.66
Min Ch El (ft)	*1360.68*	*Shear (lb/sq ft)*		*0.77*
Alpha	1.00	Stream Power (lb/ft s)		2.01
Frctn Loss (ft)	2.78	Cum Volume (acre-ft)	0.12	2.37
C & E Loss (ft)	0.02	Cum SA (acres)		1.26

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split1 *RS: 19.4869*

INPUT
Description: 19.4869
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4964.681366.5274972.9421363.3724987.7911358.6284994.8331357.3044998.419 1357.78									
5008.5071359.1325013.9941359.5925017.0891359.8755030.9411359.8935036.4971359.965									
5043.0621359.9515045.8361359.802 5053.591359.5145058.7931360.1415075.9671362.016									
5080.1181362.1595115.3381363.6795125.6811363.9065152.2421364.4085162.7511364.594									
5187.3951365.0035206.8411364.9475227.5291364.8875230.0221364.732 5245.161364.231									
5250.4051364.0815251.8191364.0495274.7041365.2525275.3171365.2915297.9491365.757									
5315.9221366.122 5316.571366.1225319.7561366.0815344.3111365.8265350.1311365.086									
5352.734 1364.85352.6191364.7045354.9641364.8575369.7561366.3585392.5821367.098									
5407.4141367.4475430.9591367.3815444.1241367.357 5461.351367.3825471.1831366.915									
5504.127 1364.755516.6121363.3595518.5581363.2395522.2991363.4315529.748 1363.85									
5546.7811364.4945567.5661365.1465570.2471365.2015573.2571365.2565601.6821365.823									
5616.1841366.4275623.5551366.7335632.6161366.673 5654.671366.823 5663.811364.956									
5665.971364.5885670.199 1365.345682.9151367.1715690.9511367.3045707.1641367.333									
5748.2131368.616									

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4964.68	.035	4964.68	.0655748.213		.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4964.685748.213			459469.5331	543	.1	.3

Right Levee Station=5187.395 Elevation=1365.003

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1360.81	Element			
Vel Head (ft)	0.31	Wt. n-Val.		0.065	
E.G. Elev (ft)	1361.12	Reach Len. (ft)	459.00	469.53	543.00
Crit W.S. (ft)	1360.46	Flow Area (sq ft)		116.51	
E.G. Slope (ft/ft)	0.024914	Area (sq ft)		116.51	
Q Total (cfs)	*520.00*	*Flow (cfs)*		520.00	
Top Width (ft)	83.99	Top Width (ft)		83.99	
Vel Total (ft/s)	4.46	Avg. Vel. (ft/s)		4.46	
Max Chl Dpth (ft)	3.51	Hydr. Depth (ft)		1.39	
Conv. Total (cfs)	3294.4	Conv. (cfs)		3294.4	
Length Wtd. (ft)	469.53	Wetted Per. (ft)		84.69	
Min Ch El (ft)	1357.30	Shear (lb/sq ft)		2.14	
Alpha	1.00	Stream Power (lb/ft s)		9.55	
Frctn Loss (ft)	6.43	Cum Volume (acre-ft)	0.12	1.70	
C & E Loss (ft)	0.05	Cum SA (acres)		0.74	

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss wes greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split1 RS: 19.3980

INPUT
Description: 19.3980
Station Elevation Data num= 65

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4767.322 1356.7974783.3061355.0834797.3621354.5994813.3241354.0424825.5841353.585									
4834.6041353.7284848.2681353.5724854.0981353.4164864.9981353.7044887.5021354.444									
4906.0351354.8944915.6561354.8684946.2811354.8914951.8651352.8994956.1491352.107									
4959.5781352.4484976.3951353.5494985.3681353.3084988.2291353.2144989.6971353.183									
4992.8571352.8865000.3561352.1325007.7231352.7925010.1761353.0935022.4061352.779									
5034.2231352.5755036.0961352.5355045.9271352.2435051.4311353.2025059.8991354.778									
5082.2241355.1245090.3591355.3455117.1181355.0235122.9971355.0695138.042 1355.38									
5145.5981355.5725148.5361355.5525164.7131355.5095178.752 13555180.3881354.946									
5182.3051354.8965185.0621354.5675197.3331353.2975204.3651353.7625215.614 1354.09									
5232.4971353.8215240.9391353.4455250.1561353.284 5251.711353.1945255.2111353.432									
5268.6211354.4655277.3641354.8055303.5681355.195 5341.351354.8075364.6611354.612									
5396.354 1353.55397.3141353.4675397.5431353.4545411.5321352.7815424.6551353.867									
5427.7371354.1175456.556 1354.745456.8411354.7485457.2331354.744 5475.521354.702									

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4767.322	.035	4946.281	.0655059.899		.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4946.2815059.899			399433.8286	377	.1	.3

Left Levee Station=4946.281 Elevation=1354.891
Right Levee Station= 5145.6 Elevation=1355.572

CROSS SECTION OUTPUT Profila #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1354.51	Element			
Vel Head (ft)	0.13	Wt. n-Val.		0.065	
E.G. Elev (ft)	1354.64	Reach Len. (ft)	433.83	433.83	433.83

Crit W.S. (ft)	1353.73	Flow Area (sq ft)			178.95
E.G. Slope (ft/ft)	0.008634	Area (sq ft)			178.95
Q Total (cfs)	520.00	Flow (cfs)			520.00
Top Width (ft)	111.11	Top Width (ft)			111.11
Vel Total (ft/s)	2.91	Avg. Vel. (ft/s)			2.91
Max Chl Dpth (ft)	2.40	Hydr. Depth (ft)			1.61
Conv. Total (cfs)	5596.4	Conv. (cfs)			5596.4
Length Wtd. (ft)	433.83	Wetted Per. (ft)			111.83
Min Ch El (ft)	1352.11	Shear (lb/sq ft)			0.86
Alpha	1.00	Stream Power (lb/ft s)			2.51
Frctn Loss (ft)	6.42	Cum Volume (acre-ft)		0.12	0.79
C & E Loss (ft)	0.02	Cum SA (acres)			

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split 1A RS: 19.3216

INPUT
Description: 19.3216
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4756.044	1351.123	4776.431	1350.794	793.281	1350.434	798.171	1350.156	4816.913	1349.099
4823.334	1348.805	4841.116	1348.044	4847.669	1347.554	855.599	1346.885	4859.237	1347.412
4869.065	1348.763	4900.061	1349.091	4912.356	1349.244	949.536	1348.728	4962.854	1347.24
4964.944	1346.946	4968.162	1347.001	4977.503	1346.921	5000.222	1346.765	004.792	1347.646
5017.622	1349.114	5033.466	1348.776						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4756.044	.035	4912.356	.065	5017.622	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4912.356	5017.622		338431.8443	325	.1	.3

Left Levee Station=4912.356 Elevation=1349.244
Right Levee Station=5017.622 Elevation=1349.114

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1348.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.		0.065	
E.G. Elev (ft)	1348.14	Reach Len. (ft)	338.00	431.84	325.00
Crit W.S. (ft)	1347.49	Flow Area (sq ft)		52.23	
E.G. Slope (ft/ft)	0.007231	Area (sq ft)		52.23	
Q Total (cfs)	100.00	Flow (cfs)		100.00	
Top Width (ft)	53.25	Top Width (ft)		53.25	
Vel Total (ft/s)	1.91	Avg. Vel. (ft/s)		1.91	
Max Chl Dpth (ft)	1.32	Hydr. Depth (ft)		0.98	
Conv. Total (cfs)	1176.0	Conv. (cfs)		1176.0	
Length Wtd. (ft)	431.84	Wetted Per. (ft)		53.43	
Min Ch El (ft)	1346.76	Shear (lb/sq ft)		0.44	
Alpha	1.00	Stream Power (lb/ft s)		0.84	
Frctn Loss (ft)	5.88	Cum Volume (acre-ft)	2.97	1.45	5.49
C & E Loss (ft)	0.00	Cum SA (acres)	5.07	2.31	4.15

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split 1A RS: 19.2398

INPUT
Description: 19.2398
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4619.373	1343.885	4644.291	1343.424	4679.023	1343.037	4679.725	1343.022	4683.265	1342.983
4708.113	1342.704	4716.776	1342.655	4734.841	1342.539	4750.224	1342.277	4783.188	1341.669
4794.541	1341.339	4804.491	1341.059	4827.891	1341.943	4832.592	1342.174	4857.199	1343.548
4857.657	1343.564	4858.549	1343.534	4885.223	1342.76	4910.82	1341.315	4913.399	1341.2
4915.957	1341.328	4926.411	1341.854	953.613	1342.173	4968.021	1342.309	4978.667	1342.161
4979.716	1342.078	4992.505	1341.452	4999.468	1341.009	5000.801	1341.024	5006.015	1341.566
5014.531	1342.523	5024.158	1342.472	5035.299	1342.441	5043.516	1342.579	5072.503	1343.08
5091.833	1343.545	5098.551	1343.55	5104.574	1343.523	5132.071	1343.771	5132.322	1343.773
5133.065	1343.776	5169.181	1343.744	5172.974	1343.895				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4619.373	.035	4857.657	.065	5091.833	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4857.657	5091.833		377381.3855	359	.1	.3

Left Levee Station=4857.657 Elevation=1343.564
Right Levee Station=5091.833 Elevation= 1343.54

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1342.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.065	
E.G. Elev (ft)	1342.26	Reach Len. (ft)	377.00	381.39	359.00
Crit W.S. (ft)	1342.00	Flow Area (sq ft)		40.12	
E.G. Slope (ft/ft)	0.034600	Area (sq ft)		40.12	

Q Total (cfs)	100.00	Flow (cfs)		100.00		
Top Width (ft)	89.28	Top Width (ft)		89.28		
Vel Total (ft/s)	2.49	Avg. Vel. (ft/s)		2.49		
Max Chl Dpth (ft)	1.15	Hydr. Depth (ft)		0.45		
Conv. Total (cfs)	537.6	Conv. (cfs)		537.6		
Length Wtd. (ft)	379.25	Wetted Per. (ft)		89.42		
Min Ch El (ft)	1341.01	Shear (lb/sq ft)		0.97		
Alpha	1.00	Stream Power (lb/ft s)		2.42		
Frctn Loss (ft)	5.78	Cum Volume (acre-ft)	2.97	0.99	5.49	
C & E Loss (ft)	0.00	Cum SA (acres)	5.07	1.60	4.15	

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split 1A RS: 19.1676

INPUT
Description: 19.1676
Station Elevation Data num= 26

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4785.979 1337.024787.6451337.0794790.9331337.2344815.7861337.5114827.7311337.389
 4839.571336.0744844.7731335.6184850.8631335.7134858.4781335.8674872.4231335.984
4884.6921336.1534888.0641336.2294894.3761335.6664900.6031335.263 4906.141335.718
4920.491  1336.64933.5361336.9554948.1141337.3534953.725 1337.334978.7321337.311
4991.9521336.5474999.9221336.0075017.5531336.4695018.4291336.517 5056.77 1337.68
5057.6261337.706
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4785.979    .0354978.732    .065 5056.77    .035
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4978.732	5056.77		441456.6185	438	.1	.3

Right Levee Station= 5056.77 Elevation= 1337.68

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1336.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.035	0.065	
E.G. Elev (ft)	1336.47	Reach Len. (ft)	441.00	456.62	438.00
Crit W.S. (ft)	1336.25	Flow Area (sq ft)	39.70	3.67	
E.G. Slope (ft/ft)	0.008544	Area (sq ft)	39.70	3.67	
Q Total (cfs)	100.00	Flow (cfs)	97.48	2.52	
Top Width (ft)	99.77	Top Width (ft)	80.08	19.70	
Vel Total (ft/s)	2.31	Avg. Vel. (ft/s)	2.46	0.69	
Max Chl Dpth (ft)	1.12	Hydr. Depth (ft)	0.50	0.19	
Conv. Total (cfs)	1081.8	Conv. (cfs)	1054.5	27.3	
Length Wtd. (ft)	449.01	Wetted Per. (ft)	80.19	19.71	
Min Ch El (ft)	1336.01	Shear (lb/sq ft)	0.26	0.10	
Alpha	1.11	Stream Power (lb/ft s)	0.65	0.07	
Frctn Loss (ft)	6.82	Cum Volume (acre-ft)	2.80	0.80	5.49
C & E Loss (ft)	0.01	Cum SA (acres)	4.72	1.12	4.15

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split 1A RS: 19.0811

INPUT
Description: 19.0811
Station Elevation Data num= 49

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4574.3241331.5874599.9211331.4464604.4471331.4364616.5081331.3534634.7741331.438
 4641.661331.4114660.4711331.2774666.4541331.1384712.3341330.1214713.1711330.155
4724.4121330.4954736.0721330.3094751.0861330.2674764.5351330.3034769.9521330.344
4781.3791330.3134813.683 1330.384854.7241329.9124863.1541329.8154870.2961329.456
4872.5471329.2994875.5181329.4754884.3981330.1024887.7371330.2734891.0811330.332
4891.3371330.3244895.7251330.1984900.0571330.1044904.9321329.9474913.1831329.817
4923.2731329.604 4931.731329.4914948.9171329.6984959.796 1329.954974.5091329.148
  4980.1 1328.864998.3321327.9574999.4121328.2515008.6311329.6555014.336 1329.72
5026.0911329.6465055.845 1329.89 5074.351330.2735081.4651330.4955088.312 1330.73
5163.9531330.9785169.0141331.0185173.8741331.0975180.9991331.001
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4574.324    .0354959.796    .0655008.631    .035
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4959.796	5008.631		421445.8344	442	.1	.3

Left Levee Station=4959.796 Elevation= 1329.95
Right Levee Station=5008.631 Elevation=1329.655

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1329.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.065	
E.G. Elev (ft)	1329.64	Reach Len. (ft)	421.00	445.83	442.00
Crit W.S. (ft)	1329.27	Flow Area (sq ft)		28.72	
E.G. Slope (ft/ft)	0.034447	Area (sq ft)		28.72	
Q Total (cfs)	100.00	Flow (cfs)		100.00	
Top Width (ft)	38.46	Top Width (ft)		38.46	

Vel Total (ft/s)	3.48	Avg. Vel. (ft/s)		3.48	
Max Chl Dpth (ft)	1.50	Hydr. Depth (ft)		0.75	
Conv. Total (cfs)	538.8	Conv. (cfs)		538.8	
Length Wtd. (ft)	439.38	Wetted Per. (ft)		38.63	
Min Ch El (ft)	1327.96	Shear (lb/sq ft)		1.60	
Alpha	1.00	Stream Power (lb/ft s)		5.57	
Frctn Loss (ft)	6.83	Cum Volume (acre-ft)	2.60	0.63	5.49
C & E Loss (ft)	0.04	Cum SA (acres)	4.32	0.82	4.15

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest. valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1A RS: 18.9967

INPUT
Description: 18.9967
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4894.361	1323.392	4914.514	1322.883	4918.159	1322.775	4920.222	1322.434	4927.974	1321.367
4933.178	1322.208	4934.494	1322.447	4937.238	1322.462	4955.974	1322.524	4966.428	1322.446
4978.752	1322.209	4990.172	1322.104	4997.834	1321.401	4999.891	1321.214	5001.685	1321.486
5014.612	1322.616	5018.446	1322.626	5036.551	1322.794	5048.491	1322.915	5051.558	1322.961
5054.472	1322.945								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4894.361	.035	4978.752	.065	5018.446	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4978.752	5018.446	407	423.507	419	.1	.3

Left Levee Station=4894.361 Elevation=1323.392
Right Levee Station=5051.558 Elevation=1322.961

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1322.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.035	0.065	0.035
E.G. Elev (ft)	1322.78	Reach Len. (ft)	407.00	423.51	419.00
Crit W.S. (ft)	1322.50	Flow Area (sq ft)	24.07	28.12	0.45
E.G. Slope (ft/ft)	0.008810	Area (sq ft)	24.07	28.12	0.45
Q Total (cfs)	100.00	Flow (cfs)	51.91	47.87	0.23
Top Width (ft)	109.75	Top Width (ft)	60.24	39.69	9.82
Vel Total (ft/s)	1.90	Avg. Vel. (ft/s)	2.16	1.70	0.51
Max Chl Dpth (ft)	1.50	Hydr. Depth (ft)	0.40	0.71	0.05
Conv. Total (cfs)	1065.4	Conv. (cfs)	553.0	510.0	2.4
Length Wtd. (ft)	417.22	Wetted Per. (ft)	60.43	39.80	9.82
Min Ch El (ft)	1321.21	Shear (lb/sq ft)	0.22	0.39	0.03
Alpha	1.05	Stream Power (lb/ft s)	0.47	0.66	0.01
Frctn Loss (ft)	6.79	Cum Volume (acre-ft)	2.48	0.34	5.49
C & E Loss (ft)	0.01	Cum SA (acres)	4.02	0.42	4.10

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest. valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1A RS: 18.9165

INPUT
Description: 18.9165
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4859.028	1316.374	4871.512	1316.495	4890.848	1316.327	4893.921	1316.282	4912.131	1316.202
4922.791	1316.136	4926.398	1315.837	4933.181	1315.491	4944.671	1315.674	952.647	1315.414
4958.093	1315.711	4964.438	1315.697	4973.176	1315.681	4984.143	1315.024	984.253	1315.001
4985.185	1315.083	4991.057	1315.299	4995.378	1315.016	4998.608	1314.345	002.398	1314.938
5007.193	1316.132	5008.561	1316.151	5013.703	1316.103	5027.405	1316.043	5032.812	1315.778
5033.927	1315.751	5037.759	1315.599	5061.772	1315.773	5064.295	1315.945	5075.851	1315.841
5094.451	1315.785	5117.981	1315.984	5120.902	1315.991	5122.681	1315.565	5128.021	1314.233
5130.317	1314.701	5137.387	1315.831	5149.634	1316.021	5165.178	1316.333	5172.105	1316.259

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4859.028	.035	4973.176	.065	5007.193	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4973.176	5007.193	354	346.165	8 218	.1	.3

Right Levee Station=5008.561 Elevation=1316.151

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1315.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.035	0.065	
E.G. Elev (ft)	1315.98	Reach Len. (ft)	0.00	0.00	0.00
Crit W.S. (ft)	1315.81	Flow Area (sq ft)	8.64	21.77	
E.G. Slope (ft/ft)	0.040398	Area (sq ft)	8.64	21.77	
Q Total (cfs)	100.00	Flow (cfs)	24.13	75.87	

Top Width (ft)	78.87	Top Width (ft)	46.16	32.71
Vel Total (ft/s)	3.29	Avg. Vel. (ft/s)	2.79	3.48
Max Chl Dpth (ft)	1.57	Hydr. Depth (ft)	0.19	0.67
Conv. Total (cfs)	497.5	Conv. (cfs)	120.1	377.5
Length Wtd. (ft)	0.00	Wetted Per. (ft)	46.18	32.97
Min Ch El (ft)	1314.34	Shear (lb/sq ft)	0.47	1.67
Alpha	1.03	Stream Power (lb/ft s)	1.32	5.80
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		
C & E Loss (ft)	0.06	Cum SA (acres)		

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Marquahala
REACH: Split 1B RS: 19.3158

INPUT
Description: 19.3158
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4874.672	1348.35	4912.71	1348.239	4914.575	1348.222	4916.407	1348.207	4919.545	1348.193
4944.243	1348.015	4950.631	1347.924	4970.279	1347.516	4978.938	1347.535	4992.173	1347.412
5000.799	1347.288	5007.525	1347.492	5019.795	1347.589	5036.774	1346.829	5050.017	1346.281
5059.316	1346.353	5065.486	1346.305	5077.094	1347.221	5086.469	1348.063	5107.922	1348.058
5124.454	1348.172	5160.048	1347.585	5167.652	1347.432	5181.226	1345.877	5181.846	1345.801
5181.972	1345.804	5191.035	1346.231	5198.721	1346.714	5206.811	1347.051	5214.205	1346.802
5216.161	1346.748	5217.082	1346.688	5224.838	1345.741	5238.007	1347.411	5241.869	1347.938
5245.173	1348.125	5249.561	1347.708	5269.467	1347.131	5276.427	1347.236	5280.059	1347.403
5297.371	1348.412	5307.334	1348.347						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4874.672	.035	5019.795	.065	5086.469	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
5019.795	5086.469	371	400.165	350	.1	.3

Right Levee Station=5124.454 Elevation=1348.172

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1347.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.035	0.065	
E.G. Elev (ft)	1348.21	Reach Len. (ft)	371.00	400.17	350.00
Crit W.S. (ft)	1347.87	Flow Area (sq ft)	24.56	69.25	
E.G. Slope (ft/ft)	0.037009	Area (sq ft)	24.56	69.25	
Q Total (cfs)	420.00	Flow (cfs)	101.91	318.09	
Top Width (ft)	132.61	Top Width (ft)	67.83	64.78	
Vel Total (ft/s)	4.48	Avg. Vel. (ft/s)	4.15	4.59	
Max Chl Dpth (ft)	2.15	Hydr. Depth (ft)	0.36	1.07	
Conv. Total (cfs)	2183.2	Conv. (cfs)	529.7	1653.5	
Length Wtd. (ft)	385.70	Wetted Per. (ft)	67.84	64.87	
Min Ch El (ft)	1346.28	Shear (lb/sq ft)	0.84	2.47	
Alpha	1.01	Stream Power (lb/ft s)	3.47	11.33	
Frctn Loss (ft)	6.19	Cum Volume (acre-ft)	2.23	3.42	12.80
C & E Loss (ft)	0.06	Cum SA (acres)	4.03	2.95	19.37

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Marquahala
REACH: Split 1B RS: 19.2400

INPUT
Description: 19.2400
Station Elevation Data num= 52

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4564.761	1341.612	4569.107	1343.806	4579.041	1343.607	4615.269	1342.534	4621.218	1342.507
4662.805	1342.094	4696.457	1342.012	4702.485	1342.076	4713.481	1342.152	4719.142	1342.085
4756.478	1341.503	4759.511	1341.647	4765.171	1341.616	4787.81	1341.339	4789.747	1341.251
4801.956	1340.986	4814.464	1340.558	4834.026	1342.153	4834.992	1342.184	4835.326	1342.211
4836.461	1342.203	4879.728	1341.851	4891.006	1341.592	4897.44	1341.389	4911.968	1340.969
4916.563	1340.837	4919.412	1340.943	4930.432	1341.399	4941.361	1341.524	4953.822	1341.549
4983.912	1341.109	4993.144	1341.024	4998.097	1339.598	4999.254	1339.337	5000.756	1339.579
5006.235	1340.463	5006.937	1340.386	5019.705	1339.905	5032.712	1341.548	5033.621	1341.672
5034.999	1341.678	5062.117	1341.392	5063.254	1341.365	5069.346	1341.365	5105.545	1341.284
5130.919	1341.628	5139.116	1341.745	5141.068	1341.765	5163.249	1342.858	5165.057	1342.892
5167.628	1342.901	5168.211	1342.883						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4564.761	.035	4993.144	.065	5034.999	.035

```
Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4993.1445034.399               384 406.012     396            .1          .3
Left Levee       Station=4835.326       Elevation=1342.211

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1341.85   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.10   Wt. n-Val.                  0.035      0.065      0.035
  E.G. Elev (ft)            1341.96   Reach Len. (ft)            384.00     406.00     396.00
  Crit W.S. (ft)            1341.66   Flow Area (sq ft)           59.47      61.93      42.91
  E.G. Slope (ft/ft)       0.008906   Area (sq ft)                59.47      61.93      42.91
  Q Total (cfs)              420.00   Flow (cfs)                 154.75     172.29      92.95
  Top Width (ft)             263.37   Top Width (ft)             113.58      41.85     107.93
  Vel Total (ft/s)             2.56   Avg. Vel. (ft/s)             2.60       2.78       2.17
  Max Chl Dpth (ft)            2.52   Hydr. Depth (ft)             0.52       1.48       0.40
  Conv. Total (cfs)          4450.4   Conv. (cfs)                1639.8     1825.7      985.0
  Length Wtd. (ft)           394.66   Wetted Per. (ft)           113.61      42.30     107.94
  Min Ch El (ft)            1339.34   Shear (lb/sq ft)             0.29       0.81       0.22
  Alpha                        1.03   Stream Power (lb/ft s)       0.76       2.26       0.48
  Prctn Loss (ft)              5.86   Cum Volume (acre-ft)         1.88       2.82      12.62
  C & E Loss (ft)              0.01   Cum SA (acres)               3.25       2.46      18.93


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Harquahala
REACH: Split 1B           RS: 19.1631

INPUT
Description: 19.1631
Station Elevation Data     num=      46
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
4591.217 1336.474594.6041336.4764603.8381336.4494644.9761336.4334653.2191335.064
4655.4021334.8814658.1691335.0614676.664 1336.134736.5951336.2434761.8911336.328
4773.3731336.1864828.3081335.8814835.3621335.944 4848.271335.898 4891.141335.695
4897.5951335.4614913.364 1334.934918.6661335.1984931.7121335.5914936.3571335.558
4956.6521335.239 4967.851335.5114982.7751335.8184992.8091334.8714999.4481334.116
5008.3581335.2045015.2011335.9155030.7821335.6255037.1351335.582 5038.291335.448
 5045.311334.6475048.4581334.788 5068.291335.3685095.5211335.6485111.7141335.813
5116.0551335.9315129.5461335.7415154.5861335.4695165.2191335.4985176.9451335.389
5213.1971336.3825225.6251336.6415252.9311336.4216258.1911336.4165260.6411336.249
5263.5151336.131

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4591.217    .0354982.775    .0655015.201    .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4982.7755015.201               390419.9715     385            .1          .3
Left Levee       Station=4761.891       Elevation=1336.328
Right Levee      Station=5116.055       Elevation=1335.931

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1335.86   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.22   Wt. n-Val.                  0.035      0.065      0.035
  E.G. Elev (ft)            1336.08   Reach Len. (ft)            390.00     419.97     385.00
  Crit W.S. (ft)            1335.86   Flow Area (sq ft)           44.74      27.07      40.22
  E.G. Slope (ft/ft)       0.029168   Area (sq ft)                44.74      27.07      40.22
  Q Total (cfs)              420.00   Flow (cfs)                 161.88      94.31     163.81
  Top Width (ft)             254.24   Top Width (ft)             126.87      31.91      95.45
  Vel Total (ft/s)             3.75   Avg. Vel. (ft/s)             3.62       3.48       4.07
  Max Chl Dpth (ft)            1.75   Hydr. Depth (ft)             0.35       0.85       0.42
  Conv. Total (cfs)          2459.2   Conv. (cfs)                947.9      552.2      959.1
  Length Wtd. (ft)           395.43   Wetted Per. (ft)           126.91      32.10      95.52
  Min Ch El (ft)            1334.12   Shear (lb/sq ft)             0.64       1.54       0.77
  Alpha                        1.01   Stream Power (lb/ft s)       2.32       5.35       3.12
  Prctn Loss (ft)              4.55   Cum Volume (acre-ft)         1.42       2.40      12.25
  C & E Loss (ft)              0.05   Cum SA (acres)               2.19       2.12      18.01


Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
                depth, the calculated water surface came back below critical depth.  This indicates that there is
                not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION          RIVER: Harquahala
REACH: Split 1B           RS: 19.0836

INPUT
Description: 19.0836
Station Elevation Data     num=      53
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
4695.756 1330.254716.637 1330.334728.954 1330.22 4737.931330.0994751.2021329.715
4780.9231329.1254790.1091328.9594797.8891328.8514823.096 1328.954848.073 1328.96
4889.1411328.5614896.8771328.5084912.5551328.4794964.1491328.5524969.9741328.253
4973.7831328.0554977.0071327.9844990.9851327.4914996.3121325.886 4999.841324.911
5001.8661325.3695009.8141327.3525024.576 1327.615036.6441327.7915066.2091327.907
```

5076.0511327.978 5079.011327.504 5087.651327.4545089.7121327.7565102.6241327.699
5105.9741327.6775109.2291327.6125139.0291327.2745141.5171327.5765148.112 1328.07
5150.5581328.0335169.3471327.7635177.2031327.7345197.2071327.7375214.3921327.854
5217.5161328.2335224.6411328.1355228.7271328.1095248.1661327.7955253.8061327.841
5267.9891328.2525272.7951328.0765277.7261328.0235292.2531328.1155293.1161328.125
5297.6191328.4635323.2141330.3335337.3251330.227

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
4695.756 .0354964.149 .0655036.644 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4964.1495036.644 337360.4106 372 .1 .3
Right Levee Station=5217.516 Elevation=1328.233

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1328.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.065	0.035
E.G. Elev (ft)	1328.41	Reach Len. (ft)	337.00	360.41	372.00
Crit W.S. (ft)	1328.04	Flow Area (sq ft)		72.25	134.17
E.G. Slope (ft/ft)	0.006116	Area (sq ft)		72.25	134.17
Q Total (cfs)	420.00	Flow (cfs)		133.05	286.95
Top Width (ft)	327.81	Top Width (ft)		68.43	259.38
Vel Total (ft/s)	2.03	Avg. Vel. (ft/s)		1.84	2.14
Max Chl Dpth (ft)	3.43	Hydr. Depth (ft)		1.06	0.52
Conv Total (cfs)	5370.5	Conv. (cfs)		1701.3	3669.2
Length Wtd. (ft)	367.09	Wetted Per. (ft)		69.11	259.53
Min Ch El (ft)	1324.91	Shear (lb/sq ft)		0.40	0.20
Alpha	1.01	Stream Power (lb/ft s)		0.74	0.42
Frctn Loss (ft)	6.02	Cum Volume (acre-ft)	1.22	1.93	11.48
C & E Loss (ft)	0.02	Cum SA (acres)	1.63	1.63	16.44

Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 19.0153

INPUT
Description: 19.0153
Station Elevation Data num= 60
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
4714.2521324.5064721.3731324.5294726.9351324.5274730.2371324.6434752.1051324.775
4775.3031324.564 4790.471324.4844799.9661324.2934844.6061323.5724880.2121322.963
4887.3441321.9634888.6761321.7574890.4931321.958 4900.221322.8124915.5431322.713
4929.191322.7544944.0841322.2094969.8731321.2584975.6991321.8624979.6331322.165
4987.0761322.2084992.6611322.0794994.5441321.5984999.2121320.4125001.8131320.731
5006.6731321.9445027.703 1321.795043.7571321.8645050.8371320.1795051.0661320.098
5051.5241320.1885060.4341321.4335061.9751321.485 5064.511321.5575071.3881320.097
5072.1571319.9265073.4731320.1935086.0381322.2455092.0851321.9925095.9391321.327
5101.11321.9235103.6091322.4445130.7531322.3245138.1821322.2465147.5591322.293
5153.8451322.2235189.6291321.5365193.1151321.4795196.5111321.9625206.7381321.996
5213.9561322.1395225.3061322.1085233.0831322.0825236.0571322.1675243.6651322.459
5264.0171322.6925298.5531323.0865314.8931323.7565324.4441324.2395366.1721324.438

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
4714.252 .0354987.076 .0655006.673 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4987.0765006.673 395431.1926 422 .1 .3
Left Levee Station= 4929.19 Elevation=1322.754
Right Levee Station=5103.609 Elevation=1322.444

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1322.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.	0.035	0.065	0.035
E.G. Elev (ft)	1322.49	Reach Len. (ft)	395.00	431.19	422.00
Crit W.S. (ft)	1322.13	Flow Area (sq ft)	13.99	13.71	63.20
E.G. Slope (ft/ft)	0.023493	Area (sq ft)	13.99	13.71	63.20
Q Total (cfs)	420.00	Flow (cfs)	51.49	42.53	325.98
Top Width (ft)	140.75	Top Width (ft)	32.82	16.08	91.86
Vel Total (ft/s)	4.62	Avg. Vel. (ft/s)	3.68	3.10	5.16
Max Chl Dpth (ft)	2.20	Hydr. Depth (ft)	0.43	0.85	0.69
Conv. Total (cfs)	2740.2	Conv. (cfs)	335.9	277.5	2126.8
Length Wtd. (ft)	421.37	Wetted Per. (ft)	32.88	16.46	92.64
Min Ch El (ft)	1320.41	Shear (lb/sq ft)	0.62	1.22	1.00
Alpha	1.09	Stream Power (lb/ft s)	2.30	3.79	5.16
Frctn Loss (ft)	5.62	Cum Volume (acre-ft)	1.16	1.57	10.63
C & E Loss (ft)	0.08	Cum SA (acres)	1.50	1.28	14.94

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SRCTION RIVER: Harquahala
REACH: Split 1B RS: 18.9337

INPUT
Description: 18.9337
Station Elevation Data num= 63

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4762.9931318.2944763.8691318.3024767.6991318.2224778.2251318.326 4803.181317.893
4811.0761317.7884813.9491317.6514817.5251317.603 4827.22 1317.49 4850.741317.016
4870.0421316.2754870.9221316.2414871.3731316.2734878.9921316.9644890.6561317.127
4918.4831317.6094951.3031316.9954970.6231316.7964975.0721316.4464977.8921316.173
4980.3821316.2874987.1361316.4974992.9961315.4465000.158 1314.245008.0111315.691
5012.0041316.4895027.076 1316.095046.344 1315.675050.5751315.7595076.2841316.541
5107.4391316.444 5124.591316.5045130.3921314.9875133.3371314.252 5138.071315.493
5141.2861316.1495150.9281316.1035162.0381316.0695185.0231315.624 5193.47 1315.45
5194.8411315.5365203.6111316.1625207.0541316.2195244.0991316.2265257.3531316.268
5273.6231315.9635287.3841315.6345292.4371314.966 5296.491314.4685300.4181314.847
5304.418  1315.45314.0561315.5055343.1741315.7635365.8681315.771 5370.871315.777
5379.161 1315.61 5385.571315.4225397.149 1315.875397.2241315.8745397.854 1315.91
5436.9231317.7495448.3171318.6165453.7341318.448
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4762.993    .035 4987.136    .065 5012.004    .035
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4987.136	5012.004		391	410.0502	393	.1	.3

Left Levee Station=4987.136 Elevation=1316.497

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1316.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.065	0.035
E.G. Elev (ft)	1316.38	Reach Len. (ft)	391.00	410.05	393.00
Crit W.S. (ft)	1316.06	Flow Area (sq ft)		23.69	154.32
E.G. Slope (ft/ft)	0.008576	Area (sq ft)		23.69	154.32
Q Total (cfs)	420.00	Flow (cfs)		50.99	369.01
Top Width (ft)	351.93	Top Width (ft)		22.74	329.20
Vel Total (ft/s)	2.36	Avg. Vel. (ft/s)		2.15	2.39
Max Chl Dpth (ft)	2.05	Hydr. Depth (ft)		1.04	0.47
Conv. Total (cfs)	4535.2	Conv. (cfs)		550.6	3984.7
Length Wtd. (ft)	394.61	Wetted Per. (ft)		23.11	329.89
Min Ch El (ft)	1314.24	Shear (lb/sq ft)		0.55	0.25
Alpha	1.00	Stream Power (lb/ft s)		1.18	0.60
Frctn Loss (ft)	5.10	Cum Volume (acre-ft)	1.10	1.38	9.58
C & E Loss (ft)	0.03	Cum SA (acres)	1.35	1.09	12.90

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.8560

INPUT
Description: 18.8560
Station Elevation Data num= 60

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4807.862 1312.914810.8621312.9894844.2161312.6794857.7851312.5154870.0771312.369
4884.4551312.1454892.4011311.2054894.5241310.9154896.0431311.2174900.5941312.134
4914.4591311.9124938.1941311.3134950.2741311.7744951.5831311.8494957.5361311.819
 4987.761311.9324992.0321311.115 4999.381309.3265005.7811310.8585009.1571311.848
5024.947 1312.045025.2491312.0455025.2611312.0455025.5291312.0345052.2341311.017
5058.5421309.1475058.577 1309.145058.6461309.152 5066.141310.3625068.4621310.618
5105.0591312.3245111.4871312.6695120.1891312.4585149.6261311.6875229.0611309.804
5244.0071309.4975265.5071311.4045266.1061311.4545266.5651311.4415279.0651311.539
5283.1921309.6615284.1681309.4495285.1921309.6485294.3161311.0495300.162 1311.03
5310.7841311.1255340.6081311.5765353.8741311.5055377.0891311.3625381.8171310.941
5390.4861310.3565394.3631310.7055401.1511311.4125412.7131311.1575421.6451311.013
5440.1761311.1885455.738 1311.545463.7231311.6295485.6421312.1685497.2951311.857
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4807.862    .035 4987.76    .0655025.249    .035
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4987.76	5025.249		365	431.1373	427	.1	.3

Left Levee Station= 4987.76 Elevation=1311.932
Right Levee Station=5340.608 Elevation=1311.576

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1310.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.		0.065	0.035
E.G. Elev (ft)	1311.25	Reach Len. (ft)	365.00	431.14	427.00
Crit W.S. (ft)	1310.88	Flow Area (sq ft)		10.04	78.41

E.G. Slope (ft/ft)	0.032031	Area (sq ft)			10.04	78.41
Q Total (cfs)	420.00	Flow (cfs)			28.31	391.69
Top Width (ft)	123.13	Top Width (ft)			12.85	110.28
Vel Total (ft/s)	4.75	Avg. Vel. (ft/s)			2.82	5.00
Max Chl Dpth (ft)	1.74	Hydr. Depth (ft)			0.78	0.71
Conv. Total (cfs)	2829.6	Conv. (cfs)			190.7	2638.9
Length Wtd. (ft)	427.19	Wetted Per. (ft)			13.25	111.10
Min Ch El (ft)	1309.33	Shear (lb/sq ft)			1.04	0.97
Alpha	1.06	Stream Power (lb/ft s)			2.94	4.85
Frctn Loss (ft)	5.41	Cum Volume (acre-ft)		1.10	1.23	8.53
C & E Loss (ft)	0.08	Cum SA (acres)		1.35	0.92	10.92

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.7744

INPUT
Description: 18.7744
Station Elevation Data num= 74

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4903.2461306.6664919.4391306.8874960.9221306.3764975.7731306.1534990.0371305.571
4993.8721304.924 4999.131304.1175007.4071305.7525008.0761305.8455033.3941305.894
5038.5821305.9935043.9251305.9485068.7261305.7155089.184 1306.055104.8471306.476
5120.811130E.377 5132.581306.1755142.5871306.3065166.0811306.3915200.3061305.712
5207.4311305.5495208.8711305.2435213.676 1303.995218.3321304.8025223.3011305.695
5225.5561306.071 5229.821306.1655255.2421306.3595261.1871306.3085268.4221306.188
5300.2281305.9775309.1361305.863 5311.671305.8255335.442 1305.775378.9181305.497
5415.7721305.4925484.3721304.4935494.5281304.3045504.4741304.5275524.7021305.067
5541.7631305.4365560.8831305.2565589.7831305.0285594.3261304.9715594.8871304.885
5598.0031304.399 5602.111303.6335603.0161303.7795607.3171304.8795623.4041304.742
5628.4991304.6955632.848 1304.575641.4611304.7835657.1821305.1085665.4261304.994
5671.7521304.683 5682.871304.1285690.1521304.2345702.1011305.0485710.8021303.496
5712.6871303.205 5715.911303.5035731.4941304.8835740.9141304.8855752.5161305.054
5761.8941305.1425780.7791305.4275786.7211305.5595806.249 1305.785828.7761306.139
5841.3541306.2945842.7441306.2295845.3141306.1595853.7431305.981
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4903.246    .0354975.773    .0655008.076    .035
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4975.7	5008.076		292	295.6265	292	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1305.25	Element		Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.			0.065	0.035
E.G. Elev (ft)	1305.34	Reach Len. (ft)		292.00	295.63	292.00
Crit W.S. (ft)	1305.05	Flow Area (sq ft)			7.41	165.29
E.G. Slope (ft/ft)	0.008211	Area (sq ft)			7.41	165.29
Q Total (cfs)	420.00	Flow (cfs)			10.49	409.51
Top Width (ft)	333.42	Top Width (ft)			12.94	320.48
Vel Total (ft/s)	2.43	Avg. Vel. (ft/s)			1.41	2.48
Max Chl Dpth (ft)	2.05	Hydr. Depth (ft)			0.57	0.52
Conv. Total (cfs)	4635.0	Conv. (cfs)			115.7	4519.2
Length Wtd. (ft)	292.09	Wetted Per. (ft)			13.14	321.34
Min Ch El (ft)	1304.12	Shear (lb/sq ft)			0.29	0.26
Alpha	1.02	Stream Power (lb/ft s)			0.41	0.65
Frctn Loss (ft)	3.82	Cum Volume (acre-ft)		1.10	1.14	7.33
C & E Loss (ft)	0.01	Cum SA (acres)		1.35	0.79	8.81

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.7184

INPUT
Description: 18.7184
Station Elevation Data num= 66

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4916.4331302.3274938.9271302.3544954.1171302.036 4969.991302.1564987.302 1302.14
4993.6711301.2334998.704 1300.435004.1611301.2115012.5151302.1225018.7071302.367
5024.5051302.3815042.2241302.3565088.2121302.2115127.1021302.354  5141.6 1302.37
5150.1571302.4795158.8771302.661 5190.271302.865  5212.31302.1575234.9291301.525
5239.8361301.5495242.4141301.5925246.294 1301.565251.2371301.5175254.6911300.998
 5257.331300.5445258.3231300.6755268.589 1302.255273.0631302.2575304.5731302.199
5323.8571301.9245351.2591301.7965356.5721301.615 5364.651301.183  5368.71301.136
5377.3741301.036 5397.861300.9455459.8851300.9855470.7161301.0035477.9981300.966
5489.6021300.9745557.3021300.934 5574.241300.8415637.6981301.3335639.3011301.346
5639.8521301.353 5645.661301.3815663.3281301.1275664.3341301.1015669.6091300.211
5674.8231299.3035676.278 1299.745683.182 1301.755694.823 1301.695729.1621301.222
5766.356 1301.165769.8561301.1765773.201 1301.175840.0631301.4035841.329 1301.33
5850.4721300.7775853.2911300.9915863.276 1301.395889.1881301.8945920.9131302.439
```

5922.1631302.423

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
4916.433 .035 4987.302 .065 5018.707 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4987.302 5018.707 378 422.3776 347 .1 .3
Right Levee Station=5683.182 Elevation= 1301.75

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1301.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.		0.065	0.035
E.G. Elev (ft)	1301.52	Reach Len. (ft)	378.00	422.38	347.00
Crit W.S. (ft)	1301.34	Flow Area (sq ft)		5.49	118.28
E.G. Slope (ft/ft)	0.023713	Area (sq ft)		5.49	118.28
Q Total (cfs)	420.00	Flow (cfs)		11.14	408.86
Top Width (ft)	332.35	Top Width (ft)		12.40	319.96
Vel Total (ft/s)	3.39	Avg. Vel. (ft/s)		2.03	3.46
Max Chl Dpth (ft)	2.04	Hydr. Depth (ft)		0.44	0.37
Conv. Total (cfs)	2727.4	Conv. (cfs)		72.4	2655.1
Length Wtd. (ft)	348.99	Wetted Per. (ft)		12.53	320.53
Min Ch El (ft)	1300.43	Shear (lb/sq ft)		0.65	0.55
Alpha	1.02	Stream Power (lb/ft s)		1.32	1.89
Frctn Loss (ft)	4.12	Cum Volume (acre-ft)	1.10	1.10	6.38
C & E Loss (ft)	0.03	Cum SA (acres)	1.35	0.71	6.66

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.6384

INPUT
Description: 18.6384
Station Elevation Data num= 105
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
4824.603 1299.229 4832.155 1299.444 4851.015 1298.711 4852.211 1298.642 4867.967 1296.653
4871.531 1296.242 4877.923 1296.766 4888.681 1297.357 4899.997 1296.913 4904.261 1296.8
4907.213 1296.728 4912.738 1296.633 4917.974 1296.485 4924.081 1296.334 4929.425 1296.922
4933.531 1297.473 4941.818 1297.725 4959.64 1298.092 4982.44 1297.444 989.847 1297.225
4994.97 1296.214 999.561 1295.317 5005.728 1296.492 5010.856 1297.475 5013.031 1297.458
5018.419 1297.285 031.688 1296.789 5038.941 1297.122 5048.911 1297.419 5055.997 1297.047
5058.846 1296.934 5060.872 1296.729 5061.109 1296.686 5070.261 1295.319 5073.612 1295.611
5082.554 1296.467 5100.321 1296.844 5113.533 1297.148 5123.976 1297.216 5138.629 1297.087
5141.225 1296.797 5146.514 1296.321 5150.389 1296.403 5153.96 1296.649 5159.135 1296.748
5172.02 1296.936 5181.369 1295.74 5184.047 1295.339 5187.883 1295.737 5198.077 1297.062
5210.718 1297.088 5256.158 1297.821 5259.152 1297.825 5280.045 1297.679 5367.282 1297.365
5375.668 1297.349 5376.995 1297.307 5381.958 1297.635 5390.35 1298.07 5394.748 1298.07
5411.494 1297.91 5419.07 1297.98 5436.25 1297.056 5437.974 1296.887 5438.499 1296.89
5469.094 1296.412 5472.08 1296.195 5478.842 1295.661 5480.292 1295.728 5486.378 1296.116
5498.358 1296.231 5521.704 1296.026 5533.60 1296.553 4.622 1295.981 5538.817 1295.423
5547.136 1294.313 5551.823 1295.182 5554.228 1295.715 5576.387 1295.917 5596.692 1296.222
5627.422 1296.215 5638.973 1296.282 5670.413 1296.375 5671.252 1296.296 5673.844 1296.042
5685.349 1294.854 5688.003 1294.553 5697.547 1296.236 5699.793 1296.777 5737.877 1297.192
5750.676 1297.357 53.133 1297.311 5754.968 1297.299 5796.306 1297.346 5839.78 1297.224
5863.062 1297.249 5868.124 1297.276 5891.944 1297.432 5914.601 1297.609 5917.25 1297.651
5927.882 1297.537 5980.935 1297.161 5987.15 1297.804 5989.151 1298.254 6001.985 1298.292

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
4824.603 .035 4959.64 .065 5010.856 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4959.64 5010.856 452 474.4267 303 .1 .3
Left Levee Station= 4959.64 Elevation=1298.092
Right Levee Station=5796.306 Elevation=1297.346

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1296.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.065	0.035
E.G. Elev (ft)	1296.65	Reach Len. (ft)	452.00	474.43	303.00
Crit W.S. (ft)	1296.33	Flow Area (sq ft)		8.00	165.94
E.G. Slope (ft/ft)	0.007034	Area (sq ft)		8.00	165.94
Q Total (cfs)	420.00	Flow (cfs)		11.04	408.96
Top Width (ft)	304.89	Top Width (ft)		12.86	292.03
Vel Total (ft/s)	2.41	Avg. Vel. (ft/s)		1.38	2.46
Max Chl Dpth (ft)	2.25	Hydr. Depth (ft)		0.62	0.57
Conv. Total (cfs)	5008.0	Conv. (cfs)		131.6	4876.4
Length Wtd. (ft)	341.97	Wetted Per. (ft)		13.10	292.93
Min Ch El (ft)	1295.32	Shear (lb/sq ft)		0.27	0.25
Alpha	1.02	Stream Power (lb/ft s)		0.37	0.61
Frctn Loss (ft)	4.23	Cum Volume (acre-ft)	1.10	1.03	5.25
C & E Loss (ft)	0.01	Cum SA (acres)	1.35	0.59	4.23

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Marquahala
REACH: Split 1B RS: 18.5485

INPUT
Description: 18.5485
Station Elevation Data num= 105

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4492.689	1292.828	4497.161	1292.893	4509.613	1293.098	4515.853	1293.138	4521.207	1293.24
4528.946	1293.535	4546.641	1293.366	4550.505	1293.259	4578.955	1293.054	4596.446	1292.896
4602.021	1292.934	4611.387	1292.843	4643.237	1292.694	4652.114	1292.585	4682.496	1292.372
4699.586	1292.356	4708.389	1292.128	4714.485	1292.248	4722.412	1292.771	4740.573	1292.859
4752.395	1292.067	4761.908	1292.167	4765.598	1292.241	4771.621	1291.875	4777.72	1291.903
4792.817	1292.512	4799.294	1292.513	4805.967	1291.952	4806.922	1292.047	4810.382	1292.122
4811.461	1292.133	4814.644	1291.443	4818.636	1290.615	4819.604	1290.752	4825.94	1292.159
4836.767	1292.333	4837.121	1292.334	4838.018	1292.338	4847.671	1292.354	4851.583	1291.975
4856.708	1291.538	4866.108	1291.774	4874.289	1291.908	4886.914	1292.076	4895.595	1292.27
4924.051	1292.131	4945.067	1292.089	4959.357	1292.178	4987.114	1292.351	4990.466	1291.318
4999.813	1290.175	5001.463	1290.345	5014.697	1291.505	5017.371	1291.537	5023.958	1291.678
5041.561	1291.842	5044.948	1291.847	5051.044	1291.925	5096.749	1292.524	5111.586	1292.767
5119.029	1292.752	5124.482	1292.739	5160.256	1292.736	5170.823	1292.717	5189.618	1292.708
5227.604	1292.315	5241.849	1292.201	5243.484	1292.195	5248.037	1292.121	5263.451	1291.842
5274.014	1292.016	5276.378	1292.075	5286.997	1290.648	5289.085	1290.385	5289.294	1290.403
5304.023	1292.152	5331.449	1291.944	5346.026	1291.944	5356.511	1291.874	5361.772	1291.785
5366.114	1291.886	5376.538	1292.004	5396.797	1292.349	5408.249	1292.532	5412.411	1291.885
5418.252	1290.795	5421.909	1291.882	5424.829	1292.875	5458.354	1292.899	5477.628	1292.896
5513.348	1292.906	5515.674	1292.916	5519.743	1292.902	5544.645	1292.816	5582.31	1292.684
5586.083	1292.668	5612.246	1292.664	5646.089	1292.639	5651.724	1292.671	5677.24	1292.67
5731.063	1293.087	5744.818	1292.545	5762.158	1292.457	5789.473	1292.952	5792.888	1292.993

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4492.689	.035	4987.114	.065	5051.044	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4987.114	5051.044	660	632.2013	440	.1	.3

Left Levee Station=4895.595 Elevation= 1292.27
Right Levee Station=5515.674 Elevation=1292.916

CROSS SECTION OUTPUT Profile #PF#1

		Element	Left OB	Channel	Right OB
W.S. Elev (ft)	1292.20	Wt. n-Val.	0.035	0.065	0.035
Vel Head (ft)	0.21	Reach Len. (ft)	0.00	0.00	0.00
E.G. Elev (ft)	1292.40	Flow Area (sq ft)	4.02	52.64	62.48
Crit W.S. (ft)	1292.20	Area (sq ft)	4.02	51.64	62.48
E.G. Slope (ft/ft)	0.029812	Flow (cfs)	4.14	176.34	239.52
Q Total (cfs)	420.00	Top Width (ft)	76.40	63.93	179.02
Top Width (ft)	319.35	Avg. Vel. (ft/s)	1.03	3.41	3.83
Vel Total (ft/s)	3.56	Hydr. Depth (ft)	0.05	0.81	0.35
Max Chl Dpth (ft)	2.03	Conv. (cfs)	24.0	1021.3	1387.2
Conv. Total (cfs)	2432.5	Wetted Per. (ft)	76.40	64.17	179.58
Length Wtd. (ft)	0.00	Shear (lb/sq ft)	0.10	1.50	0.65
Min Ch El (ft)	1290.17	Stream Power (lb/ft s)	0.10	5.11	2.48
Alpha	1.05	Cum Volume (acre-ft)			
Frctn Loss (ft)	0.00	Cum SA (acres)			
C & E Loss (ft)	0.05				

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Marquahala
REACH: Upper Mid Reach RS: 18.9676

INPUT
Description: 18.9676
Station Elevation Data num= 242

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3503.626	1314.269	3515.194	1314.296	3537.039	1314.056	3547.885	1313.994	3557.616	1311.333
3558.063	1311.221	3558.723	1311.386	3566.781	1313.273	3594.396	1313.578	3618.151	1313.737
3629.341	1313.844	3655.086	1313.597	3678.548	1313.206	3685.978	1312.239	3691.265	1311.825
3705.087	1313.077	3706.238	1313.172	3707.491	1313.189	3746.532	1314.053	3759.492	1313.887
3789.925	1313.266	3816.077	1313.054	3848.914	1312.621	3885.396	1311.971	3891.446	1311.972
3908.539	1312.096	3919.121	1312.219	3922.248	1311.729	3930.079	1310.833	3932.915	1311.189
3941.218	1311.772	3954.818	1312.116	3973.002	1312.329	3990.064	1311.693	3996.227	1311.479
4007.712	1311.796	4010.995	1311.833	4016.643	1311.463	4022.337	1310.834	4029.086	1311.251
4033.277	1311.334	4047.323	1312.056	4052.311	1312.344	4054.345	1312.014	4062.086	1310.684
4070.675	1310.797	4075.552	1311.056	4087.345	1311.76	4095	1312.263	4099.351	1311.963
4111.502	1311.117	4120.131	1311.704	4120.788	1311.774	4134.145	1312.302	4137.799	1312.386
4141.496	1311.385	4148.372	1309.594	4152.173	1310.164	4156.267	1311.84	4159.035	1311.759
4161.103	1311.652	4165.202	1311.425	4166.961	1311.351	4168.683	1311.485	4174.906	1312.142
4191.736	1312.197	4210.528	1312.434	4229.761	1312.297	4250.974	1312.231	4285.233	1311.859
4296.782	1311.704	4307.189	1312.186	4321.397	1312.774	4328.481	1312.746	4335.827	1312.611
4375.655	1312.113	4400.504	1312.059	4430.908	1312.171	4432.243	1312.184	4453.645	1312.572

```
 4508.671312.6674508.8311312.6674565.474 1312.334569.2711312.3754580.3071312.585
4597.3161312.625 4601.921312.622 4607.821312.5824641.7371312.3974647.6211310.466
4650.4421309.5464654.008 1310.374659.4721312.7364665.189 1311.914674.1121311.885
4686.1491311.8444687.4551311.7654688.0571311.5224694.6261308.909 4705.711311.856
4705.8691311.8944706.477  1311.94750.1181312.305 4758.41  1312.24786.2141311.758
4801.872 1311.944810.6971311.8934814.3951311.1114818.2751310.1944824.3381309.758
4825.0441309.5634825.4091309.6314828.0531309.8144833.9241310.2474838.1311310.618
4839.0281310.7294852.1691310.9054856.743 1312.294862.8391311.0784871.4131309.009
4872.7091308.7044873.6121308.9114888.614 1311.874897.9451311.9764913.5891310.291
4918.5011312.3794923.1461312.1234925.9811311.9224940.4271310.7934945.8581311.021
4950.5231310.5944955.4191310.8974966.6981311.8354971.6531312.4294976.5281312.423
4984.5951312.0954991.7381311.6635002.0821309.7945002.5461309.6975011.7071311.279
5015.1341312.0135021.6181312.0655026.685 1312.125050.4491312.4215054.0241312.456
5068.7441312.4415113.045 1312.115135.4411311.9255145.343 1311.925167.1081311.973
5224.4351312.0555232.2041311.1295235.6261310.9335240.5841310.593 5250.221309.956
5253.2421309.7825255.7291309.9135256.2941309.761 5261.651308.7585262.0761308.675
5262.7371308.8275275.7061311.0035303.2231311.7575312.5121312.1255328.0341311.837
5335.0251311.9415339.3751311.8915341.9021311.8025370.5441310.2155378.8131308.627
 5381.67 1308.185383.0021308.3825386.1481308.927 5392.251309.858 5411.081310.833
5426.5461311.2865439.8571311.1765461.7541310.2775467.1911310.1595467.2541310.103
5468.3391310.0415479.0441309.6035492.2021310.2175496.2611310.4075499.1671310.358
5505.2371310.3285529.8221310.1685536.7461308.6445537.8791308.3215541.5261308.698
5544.2651309.0035546.476 1309.055550.9211309.4245554.9661307.3835556.4621306.751
5565.5871309.9635566.2071310.1795566.5781310.1925571.4951310.2445602.3171310.448
5614.5471310.4945622.9231309.7525625.4151309.3825627.5981309.6025634.3061310.135
 5665.79 1310.635686.9761310.9865695.5961311.2235713.1021312.092  5723.61311.947
5724.525 1311.87 5727.131311.8635748.427 1311.545754.2711310.6085755.9821310.415
 5757.081310.547 5763.331310.9615776.957 1310.985779.0021310.2425784.1561308.516
5786.608 1309.025788.7921308.4215791.4381309.1215800.2341310.6985817.8231310.813
  5842.71310.821 5853.081311.0875857.5761311.138 5869.371311.4185896.9331311.852
 5939.831312.5685949.6651312.7395959.9631312.9416015.7931313.2286025.3591312.996
6034.2681312.8266034.3261312.8256040.5161313.3796044.7471313.7766068.3651314.175
6081.463  1314.46095.9741314.309

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
3503.626     .0354976.528     .0855026.685     .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4976.5285026.685                559607.2768     521              .1        .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1312.27   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.55   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)            1312.82   Reech Len. (ft)            559.00     607.28     521.00
  Crit W.S. (ft)            1312.27   Flow Area (sq ft)          507.55      41.15    1140.03
  E.G. Slope (ft/ft)       0.015029   Area (sq ft)               507.55      41.15    1140.03
  Q Total (cfs)             9580.00   Flow (cfs)                2198.11      80.93    7300.96
  Top Width (ft)            1689.81   Top Width (ft)             801.22      46.40     842.19
  Vel Total (ft/s)             5.67   Avg. Vel. (ft/s)            4.33       1.97       6.40
  Max Chl Dpth (ft)            5.52   Hydr. Depth (ft)            0.63       0.89       1.35
  Conv. Total (cfs)         78144.6   Conv. (cfs)               17930.1      660.2    59554.3
  Length Wtd. (ft)           532.53   Wetted Per. (ft)           805.50      46.80     845.59
  Min Ch El (ft)            1309.70   Shear (lb/sq ft)            0.59       0.82       1.26
  Alpha                        1.11   Stream Power (lb/ft s)      2.56       1.62       8.10
  Frctn Loss (ft)              6.51   Cum Volume (acre-ft)       23.31       5.67      57.66
  C & E Loss (ft)              0.06   Cum SA (acres)             25.64       2.70      34.80

Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
                depth, the calculated water surface came back below critical depth.  This indicates that there is
                not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION          RIVER: Harquahala
REACH: Upper Mid Reach     RS: 18.8526

INPUT
Description: 18.8526
Station Elevation Data     num=      225
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
3737.6451308.4491753.5771308.4213770.7081307.8583782.7141307.3483791.421 1307.06
3805.5871306.1012810.9161305.7633816.5021305.8723828.0411306.1193832.9381306.184
3841.0491306.3783841.125 1306.383841.9911306.2413851.2321304.7243851.7211304.655
3852.1461304.7333868.3651306.2343869.5661306.2223918.903  1305.83932.4321305.684
3942.6491305.6913995.2021305.4364011.982 1305.294014.7561305.2534016.6861305.259
4031.651 1305.234053.9171304.9564067.702 1304.884076.1431304.8654100.2811304.875
4106.1991304.8924114.0511305.0434114.6691305.0524115.6721305.0344125.7411304.807
4133.5521304.1934134.175 1304.384134.8321304.4194138.3671304.6524146.6221305.164
4179.4591305.2364194.7691305.3064204.3121305.4144213.8421305.4294241.2151305.683
4265.1811305.0724267.8521305.0324269.393 1304.714271.4731304.2584277.581    1303
4289.2471305.0944289.9621305.208 4290.221305.2394306.0921305.0594313.0461305.332
4346.9621304.3314349.4471304.2324351.1581304.2284371.228 1304.344375.472 1303.85
4376.7221303.7194385.8651304.816 4387.061304.9324390.1681304.959 4449.411305.355
4457.525 1305.224472.1581304.8044505.8311303.9014548.2931304.0614557.1861304.124
4570.0241304.3864597.5631304.9014601.6031305.0144606.6591305.0784613.0831305.137
4628.139 1304.774666.8831303.8184687.9271304.5844688.1051304.591 4688.161304.592
4688.237 1304.594703.1681304.0764705.5441303.7984710.3761303.2494714.1711303.447
4718.7941303.9384738.7061303.5574740.5781303.5344744.2571303.7334753.7431303.562
4768.9391303.5624772.4931302.8114775.8951302.3384791.552 1304.034792.2231304.094
4792.3841304.1014816.8551304.522 4831.941304.3494839.6421304.2444841.5351304.188
4850.8811303.7434856.9161303.7564869.4941304.3314878.3511304.0734878.4511304.074
4880.9721304.1714891.8011304.6624900.2441304.794 4923.211305.1844924.1261305.192
4925.9221305.254 4943.011305.7284957.1341305.0224959.8861304.7594963.865 1304.43
 4970.461304.1154974.6131303.7864978.2811303.6654984.981 1303.914988.7021303.508
4990.7381303.4694999.1581302.2674999.7271302.1035000.6041302.208 5005.271302.891
```

5012.3871303.4455014.212 1303.655016.7811303.739 5028.891304.2215029.7461304.265
5043.861304.5885046.7521304.5935098.1291304.6455105.8221304.642 5107.16 1304.66
5171.8281304.4445176.0921304.4485179.605 1304.435181.9331304.3375195.6451303.757
5197.3271303.8145224.1441304.4415243.6181304.8855244.8811304.8965246.5051304.879
5294.9291303.7835299.6811303.5195310.133 1303.015315.1211303.3575324.6361304.061
5351.3351304.522 5358.471304.6315364.8581304.443 5401.291303.4955409.9091302.628
5410 151302.6045413.0151302.9445416.3871303.5995418.6941303.6015426.9491303.841
5430.6041303.7935446.3961303.4735452.804 1302.335453.8551302.0685465.4731303.234
5466.0061303.3195466.7141303.3385486.1261304.234 5499.981303.8395526.3371303.508
5536.682 1303.36 5545.561303.5045552.952 1304.365561.6191304.6825570.5161304.642
5574.5091304.7095639.6391304.5525642.683 1304.575656.2591304.5335660.2261304.475
5676.561 1304.435716.2271304.3095722.3651304.2295731.9751304.0545743.3821303.888
5769.9841303.308 5771.11303.0995776.8671302.1145782.8421301.1395784.2221300.834
5792.458 1303.525793.6821303.8255796.5721303.8015808.4851303.6775824.441 1303.72
5842.6471303.7615847.2421303.0285851.9961302.5945857.2381302.939 5862.021303.425
5879.3951303.7665880.5371303.7895881.2231303.7985911.7521304.1875922.1921303.864
5929.5381303.6875941.0131302.2515945.9591301.3745953.7581302.771 5962.921304.073
5991.2691304.309 5995.121304.3266020.4221304.6356025.6711304.6966026.3971304.706
6026.6041304.7096026.7731304.7096027.6071304.7226082.0541305.4656113.749 1305.65
6114.61305.6486125.5911305.6586136.5481305.6716145.6871306.0336156.8251306.269

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
3737.645	.035	4943.01	.085	5043.86	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4943.01	5043.86		533581.9578	508	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1305.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1305.67	Reach Len. (ft)	533.00	581.96	508.00
Crit W.S. (ft)	1305.11	Flow Area (sq ft)	682.43	135.32	1306.24
E.G. Slope (ft/ft)	0.010125	Area (sq ft)	682.43	135.32	1306.24
Q Total (cfs)	9580.00	Flow (cfs)	2738.20	305.07	6536.73
Top Width (ft)	1992.57	Top Width (ft)	870.99	92.97	1028.60
Vel Total (ft/s)	4.51	Avg. Vel. (ft/s)	4.01	2.25	5.00
Max Chl Dpth (ft)	4.50	Hydr. Depth (ft)	0.78	1.46	1.27
Conv. Total (cfs)	95204.6	Conv. (cfs)	27211.8	3031.7	64961.0
Length Wtd. (ft)	517.93	Wetted Per. (ft)	872.08	93.27	1030.32
Min Ch El (ft)	1302.10	Shear (lb/sq ft)	0.49	0.92	0.80
Alpha	1.07	Stream Power (lb/ft s)	1.98	2.07	4.01
Prctn Loss (ft)	7.05	Cum Volume (acre-ft)	15.67	4.44	43.03
C & E Loss (ft)	0.02	Cum SA (acres)	14.91	1.73	23.61

Warning - Divided flow compnted for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION RIVER: Harquahala
REACH: Upper Mid Reach RS: 18.7424

INPUT
Description: 18.7424
Station Elevation Data num= 168

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4053.504	1300.913	4071.806	1300.798	4099.704	1300.746	4113.457	1300.393	4138.35	1299.716
4144.33	1298.409	4145.761	1298.103	4154.103	1299.333	4154.597	1299.424	4159.088	1299.36
4190.487	1299.097	4196.854	1298.614	4200.632	1298.251	4203.915	1298.625	4210.783	1299.354
4217.521	1299.396	4224.364	1299.408	4240.467	1299.235	4253.513	1299.061	4264.489	1299.102
4271.84	1299.146	4272.61	1299.153	4290.261	1299.103	4299.82	1299.235	4323.541	1298.696
4328.826	1298.487	4360.11	1297.845	4373.213	1297.983	4392.029	1298.186	4393.277	1298.224
4395.51	1298.221	4408.417	1297.506	4409.106	1297.381	4411.688	1297.061	4412.748	1296.943
4416.463	1296.141	4419.366	1295.295	4422.207	1295.835	4431.84	1298.14	4434.715	1298.135
4448.932	1298.047	4476.628	1297.643	4493.866	1297.315	4497.912	1295.502	4499.682	1295.711
4506.09	1297.357	4525.27	1297.429	4529.586	1297.344	4532.795	1296.824	4533.306	1295.987
4542.753	1296.965	4545.909	1297.416	4574.249	1297.691	4589.705	1297.884	4603.55	1297.775
4614.99	1297.774	4634.257	1297.545	4645.824	1297.316	4670.955	1297.129	4679.811	1297.079
4688.627	1297.048	4691.246	1297.039	4693.759	1297.012	4707.163	1296.929	4713.55	1296.988
4733.399	1297.014	4748.787	1297.105	4774.267	1297.53	4797.08	1297.014	4814.621	1296.876
4832.61	1296.563	4845.079	1296.186	4845.954	1296.472	4847.707	1295.754	4849.55	1295.218
4856.096	1295.776	4858.919	1295.887	4861.481	1296.113	4883.679	1296.523	4906.313	1296.76
4951.205	1297.495	4955.71	1297.568	4988.114	1297.113	4988.968	1297.102	4989.027	1297.1
4989.477	1296.984	4999.263	1294.505	4999.698	1294.411	4999.997	1294.471	5005.149	1295.294
5009.983	1296.071	5022.19	1296.267	5041.852	1296.601	5042.388	1296.606	5055.622	1296.546
5058.271	1296.485	5065.693	1296.222	5070.349	1296.634	5076.212	1296.888	5110.217	1297.099
5115.839	1297.155	5124.933	1297.112	5150.329	1297.029	5155.638	1297.005	5172.566	1297.08
5179.958	1297.025	5219.492	1296.911	5222.681	1296.917	5235.088	1296.952	5250.426	1296.907
5261.666	1296.904	5269.451	1296.367	5279.351	1295.869	5281.604	1295.978	5288.392	1296.193
5305.775	1296.655	5309.558	1296.712	5322.96	1296.765	5353.412	1296.968	5362.9	1296.925
5426.528	1297.119	5452.216	1296.879	5482.396	1296.602	5515.361	1296.958	5528.57	1297.02
5531.182	1296.417	5536.319	1295.373	5543.06	1296.75	5544.384	1296.949	5548.356	1296.949
5573.326	1296.686	5581.07	1296.819	5594.024	1296.881	5613.252	1296.892	5635.664	1296.799
5652.354	1297.344	5657.85	1297.529	5668.972	1297.865	5679.333	1297.534	5682.53	1297.453
5688.851	1297.439	5695.295	1297.455	5706.03	1297.495	5726.188	1297.614	5759.118	1297.438
5770.048	1297.374	5772.168	1297.033	5779.675	1295.472	5784.358	1296.486	5788.293	1297.366
5818.326	1297.623	5842.08	8 1297.795	849.726	1297.558	859.014	1297.421	5885.639	1297.449
5895	1297.575	931.389	1297.615	5933.192	1297.619	5937.505	1296.769	5947.751	1294.738
5948.236	1294.806	5949.058	1294.897	5962.99	1296.759	65.818	1296.982	5976.68	1297.481
5982.728	1297.775	6017.145	1298.219	6037.354	1298.697				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4053.504	.035	4988.114	.085	5022.19	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4988.114	5022.19		586595.6793	540	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1298.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1298.60	Reach Len. (ft)	586.00	595.68	540.00
Crit W.S. (ft)	1298.07	Flow Area (sq ft)	539.10	77.87	1029.82
E.G. Slope (ft/ft)	0.019245	Area (sq ft)	539.10	77.87	1029.82
Q Total (cfs)	9580.00	Flow (cfs)	3005.74	324.67	6249.59
Top Width (ft)	1625.39	Top Width (ft)	608.02	34.08	983.29
Vel Total (ft/s)	5.82	Avg. Vel. (ft/s)	5.58	4.17	6.07
Max Chl Dpth (ft)	3.66	Hydr. Depth (ft)	0.89	2.29	1.05
Conv. Total (cfs)	69057.5	Conv. (cfs)	21666.9	2340.4	45050.2
Length Wtd. (ft)	552.75	Wetted Per. (ft)	609.79	34.55	984.57
Min Ch El (ft)	1294.41	Shear (lb/sq ft)	1.06	2.71	1.26
Alpha	1.02	Stream Power (lb/ft s)	5.92	11.29	7.63
Frctn Loss (ft)	6.50	Cum Volume (acre-ft)	8.20	3.02	29.41
C & E Loss (ft)	0.06	Cum SA (acres)	5.87	0.88	11.88

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Upper Mid Reach RS: 18.6296

INPUT
Description: 18.6296
Station Elevation Data num= 193

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4130.883	1293.589	4133.377	1293.573	4137.808	1293.359	4171.783	1292.007	4175.654	1291.994
4178.275	1291.969	4190.167	1291.881	4204.821	1291.749	4211.065	1291.538	4212.895	1291.622
4216.031	1291.547	4227.865	1290.969	4231.778	1290.776	4233.233	1290.948	4238.998	1291.637
4241.406	1291.555	4241.956	1291.543	4249.532	1291.414	4303.092	1291.583	4309.525	1291.61
4317.491	1291.661	4324.866	1290.485	4330.017	1289.822	4342.475	1291.036	4351.767	1292.127
4363.867	1292.216	4394.168	1291.996	4400.829	1291.936	4403.459	1291.949	4433.751	1292.218
4440.466	1292.239	4457.545	1292.075	4492.568	1291.851	4522.397	1291.516	4538.477	1291.404
4553.749	1291.23	4585.131	1290.807	4595.861	1290.383	4602.486	1290.066	4606.415	1290.195
4624.152	1290.819	4646.591	1290.922	4680.126	1291.129	4700.775	1291.099	4717.209	1290.954
4746.391	1291.066	4752.991	1291.232	4773.781	1291.357	4789.486	1291.089	4798.212	1290.924
4817.221	1290.696	4837.271	1290.492	4843.788	1290.454	4851.854	1290.227	4858.923	1289.876
4867.348	1289.479	4873.147	1289.125	4880.112	1288.072	4880.112	1288.054	4880.316	1288.076
4885.508	1289.077	4889.121	1289.709	4892.021	1289.586	4902.086	1289.272	4910.279	1290.172
4910.671	1290.202	4912.725	1290.162	4935.485	1289.539	4953.947	1289.247	4976.659	1288.9
4997.929	1288.737	5000.445	1287.734	5001.551	1287.207	5003.363	1287.597	5009.991	1288.874
5014.416	1288.814	5030.508	1288.565	5036.037	1287.904	5039.343	1287.516	5045.251	1287.948
5054.021	1288.855	5072.566	1288.803	5089.181	1288.862	5094.135	1288.988	5111.261	1289.656
5113.458	1289.671	5128.481	1289.535	5163.623	1289.191	5173.518	1289.161	5243.828	1289.162
5244.164	1289.162	5244.236	1289.161	5244.251	1289.161	5257.634	1288.891	5259.742	1288.962
5261.086	1288.971	5265.696	1289.055	5282.565	1288.956	5299.503	1289.289	5312.421	1289.176
5334.135	1289.079	5345.861	1290.118	5359.755	1290.017	5379.161	1289.975	5386.689	1289.56
5386.707	1289.558	5393.904	1289.116	5396.021	1288.499	5401.297	1287.619	5405.738	1288.373
5410.179	1289.036	5432.433	1289.525	5438.287	1289.644	5440.925	1289.765	5455.08	1290.44
5470.586	1290.665	5472.395	1290.737	5482.291	1290.836	5500.144	1291.155	5508.758	1290.738
5512.443	1290.737	5548.023	1291.332	5549.991	1291.086	5552.145	1291.034	5565.251	1290.852
5577.691	1290.861	5586.582	1290.582	5604.039	1289.814	5610.346	1288.865	5614.021	1288.146
5619.902	1289.047	5622.369	1289.465	5631.801	1289.749	5640.899	1289.793	5671.992	1289.959
5687.634	1290.176	5732.185	1290.27	5761.411	1290.295	5775.627	1289.956	5775.807	1289.956
5779.672	1290.057	5801.501	1290.647	5806.143	1290.627	5862.101	1290.344	5870.275	1290.472
5878.986	1290.614	5881.468	1290.163	5889.379	1289.499	5892.506	1289.829	5903.233	1290.326
5916.885	1290.352	5941.931	1290.746	5943.603	1290.779	5944.063	1290.776	5944.497	1290.743
5953.104	1289.885	5959.502	1290.432	5960.682	1290.572	5965.663	1290.608	5978	1290.716
5984.044	1289.301	5984.795	1289.177	5985.441	1289.247	6001.645	1290.464	6029.247	1290.778
6046.819	1291.003	6057.224	1290.889	6068.073	1290.636	6071.336	1290.277	6077.096	1289.839
6087.508	1290.165	6096.684	1290.705	6115.891	1290.952	6119.874	1291.204	6130.153	1291.109
6137.548	1291.103	6157.162	1290.965	6179.809	1290.796	6184.701	1289.533	6188.841	1288.591
6192.822	1289.834	6196.888	1290.84	6208.771	1290.684	6217.083	1290.473	6225.061	1290.647
6233.283	1290.915	6250.785	1290.984	6254.945	1291.018	6262.623	1291.235	6294.289	1292.018
6304.958	1292.272	6315.609	1292.316	6316.235	1292.313				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4130.883	.035	4976.659	.085	5014.418	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4976.659	5014.418		501	559.1249	525	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1291.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1291.65	Reach Len. (ft)	559.12	559.12	559.12
Crit W.S. (ft)	1291.04	Flow Area (sq ft)	384.57	103.71	1616.99
E.G. Slope (ft/ft)	0.007932	Area (sq ft)	384.57	103.71	1616.99
Q Total (cfs)	9580.00	Flow (cfs)	1531.41	314.03	7734.56
Top Width (ft)	1751.74	Top Width (ft)	463.21	37.76	1250.77
Vel Total (ft/s)	4.55	Avg. Vel. (ft/s)	3.98	3.03	4.78
Max Chl Dpth (ft)	4.11	Hydr. Depth (ft)	0.83	2.75	1.29
Conv. Total (cfs)	107566.7	Conv. (cfs)	17195.1	3526.0	86845.6
Length Wtd. (ft)	559.12	Wetted Per. (ft)	463.82	38.23	1252.65
Min Ch El (ft)	1287.21	Shear (lb/sq ft)	0.41	1.34	0.64
Alpha	1.03	Stream Power (lb/ft s)	1.63	4.07	3.06
Frctn Loss (ft)	5.40	Cum Volume (acre-ft)	3.15	1.25	14.69
C & E Loss (ft)	0.02	Cum SA (acres)			

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 18.5237

INPUT
Description: 18.5237
Station Elevation Data num= 206

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4109.8761286.881 4110.481286.8744115.0641286.9064142.8951286.9534149.8171286.358
 4151.861286.4044152.3481286.375 4152.531286.3624152.862 1286.37 4168.911286.738
4173.1091286.0054178.9991284.9664190.3711286.7814192.159  1287.14210.3291286.852
4222.3621286.7124227.9151286.5004233.9821286.2414247.2731285.6624272.853 1287.66
4273.8991287.7314299.5831285.0244306.1061288.1574307.9871288.1964309.5411288.221
4316.4241288.0464326.0291287.7724328.3481287.7434344.2711287.3764357.113 1287.12
4358.3081287.0714373.3911287.0964397.6821287.1784403.7141287.074 4432.621286.696
4443.0461286.1164444.8521285.8844451.3441286.123 4459.911286.4574472.3821286.593
4481.1211286.6674494.4261287.7764497.7461288.0224499.5761287.9874510.2291287.716
4519.5211287.6144525.6481287.1354536.5031286.2644545.3721286.1394557.4041285.804
  4566.91286.2354572.3681286.3694577.9681286.1234597.1861285.4044600.0971285.246
4605.4321284.9134612.5111283.8834618.1461284.2214631.1821285.1794661.8881285.475
4678.0771285.5874687.4071285.6324743.067 1286.014769.0581286.1094796.6111286.066
4848.125 1285.0648870.2641284.5864874.3171284.2464886.562 1283.624897.5661284.362
4900.8851284.5614906.096 1284.444933.5361284.1544935.8321284.1894962.3631284.719
4968.1811284.6464982.9221284.362 4997.571282.2714997.9221282.2244998.2011282.262
5006.3861283.353 5007.321283.2555019.827 1283.585022.6771283.7565042.0521283.948
5053.6771284.0875062.9741284.1625095.5771284.789 5099.621284.8335105.9431284.692
5139.0241283.9495162.6731283.4145171.2211283.3015192.1021282.9095195.0511282.393
5198.7541291.9285201.5271282.1945209.5631282.9365212.705 1282.895229.5461282.665
5233.8131283.1325239.6731283.6685248.9431283.8455249.8941283.841 5251.631283.809
5259.2821283.5885268.9071283.2535274.935 1283.055277.0341283.133 5282.48 1283.37
5291.2711283.5515297.1691283.0225300.0431283.0315305.1781283.2665340.2331285.051
 5367.611286.115 5374.381286.152 5411.841286.235  5411.91286.2125421.1381286.047
5478.3811286.5265484.3371286.5765505.6431285.6955518.5171285.2975536.8171283.783
5542.5911283.0015543.3251283.0225546.4021282.8775552.711 1282 745554.7031282.746
5574.2291282.4455575.6221282.4135576.2121282.3185582.8591280 8455583.0391280.913
5587.718 1283.025592.5911283.7215623.9861283.4745657 4411283.6665689.4051284.324
5732.5091284.8365734.6641284.863 5796.421284.787  5796.51284 7875796.6481284.782
5818.9281283.9095828.4371284.6435829.1641284.7025844.4611284.2995846.9851284.245
 5854.111284.1095884.4281283.7965904.4821284.9815905.2031285.0055915.6281283.293
5915.7731283.2585916.0131283.2815923.8251284.2485928.2851284.1975938.9151283.985
5943.1841284.4435945.1931284.611 5955.411284.7675961.1291285.4295970.5661286.573
5980.9891286.2585985.8691286.2425996.5231286.0916019.5831285.2366023.7081285.137
6026.7871285.1716037.7111284.0636041.7961283.544 6045.181284.237 6051.721285.153
6067.0631285.2036082.4611285.2076089.4781285.2286104.149 1285.326117 3341285.195
6125.9251285.2676139.2331285.3956172.2461285.5666179.3561285.6446182.2081285.662
6221.7061285.9366230.4481285.9936262.428  1286.36290.6481286.5826295.7771286.628
6301.5241286.6226342.9071286.707 6350.921286.782 6369.981286.9326373.3491286.958
6375.6661286.9616377.309 1286.82 6383.761286.1476388.7371286.502 6393.97 1286.86
 6410.93  1287.26432.1571287.4616459.7191287.3636468.5411287.5656496.988 1288.27
6498.6791288.286
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4109.876    .0354968.181    .0855062.974    .035
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4968.181	5062.974		690726.5636	654	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1285.66	Element			
Vel Head (ft)	0.57	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1286.23	Reach Len. (ft)	690.00	726.56	654.00
Crit W.S. (ft)	1285.55	Flow Area (sq ft)	211.94	181.17	1344.15
E.G. Slope (ft/ft)	0.011893	Area (sq ft)	211.94	181.17	1344.15
Q Total (cfs)	10000.00	Flow (cfs)	919.69	531.02	8549.30
Top Width (ft)	1277.88	Top Width (ft)	260.20	94.79	922.88
Vel Total (ft/s)	5.76	Avg. Vel. (ft/s)	4.34	2.93	6.36
Max Chl Dpth (ft)	4.81	Hydr. Depth (ft)	0.81	1.91	1.46
Conv. Total (cfs)	91698.3	Conv. (cfs)	8433.4	4869.3	78395.6
Length Wtd. (ft)	659.97	Wetted Per. (ft)	260.54	95.04	924.63
Min Ch El (ft)	1282.22	Shear (lb/sq ft)	0.60	1.42	1.08
Alpha	1.11	Stream Power (lb/ft s)	2.62	4.15	6.86
Prctn Loss (ft)	6.50	Cum Volume (acre-ft)	98.98	9.44	103.05
C & E Loss (ft)	0.06	Cum SA (acres)	72.32	4.12	78.75

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 18.3861

INPUT
Description: 18.3861
Station Elevation Data num= 183

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4350.2541280.0754352.682 1280.334361.7681280.8174368.2751281.1864371.034 1281.23
4387.0041280.3284401.9871279.552  4411.8 1279.554432.2571279.5834440.7421279.668
4452.3651279.5264467.4261279.2824471.8661278.3684474.9411277.2944477.9251277.966
4485.4381278.9364486.5431278.9634488.4071278.9124495.3411278.881 4502.811277.443
4504.0951277.1424506.9121277.5054516.8141279.2254537.5291279.1034539.4111279.106
 4540.931279.3524548.0791280.5934550.9631281.0484551.9521281.023 4565.47 1280.88
 4578.881280.2754585.9571280.1054599.7711280.0394619.6841279.9474629.9641279.869
4639.4481279.7344666.2381278.1444675.9921277.7384699.184 1278.764712.2181279.317
```

4718.3321279.5324733.0591280.0894740.5651280.079 4757.151279.7854759.9561279.014
4760.141278.9584765.946 1277.294766.0141276.761 4778.931277.6494779.3721277.686
4818.3181276.6474829.793 1278.864842.1641278.6264885.3881277.7594905.2981278.542
4908.6941278.709 4932.351278.8124936.7281278.7974974.4041278.636 4985.74 1278.59
4987.1661278.5275001.3781277.5125002.1421277.5365010.1011277.8915029.5061278.257
5033.3561278.3665034.2821278.2245040.5281277.2375045.2821277.8825050.8951278.662
5082.51278.4025132.7751278.2065173.7311278.2195208.4461278.2055224.3551277.896
5225.7921277.8685228.751 1277.965248.2911278.6535260.2751278.5995266.2261278.552
5271.3261278.5185286.9231278.4965296.7921277.9125300.8371277.5955302.4091277.634
5303.6361277.5165312.0791276.957 5314.211276.9355321.465 1277.055328.225 1277.54
5331.2161277.6515353.0381279.2065354.1781279.2955356.2911279.3355360.7371279.372
5413.7081279.8075422.3591278.8365436.0321279.7425449.3961279.7335469.7841279.527
5495.3471279.2595511.4731279.6025513.6691279.6345526.8521279.9825561.0221279.317
5566.0291279.1965570.9841278.9825585.281 1278.25596.0121277.854 5600.061277.726
5616.368 1276.435617.2111276.357 5617.71276.3455634.6251276.4025637.8361275.909
5644.0081274.7915650.6881275.9555654.9311276.7075658.4531276.2785658.8821276.243
5660.6021276.2545674.2631276.9585676.4971277.1935714.7341277.4155722.3991277.614
5730.2811277.7365766.1041277.1355773.3591277.0125773.8891276.9065781.4541275.583
5782.448 1275.915788.0731276.8545791.4751276.885 5799.411276.993 5803.241276.215
5806.5531275.5385810.8551276.6725813.2221277.3465817.6671276.902 5818.071276.665
5819.9341276.4755827.6331275.7175836.0031276.4445839.316 1276.785843.9981277.011
5851.9351277.4235855.4421277.4215883.3331277.4125895.4351276.9595909.9851276.702
5912.5191276.8085916.6891276.9875935.9141277.7555942.9991277.7975946.1561277.786
5973.2161278.1036001.0341277.9646019.2831277.9916055.8911277.6116072.0421277.759
6100.1811278.2556125.608 1278.08 6138.41277.9746143.7491277.9586154.7051278.416
6157.4121278.4796169.5541278.4366191.8131278.1986207.9311278.0286226.6151278.019
6249.1381277.8846252.6531276.9886259.4171275.4476260.8061275.9276267.8341277.547
6300.8851278.1766325.2211278.6686340.4071278.9916415.6761279.4846515.0281280.163
6528.9711280.263 6836.591280.2356569.2911280.361

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4350.254	.035	4985.74	.085	5033.356	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4985.74	5033.356		520	542.3258	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1279.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1279.68	Reach Len. (ft)	520.00	542.33	497.00
Crit W.S. (ft)	1279.03	Flow Area (sq ft)	313.05	60.75	1715.70
E.G. Slope (ft/ft)	0.008280	Area (sq ft)	313.05	60.75	1715.70
Q Total (cfs)	10000.00	Flow (cfs)	1095.43	113.58	8790.99
Top Width (ft)	1565.60	Top Width (ft)	365.95	47.62	1152.04
Vel Total (ft/s)	4.79	Avg. Vel. (ft/s)	3.50	1.87	5.12
Max Chl Dpth (ft)	4.51	Hydr. Depth (ft)	0.86	1.28	1.49
Conv. Total (cfs)	109899.4	Conv. (cfs)	12038.7	1248.2	96612.4
Length Wtd. (ft)	499.00	Wetted Per. (ft)	367.23	47.67	1154.30
Min Ch El (ft)	1277.51	Shear (lb/sq ft)	0.44	0.66	0.77
Alpha	1.07	Stream Power (lb/ft s)	1.54	1.23	3.94
Frctn Loss (ft)	5.20	Cum Volume (acre-ft)	94.82	7.43	80.08
C & E Loss (ft)	0.01	Cum SA (acres)	67.36	2.94	63.18

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 18.2834

INPUT
Description: 18.2834
Station Elevation Data num= 223

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4323.4	351277.8	584324.2	541277.8	554340.0	651277.7	874347.1	621277.5	134350.5	281277.459
4365.5	881277.2	054383.7	091276.4	954384.9	171276.4	264386.7	711276.3	524390.3	121275.925
4392.2	211275.7	13 4392.7	61275.6	044395.0	561275.3	224404.2	331274.0	464406.9	881273.655
4409.7	421273.9	554415.5	281274.6	224431.6	381275.0	714432.6	291275.0	954433.0	491275.081
4433.8	811275.0	564456.3	841274.3	534465.0	061272.2	144465.3	961272.1	384465.6	031272.168
4467.7	011272.5	734479.7	761274.7	784480.6	011275.0	174501.2	361275.1	144510.7	781275.063
4532.4	691274.6	294541.5	551274.4	864556.0	381274.4	784563.4	96 1274.2	74580.6	681274.302
4584.471	12744	590.986	1273.0	94601.9	391274.4	064606.3	561274.9	65 4609.66	1274.92
4622.3	31274.8	354632.3	181274.9	544662.5	551274.7	174664.9	741274.6	624705.0	11 1273.99
4721.8	531273.6	384733.5	051273.5	334744.3	121273.4	274760.4	381273.4	764783.1	461273.683
4788.5	91273.0	944792.6	021272.8	294794.4	06 1272.9	5 4800.42	1273.4	24815.4	731273.887
4821.0	531273.9	964825.1	361273.0	894829.2	791272.2	364832.0	171272.3	374835.6	511272.868
4844.7	761272.5	554849.8	071273.0	95 4856.5	11273.8	674880.2	16 1273.9	54892.8	521274.013
4897.5	161274.0	574941.1	721274.2	174955.2	46 1273.9	4964.755	1273.7	554973.7	891273.668
4996.1	421273.6	254996.4	721273.5	794999.1	09 1272.7	55000.84	21272.9	545008.7	271274.148
5016.7	421274.0	455017.2	491274.0	535018.5	531274.0	165027.7	371273.7	075043.4	171273.193
5044.9	291273.1	525046.4	071273.1	945051.5	151273.3	635055.6	921272.6	465059.5	83 1272.22
5067.1	831273.2	085068.8	451273.4	155071.6	841273.4	315099.4	781273.5	625117.9	581273.508
5142.3	611273.0	185145.3	491272.9	355150.3	691273.2	735153.9	651273.1	785158.8	731273.299
5161.7	11273.3	285186.4	811273.2	895194.6	871272.5	125196.3	381272.3	855202.3	621272.686
5221.9	77 1273.6	55250.7	941273.4	865291.2	931273.1	085305.9	871273.1	095318.5	631273.076
5326.6	961272.7	725338.1	16 1273.2	35344.8	24 1273.3	8 5349.9	11272.7	215352.6	841272.208
5357.2	611272.6	945363.0	811272.6	185366.9	581272.8	995371.4	791273.1	725402.1	39 1274.03
5404.1	571274.0	695404.9	021274.0	715447.0	621273.6	155480.4	131273.6	87 5486.8	81273.689
5519.7	241273.2	995523.8	13 1273.2	45524.2	491273.2	645526.5	681273.3	185534.0	54 1273.45
5542.4	191273.2	585555.0	021273.0	415555.8	471272.9	955563.8	411272.6	15 5566.5	41272.552
5596.8	861271.3	475600.7	641271.2	02 5602.0	41271.2	695625.1	541272.2	365625.7	141272.241
5644.9	961272.2	555649.4	241271.0	96 5654.5	91269.8	995660.5	07 1271.1	7 5665.18	1272.06
5669.2	221271.9	945687.2	261271.6	835708.4	991271.7	725712.5	491271.8	675718.1	531272.452
5726.2	191272.8	685738.9	111271.7	685751.3	181270.6	125755.2	321271.4	245761.0	881272.354
5796.6	261272.1	825811.6	291272.1	165831.6	041272.6	855843.8	411272.9	265856.1	841272.898
5904.9	11272.4	595911.0	581272.3	295922.3	691270.9	355922.4	241270.9	285922.4	631270.938
5929.2	921272.1	985940.9	751272.4	095945.9	981272.5	815984.2	331272.8	685991.9	911272.905
6000.8	641272.8	366035.2	151272.4	046040.6	49 1272.3	56051.8	531272.0	896057.9	781272.164

```
6096.7041272.6936117.154 1272.446127.6331272.4686152.5791272.357  6158.41270.948
6161.9551270.3426166.5291271.4526172.4831271.6076205.8371272.4136212.8361272.346
 6215.221272.417 6225.971272.7646240.0021272.9596272.0441273.0096320.0861273.101
6337.2911272.9666343.605 1272.08 6345.29 1271.886350 535 1272.246353.6881272.493
6355.7971272.4576357.0071272.2966362.4761272.1536371.6861273.1026387.0911273.315
6403.0071273.5416403.9941273.5566432.7121273.8386445.3051273.8146446.0181273.813
6447.2721273.831 6471.721274.1016476.0181274.1176509.4081274.2426522.3261274.246
6563.0611274.4336589.6451274.4586615.0781274.9076628.6041274.9896631.422 1274.63
6637.114 1273.816648.804 1274.516652.1231274.7166660.9581274.777 6665.961274.848
6690.5161274.8056726.7251275.1956728.3861275.2236734.2941276.048 6734.721276.048
6735.0361276.0576736.1481276.0746745.3651276.105

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4323.435    .0354996.142    .0855008.727    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4996.1425008.727              460463.5521     404              .1        .3
Right Levee     Station=6629.604      Elevation=1274.989

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1273.98   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.49   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)          1274.47   Reach Len. (ft)            460.00     463.55     404.00
  Crit W.S. (ft)          1273.92   Flow Area (sq ft)          124.21       7.73    1691.69
  E.G. Slope (ft/ft)     0.013429   Area (sq ft)               124.21       7.73    1691.69
  Q Total (cfs)          10000.00   Flow (cfs)                 395.52      11.87    9592.61
  Top Width (ft)          1701.93   Top Width (ft)             261.72      11.49    1428.72
  Vel Total (ft/s)           5.48   Avg. Vel. (ft/s)             3.18       1.54       5.67
  Max Chl Dpth (ft)          4.08   Hydr. Depth (ft)             0.47       0.67       1.18
  Conv. Total (cfs)       86292.3   Conv. (cfs)                3413.0      102.5    82776.8
  Length Wtd. (ft)         411.06   Wetted Per. (ft)           262.65      11.71    1430.90
  Min Ch El (ft)          1272.75   Shear (lb/sq ft)             0.40       0.55       0.99
  Alpha                      1.04   Stream Power (lb/ft s)       1.26       0.85       5.62
  Frctn Loss (ft)            4.01   Cum Volume (acre-ft)        92.21       7.00      60.64
  C & E Loss (ft)            0.05   Cum SA (acres)              63.61       2.57      48.46


Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Harquahala
REACH: Lower Mid Reach     RS: 18.1956

INPUT
Description: 18.1956
Station Elevation Data     num=      200
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4450.5281271.5994459.1591271.5754481.4671271.7764489.3651271.6064498.5511271.285
4500.4351271.1634508.4121269.737 4514.471268.6284517.5791268.7034523.9781269.012
4533.1321269.0184537.8571268.3844547.3981267.1644552.0021268.7654552.1681268.744
 4558.371266.7114562.3661267.5684571.4791269.3934587.1811270.3344588.2161270.378
4593.5141270.6594605.4851270.5724631.4281270.3774636.0321270.4664638.1591270.516
4642.9221270.477 4645.721270.4694683.1761270.1664698.1411269.9684704.2581269.748
4714.4291269.532 4735.041268.9914748.9751269.4984769.111  1270.54779.6351270.619
  4789.51270.8574796.663 1270.614801.8791270.3864821.1411269.7424836.4331269.255
4845.4631267.7194853.2081266.4254866.9221267.963 4870.861268.6014875.7261268.601
4901.7941268.6024917.5911268.6164937.299 1268.35 4960.531268.2714963.8821267.804
4969.5751268.3844971.8331268.7454979.9661268.7444993.0281268.636 4994.581268.619
5000.0961267.1785001.7441267.0635003.6041267.8915010.9821268.9185011.7551269.064
5013.9351269.1485017.6131269.2225023.9641268.6895024.3481268.6675024.3961268.661
5025.2931268.6995031.3911269.0325034.1541268.982 5061.151268.4345062.7261268.493
5076.2221268.9395080.9791269.1265095.6461269.8035136.9451270.0965157.1881270.166
5170.2721269.6915184.2551269.0525188.8451268.1095191.717 1267.265197.0851268.272
5200.3521269.1515205.1911268.3155207.2831268.1385224.1121268.3655227.4991267.946
5233.2961267.5335237.3081267.8385241.3331268.548 5254.151268.6585261.3921268.544
5273.6671268.8895298.7331269.2425301.2631269.2885326.8971269.2065344.1131269.198
5358.4391269.2395273.8441269.1555407.3541269.2745416.333 1268.885419.141 1268.66
5422.3951268.9935429.0921269.2645445.1361269.2725461.823 1269.345492.894 1269.39
5501.8061269.4395540.4581270.0395567.6521270.5185579.3581270.597 5585.561270.614
5612.9421270.5825625.1741270.635 5640.871270.2585673.8461269.3745699.8431268.433
5710.6541267.9495722.3461268.2235734.7351268.5135744.073 1268.565754.0861268.469
5761.0421268.5045762.9351268.0995771.6061266.5385775.1221267.1425779.0791267.909
5792.8071267.8415801.0921267.7645810.9411267.077 5824.341266.2385827.7031267.191
  5831.31268.1025837.072 1267.765850.2021267.4825851.1841267.5995859.8021268.631
5886.8291268.7265961.0171269.1566013.3141268.1586016.7411268.086 6019.01 1268.07
 6026.761267.8346035.3331268.0926045.0351268.3056061.1841268.5316067.2531268.647
6075.5151268.4496098.4071267.6366104.9351267.2736107.6021267.0296115.2631267.781
6117.6581268.0516121.479 1268.046132.3881268.3246135.9781268.2426147.6511267.894
6156.4691267.6836159.4031267.1716163.5251266.4876169.1941267.2476173.7851267.916
6181.7491267.7336192.6691267.6236195.2191267.4416202.6771267.0426207.7851267.712
6208.7351267.9726210.4741267.9656216.8951267.9466247.0531268.3986264.9041269.012
6280.8271268.8426320.6741268.643 6330.161268.7196356.5661269.0256371.7951269.234
6394.8891269.4896403.8651269.5616428.6731269.956 6484.331270.043 6500.131269.987
6511.3241270.0226563.0461270.2156565.6741270.2856571.2691268.9116571.7371268.841
6572.0941268.9246580.4681270.3616591.7451270.3756616.5651270.6116618.2411270.627
6619.0291270.6376627.4251270.5616629.6821270.5456637.0811270.6996644.836 1270.91
6659.7811271.1896674.2011271.7016690.0961271.8646710.9751272.1536737.3111272.406

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4450.528    .0354979.966    .0855017.613    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4979.9665017.613              511 563.677     427              .1        .3
Right Levee     Station=6565.674      Elevation=1270.285

CROSS SECTION OUTPUT     Profile #PF#1
```

W.S. Elev (ft)	1270.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1270.40	Reach Len. (ft)	511.00	563.68	427.00
Crit W.S. (ft)	1269.72	Flow Area (sq ft)	423.52	61.41	1787.58
E.G. Slope (ft/ft)	0.007411	Area (sq ft)	423.52	61.41	1787.58
Q Total (cfs)	10000.00	Flow (cfs)	1978.08	127.05	7894.87
Top Width (ft)	1745.13	Top Width (ft)	316.84	37.65	1388.64
Vel Total (ft/s)	4.40	Avg. Vel. (ft/s)	4.67	2.07	4.42
Max Chl Dpth (ft)	3.86	Hydr. Depth (ft)	1.33	1.63	1.29
Conv. Total (cfs)	116158.5	Conv. (cfs)	22977.1	1475.8	91705.6
Length Wtd. (ft)	454.22	Wetted Per. (ft)	320.51	38.10	1390.58
Min Ch El (ft)	1267.06	Shear (lb/sq ft)	0.61	0.75	0.59
Alpha	1.02	Stream Power (lb/ft s)	2.86	1.54	2.63
Frctn Loss (ft)	4.33	Cum Volume (acre-ft)	89.32	6.63	44.50
C & E Loss (ft)	0.01	Cum SA (acres)	60.55	2.31	35.39

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Marquahala
REACH: Lower Mid Reach RS: 18.0888

INPUT
Description: 18.0888
Station Elevation Data num= 216

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3806.993	1270.288	3809.288	1270.293	816.361	1270.163	828.629	1270.023	3837.821	1269.752
3845.162	1269.602	3854.823	1269.353	3862.675	1269.273	877.611	1269.022	3888.16	1268.97
3903.114	1268.955	3914.382	1268.953	3921.298	1268.862	3940.461	1268.499	3944.647	1268.402
3945.748	1268.385	3970.962	1268.158	3987.148	1267.774	002.688	1267.638	4014.148	1267.538
4025.919	1267.574	4032.081	1267.384	4037.394	1267.007	4046.829	1266.405	4055.735	1266.182
4057.316	1266.089	4061.838	1265.869	4066.338	1265.954	4086.079	1266.324	4095.217	1266.078
4106.166	1265.874	4117.557	1265.732	4120.445	1264.591	4128.911	1261.444	4141.049	1263.35
4142.563	1263.603	4146.088	1263.717	4148.326	1263.764	4151.625	1263.814	4162.773	1263.902
4166.747	1263.955	4170.681	1262.448	4173.931	1261.075	4173.961	1261.078	4176.234	1261.679
4185.697	1264.017	4200.442	1264.372	4201.29	1264.384	204.266	1264.258	4215.89	1263.708
4222.588	1263.439	4243.892	1263.949	4263.147	1264.134	4276.197	1264.008	4280.171	1264.242
4299.965	1264.474	4299.989	1264.475	4299.997	1264.475	4300.111	1264.476	4356.081	1264.877
4359.601	1264.868	4380.883	1264.424	4381.961	1264.402	4382.239	1264.44	4383.908	1264.356
4406.467	1263.776	4408.608	1263.858	4414.41	1264.174	4423.497	1264.646	4427.244	1264.826
4454.805	1265.095	4493.755	1265.532	4498.682	1265.581	4500.024	1265.599	4501.499	1265.614
4567.983	1265.293	4592.296	1265.032	4621.501	1264.923	4634.908	1264.966	4647.172	1265.155
4679.457	1265.543	4686.621	1265.615	4729.496	1265.353	4736.146	1265.486	4747.967	1264.127
4748.806	1264.042	4749.057	1264.076	4762.293	1265.924	769.699	1265.804	4788.912	1265.479
4814.364	1265.195	4815.869	1265.174	817.859	1265.148	4820.889	1265.134	4847.975	1265.014
4875.784	1265.096	4884.578	1265.052	4887.235	1264.731	4894.818	1263.783	4897.978	1264.079
4904.402	1264.498	4918.882	1264.337	4920.487	1264.315	4921.463	1264.344	4942.28	1264.422
4943.236	1264.274	4945.177	1263.843	4949.534	1263.787	4956.567	1263.894	4958.892	1264.277
4960.395	1264.274	4962.027	1264.259	4990.314	1264.082	4998.941	1262.769	4999.963	1262.501
5001.933	1262.783	5007.504	1263.845	021.476	1263.378	5023.171	1263.328	5036.359	1263.568
5063.692	1264.058	5066.544	1264.025	5090.97	1263.745	5122.915	1263.609	5138.504	1263.581
5147.163	1264.059	5159.419	1264.907	5195.87	1265.209	5209.275	1265.294	5218.013	1265.188
5261.497	1264.818	5317.558	1265.813	5320.76	1265.863	5322.358	1265.804	5355.276	1264.744
5357.364	1264.627	5368.329	1264.003	5379.855	1264.618	5387.936	1265.123	5411.915	1265.835
5424.946	1266.241	5450.68	1266.315	458.123	1266.333	5461.984	1266.355	05.076	1266.106
5535.075	1265.676	5539.70	1265.615	542.508	1265.552	5546.863	1265.697	5568.689	1264.738
5574.907	1264.474	5578.776	1263.688	5583.814	1262.747	5587.234	1263.719	5589.754	1264.419
5606.189	1264.686	5607.58	1264.695	5618.343	1261.863	5619.014	1261.702	5621.29	1262.24
5629.312	1264.344	5635.889	1264.212	5661.701	1263.981	5665.192	1263.982	5671.582	1263.821
5683.934	1263.689	5705.263	1263.505	5712.86	1263.645	717.331	1263.744	5745.896	1264.307
5761.616	1264.617	5767.028	1264.662	5772.22	1264.699	5803.959	1264.545	5831.69	1264.482
5838.698	1264.442	5850.223	1261.957	5850.997	1261.808	5861.918	1263.838	5865.042	1264.565
5870.644	1264.746	5894.082	1264.964	5903.154	1265.141	5910.312	1265.137	5917.334	1264.661
5932.393	1263.779	5942.614	1264.302	5945.056	1264.403	5947.001	1264.534	5970.769	1264.921
5987.829	1265.187	5989.91	1265.207	5991.832	1265.213	5994.243	1265.179	6030.73	1264.91
6048.673	1265.012	6101.751	1265.488	6159.616	1265.778	6161.102	1265.771	6161.615	1265.673
6168.406	1264.588	6172.536	1265.012	6182.366	1266.284	6193.539	1266.34	6241.17	1266.184
6258.451	1266.096	6263.338	1266.099	6271.187	1266.285	6275.518	1266.531	6288.869	1266.563
6365.082	1266.796	6412.668	1267.364	6427.929	1267.427	6467.178	1267.571	6473.319	1267.613
6541.033	1268.423								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
3806.993	.035	4990.31	.085	5007.504	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4990.31	5007.504		557533.7156	426	.1	.3

Right Levee Station=6159.616 Elevation=1265.778

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1265.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1266.06	Reach Len. (ft)	557.00	533.72	426.00
Crit W.S. (ft)	1265.54	Flow Area (sq ft)	847.63	41.42	1098.83
E.G. Slope (ft/ft)	0.012916	Area (sq ft)	847.63	41.42	1098.83
Q Total (cfs)	10000.00	Flow (cfs)	4058.72	146.45	5794.83
Top Width (ft)	1851.11	Top Width (ft)	854.87	17.19	979.05
Vel Total (ft/s)	5.03	Avg. Vel. (ft/s)	4.79	3.54	5.27
Max Chl Dpth (ft)	4.59	Hydr. Depth (ft)	0.99	2.41	1.12
Conv. Total (cfs)	87990.7	Conv. (cfs)	35712.9	1288.6	50989.1
Length Wtd. (ft)	502.40	Wetted Per. (ft)	857.44	17.44	980.99
Min Ch El (ft)	1262.50	Shear (lb/sq ft)	0.80	1.91	0.90
Alpha	1.01	Stream Power (lb/ft s)	3.82	6.77	4.76
Frctn Loss (ft)	4.36	Cum Volume (acre-ft)	81.87	5.97	30.36
C & E Loss (ft)	0.04	Cum SA (acres)	53.66	1.95	23.79

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 17.9877

INPUT
Description: 17.9877
Station Elevation Data num= 248

```
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 3611.911262.8963623.5131262.9173625.8021262.9233627.483 1262.913634.0151262.831
3857.8941262.3953671.2611262.4413672.1581262.4493689.3021262.2723699.1711262.227
3704.1111262.1873726.6521261.7163727.0061261.7083738.5251261.4523747.6681261.198
3753.0581260.9363768.6541260.2093771.4021260.1533782.1351259.6723785.2341259.572
3790.0191259.4843803.3651259.1563807.5491258.8973817.0111257.865  3818.11257.683
3821.767125 8.3093824.1971258.7043825.7711258.6423840.7271258.2143852.6271258.673
3864.899 1259.073882.3261258.624 3894.051258.2553898.3371258.4723909.5881259.429
3925.3431259.706 3934.351259.8893968.9171259.6553976.045 1259.593978.7471258.731
3986.4471256.3333995.6451259.2163996.0781259.3333996.677 1259.324022.4241258.954
 4023.491259.0244025.2221258.9154031.9771258.758 4036.851258.3454040.4011258.024
4059.7751259.8934062.1541260.0764063.9081260.2714065.7261260.3184085.2051260.719
4090.4231260.2054094.9961259.8764107.8661259.7024112.4861259.6654117.8011259.792
4131.9271259.8614139.8551259.7854153.0181259.8124215.2231260.2234234.0921260.294
 4250.471260.3964272.7791260.5484305.8391260.8554308.4851260.8264314.0821260.784
 4373.621260.2864378.149 1260.054382.8791259.779 4394.611260.1374396.4241260.218
4401.4841260.4884418.9471260.5174420.9371260.4954424.6871260.3524437.8111259.983
4446.7611259.8264447.3351259.9424455.9731260.2164466.7381260.1254467.1421260.115
4472.1981260.1564509.7251260.4754514.3961260.4434525.9021260.4564569.6631260.623
4587.0711260.9324606.9441261.2164611.6041261.0724628.4221260.0714642.964 1260.17
4653.7471260.2984681.9351261.0034690.155 1261.14 4693.921261.0174700.3181260.648
 4710.181260.5484718.0291260.3424730.554 1260.234771.8391260.1974780.9481260.219
4791.4221260.1544802.2741260.0414805.1471259.7674812.1031259.3124814.095 1259.41
4822.9091259.9714837.4671260.1854844.3971260.2524846.9831260.3554850.0311260.403
4860.1141260.6584868.0831260.5464869.6331260.5514880.366 1260.134896.8051259.568
4907.4731260.4074908.604 1260.574910.966 1260.524930.826 1260.374950.8011260.171
4965.364 1260.074971.2751259.0324972.3271258.8634975.7821258.9994991.9211259.797
4997.5151257.7375000.0321256.9185002.578 1257.455015.3381259.8915024.3111259.842
5036.7821259.847 5050.621259.9225064.5671260.0015089.3451260.0785093.813 1258.44
5097.3951256.9115104.5241258.5695106.8551259.1675110.1511259.1515120.3941259.364
5132.5951259.9755134.7361260.0855138.4091259.9775145.4831260.2065160.571  1261.2
5175.323  1261.45186.3221261.8725201.3871262.3995211.8121262.4255245.9831263.018
 5279.081261.9955283.1561261.8285292.536 1261.395327.0271260.1935333.0061260.245
5350.4721260.336 5357.761260.5645372.304 1260.755388.484 1260.97  5394.51260.961
5406.2981260.8695426.3321261.0555435.2571261.1155475.3261260.7255481.9551260.686
5493.5141258.432 5494.361258.2285497.2531259.1275501.1121260.6755503.3051260.636
 5506.011260.4535514.756 1259.775518.9731259.5345520.9461259.4145524.6661259.539
5529.3731259.4765532.8871259.3185540.9821258.6295543.1671258.3025552.3851260.036
5554.1561260.1885567.0571260.1665575.3331260.2555593.5021260.4095597.6921260.544
5604.7681259.7185605.5121259.657 5606.02 1259.675610.9631260.5055616.2441260.676
5619.0961260.7245624.2121260.6645634.643  1260.75658.4561260.8345667.7271260.905
5687.2341260.594 5727.881259.8825732.0591260.1045739.3561260.5645740.9911260.676
5747.2671260.8595763.1351261.3555775.6631261.4665783.9061261.4145789.9811261.398
5800.8691261.6015814.6251261.469 5815.731261.4635816.4581261.4215818.8161261.196
5824.5761260.5555825.9621260.3875831.326 1260.745840.093 1261.245864.6441261.147
5866.0771261.1455867.3071261.1455891.958 1261.145901.7461261.2035935.0381261.548
 5936.141261.6865953.2771261.6865995.5981261.8636031.704 1262.146043.9141262.238
6098.4111262.6576122.8031262.8186129.2341262.8656148.0571262.7936165.8051262.786
6171.2221262.8186178.7781262.8986186.8091263.0236193.5791262.413 6196.831262.129
6208.3131262.8976209.1421263.0276210.614 1263.086220.841 1263.616268.569 1264.16
6270.9231264.1866272.1941264.2046272.3261264.204
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
 3611.91    .0354991.921    .0855015.338    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4991.9215015.338              523584.0225     526          .1          .3
Right Levee      Station=5800.869      Elevation=1261.601
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1261.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1261.65	Reach Len. (ft)	523.00	584.02	526.00
Crit W.S. (ft)	1260.98	Flow Area (sq ft)	1746.37	70.59	684.70
E.G. Slope (ft/ft)	0.006260	Area (sq ft)	1746.37	70.59	684.70
Q Total (cfs)	10000.00	Flow (cfs)	7317.99	199.31	2482.70
Top Width (ft)	1912.87	Top Width (ft)	1251.59	23.42	637.87
Vel Total (ft/s)	4.00	Avg. Vel. (ft/s)	4.19	2.82	3.63
Max Chl Dpth (ft)	5.07	Hydr. Depth (ft)	1.40	3.01	1.07
Conv. Total (cfs)	126386.5	Conv. (cfs)	92489.6	2518.9	31378.0
Length Wtd. (ft)	525.01	Wetted Per. (ft)	1253.41	24.20	639.95
Min Ch El (ft)	1256.92	Shear (lb/sq ft)	0.54	1.14	0.42
Alpha	1.02	Stream Power (lb/ft s)	2.28	3.22	1.52
Frctn Loss (ft)	4.86	Cum Volume (acre-ft)	65.28	5.28	21.63
C & E Loss (ft)	0.02	Cum SA (acres)	40.19	1.70	15.88

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala

REACH: Lower Mid Reach RS: 17.8771

INPUT
Description: 17.8771
Station Elevation Data num= 196

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
3431.6941258.4173436.4661258.4483436.9471258.4593439.4751258.3673461.9351257.619
3472.3051256.7972501.3221254.8373526.3181253.7293531.311 1253.493532.7561253.364
3535.501 1253.263541.0011253.5773546.5211253.9623555.8791254.3693566.885 1254.62
3592.1731254.4343594.8231254.4223595.8021254.3783598.131 1254.243611.875 1253.48
3613.1611253.3653621.7021253.3993625.9171253.4653635.1761251.9473638.2111251.272
3645.4661252.1143650.4921252.8313653.8681252.8563660.8281252.8173670.7191254.208
3673.6231254.6353677.3681254.7113685.1931254.8593724.227 1255.643737.3941255.575
3756.664 1255.663788.5221255.6893806.4251255.6773847.8561255.547 3864.361255.229
3878.4921254.9523920.5281255.4113925.1461255.5013933.3961255.5393941.0741255.984
3952.0121255.9064001.3491255.5784016.1011255.4154018.0751255.3394025.0491254.736
4038.6761254.6454050.8581254.5624059.7891254.5784066.4271254.6644087.7591254.905
4136.7071255.4674139.2451255.3984143.6891254.9874151.662 1255.094185.3461255.044
4214.6741255.032  4215.61254.861 4220.581254.2734223.5371253.9214242.299 1254.94
4261.306  1255.94294.0711256.9544306.7361257.1744339.3281255.9234384.2811254.739
4402.7631254.6364405.6361254.5854408.8241254.6884421.0281255.0124443.3161255.827
4461.4321256.328 4476.16 1256.614502.0891256.6224513.0551256.7214520.4111256.819
4553.8141256.4354558.7711256.3714573.8791257.0694591.8651257.9014626.2331257.436
4650.0591257.1264657.5331257.008 4671.541256.6794697.1661256.2364714.4371253.649
4715.7991253.4274722.0691254.7134726.1321255.5924727.1671255.5524736.4081255.016
4750.7741255.5264771.8911256.3284795.8061256.0594814.7761255.8564819.8551255.819
4837.1911255.8544855.4531255.5934859.047 1255.454886.1681255.5764917.7071255.191
4925.3441255.7034956.375 1255.574973.0461255.3764991.5741255.9064994.0951255.948
4994.6681255.7454996.1051254.7884996.297 1254.665000.6041252.5755004.4451253.012
5035.1511256.1145068.8261256.844 5073.821256.9465074.4451256.9775110.8321256.601
5121.1881256.3415122.6291256.0935129.656 1255.085134.1151255.8885135.9371256.041
5145.423 1255.995152.6421255.8515160.7071254.7715165.4841253.9445176.2521255.756
5177.9461256.1345198.2531256.1045216.9121255.9955254.1591256.0635265.9241256.078
5271.9871256.0865285.1691256.0135315.5321255.773 5320.131255.5185325.3691255.058
5327.8211255.129 5333.921255.5335343.3211255.1525351.4951254.9845355.6681255.416
 5370.971256.4515377.2611256.0265380.174 1255.915390.5141256.1545395.6611256.444
5398.8321255.6275411.3041254.5265416.0311254.9545421.8481255.4615426.787 1254.65
5431.0081255.0785438.2511255.6745460.3241255.2735470.7711255.0885487.382 1255.45
5490.9361255.4885499.1721255.7265507.8011255.8975509.6461255.6485521.8031253.764
5522.1931253.8595523.4971254.0125532.8781255.5255559.1161255.614 5563.131255.603
5565.646  1255.65566.5961255.4635572.7431254.8075573.5421254.7535580.5441255.084
5592.9981255.3895607.3161255.7795618.7121256.1355631.4551256.4675640.6581256.609
5648.8831256.6355691.3671256.6335694.9521256.6565727.8831256.9585740.1321256.944
5768.9671256.8535796.0711256.8975842.7691257.4055842.7761257.4055842.8011257.406
5860.158 1257.025870.917 1257.765877.2041257.9295883.871 1257.995905.9721258.197
5913.0451258.214
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
3431.694    .0354994.095    .0855035.151    .035
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4994.095	5035.151		446560.1197	525	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1256.29	Element			
Vel Head (ft)	0.49	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1256.78	Reach Len. (ft)	446.00	560.12	525.00
Crit W.S. (ft)	1256.27	Flow Area (sq ft)	1405.69	80.04	351.27
E.G. Slope (ft/ft)	0.014728	Area (sq ft)	1405.69	80.04	351.27
Q Total (cfs)	10000.00	Flow (cfs)	8223.81	260.68	1515.51
Top Width (ft)	1764.26	Top Width (ft)	1219.86	41.06	503.34
Vel Total (ft/s)	5.44	Avg. Vel. (ft/s)	5.85	3.26	4.31
Max Chl Dpth (ft)	5.02	Hydr. Depth (ft)	1.15	1.95	0.70
Conv. Total (cfs)	82398.8	Conv. (cfs)	67763.2	2148.0	12487.6
Length Wtd. (ft)	462.23	Wetted Per. (ft)	1221.22	42.08	504.65
Min Ch El (ft)	1252.57	Shear (lb/sq ft)	1.06	1.75	0.64
Alpha	1.05	Stream Power (lb/ft s)	6.19	5.70	2.76
Frctn Loss (ft)	4.65	Cum Volume (acre-ft)	46.36	4.27	15.38
C & E Loss (ft)	0.07	Cum SA (acres)	25.36	1.27	8.99

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 17.7710

INPUT
Description: 17.7710
Station Elevation Data num= 244

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
3015.9711254.2593035.3751254.1093048.9121253.8033055.6411253.6593069.2991252.978
3086.1441252.074 3088.361251.9713101.696 1251.363108.2411251.0343113.3841250.896
3115.3321250.5023134.1741249.2473139.1611247.8073140.526  1247.6 3141.341247.431
3142.9961247.8543150.6431248.8763152.4881248.8853162.1921248.8923177.1071249.081
3184.8921249.2063187.8741249.2673193.4061249.4693213.3511249.7743213.8921249.705
3217.0051249.348 3225.421248.3793226.943  1248.23232.6341248.784  3238.41249.326
3240.8491249.3533264.9781249.3433266.9811248.9823272.0921248.0093279.0121246.691
3287.1691248.9693294.9761250.6513309.8191250.645 3316.891250.7813330.229 1251.44
3336.139 1251.563352.414 1252.023355.0071252.0023385.296 1251.55 3394.151251.556
3404.9931251.455 3422.691251.4793452.8311251.0883455.2571251.0673457.0391250.994
3486.8131250.0153491.6621250.1813499.3651250.6353513.1511250.9963514.5241251.019
3520.7191250.9623532.6421250.8563534.3231250.8583563.8251250.7423565.2851250.735
 3578.671251.0053581.715 1250.923613.7761250.6813656.552  1251.23659.7491251.212
3673.0081251.3073693.1051251.1593710.6991251.3433748.0341251.225 3786.171251.838
3788.3431251.7993807.2961251.4653819.7321251.2313820.4861251.2223823.3551250.964
3837.4171249.773 3838.841249.8153845.9871249.9473849.9291250.022  3886.31250.532
3918.1921250.5793925.2351250.6123927.4311250.5933928.8921250.6143938.0591250.769
```

3945.4951250.7593952.706 1250.463960.6321250.7963967.1551250.9873982.1231250.897
4016.1751251.1974020.3371251.2474053.4011250.821 4056.071250.801 4079.841251.106
4080.7991251.1054098.4631251.2334102.1841251.2984102.4931251.2614103.0491251.255
4135.4791250.7254149.663 1249.254152.3121249.0694156.4121249.6934157.9961249.895
4158.2161249.9264158.6251249.9494160.1861249.9864170.6681250.1044174.3571250.347
4182.3271250.709 4188.441250.9674192.1121250.934 4208.281250.9394213.9321250.727
4223.3111250.3814229.5061250.4324234.6441250.4964243.9391250.4764257.9991250.511
4264.7941250.1014269.2021249.7444273.6221249.9734280.6871250.2274296.1031250.755
4300.9311250.9114307.9781250.9074329.2361251.0584350.3861250.6144354.8461250.535
4357.8581250.4124366.5651250.1064374.0981250.0734389.0731250.3084396.5531250.396
4402.4511250.515 4416.51250.7324428.9851250.7324450.8381250.8154463.6981250.831
4476.813 1250.664480.2061250.6144490.346 1250.734494.3251250.7924524.5431251.128
4562.9531251.1454573.322 1251.174574.3871251.1774580.9361251.1544607.3531251.004
4623.9731251.0284631.5221251.1754671.3841251.3794689.1451251.3624695.5191251.294
4712.5841251.353 4770.1251.4684792.5091251.4844802.0761249.7324805.097 1249.1
4806.1761249.1894831.184 1252.544841.2381251.0644848.1371249.7064854.2841251.007
4856.8811251.5474860.8411251.554 4888.251251.7594917.8171251.5184919.2491251.504
4920.3421251.4444932.3991250.772 4935.311250.9044945.5851251.2094956.1321251.436
4970.5751251.8764974.9281251.8264980.7511251.8094994.3751251.7344999.5791250.462
5002.3541249.9025007.6461250.564 5013.021251.4375020.0421251.1525028.9231250.726
5047.007 1250.535050.6771250.4695050.9981250.418 5053.91250.0845057.824 1249.53
5060.8151249.7255070.239 1250.575075.3111249.7815079.3481249.2375080.2361249.374
5088.977 1250.575109.5881250.7835133.8791250.8535175.4181250.6035210.717 1250.45
5286.6011250.9725287.1471250.9775287.2711250.9775287.9241250.9755332.9571250.949
5337.5561249.879 5341.111248.9985347.783 1250.415349.2971250.8135359.149 1250.29
5364.7421249.9395366.1171249.9765375.6021249.9535381.9461250.4675382.9371250.587
5383.9161250.6095392.1461250.9665405.8371250.735 5410.511250.7175428.2861251.058
5429.521251.079 5430.971250.8575438.9341249.4735447.3791250.2115450.604 1250.61
5463.7781250.9985482.7971251.1965483.1761251.1965494.4521251.2545508.6191251.557
5517.321251.7035529.5041251.6835554.269 1251.955585.2251252.2975621.9631252.413
5673.9131252.5075679.1511252.5085680.0821252.5255683.3111252.4875725.2181252.055
5731.3381252.454 5735.981252.6925746.4051252.8195762.6571253.148

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
3015.971	.035	4980.751	.085	5013.02	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4980.751	5013.02		400532.6463	445	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1251.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1252.05	Reach Len. (ft)	400.00	532.65	445.00
Crit W.S. (ft)	1251.52	Flow Area (sq ft)	1893.39	21.04	569.72
E.G. Slope (ft/ft)	0.007342	Area (sq ft)	1893.39	21.04	569.72
Q Total (cfs)	10000.00	Flow (cfs)	7795.30	24.64	2180.05
Top Width (ft)	2393.31	Top Width (ft)	1836.15	30.09	527.06
Vel Total (ft/s)	4.03	Avg. Vel. (ft/s)	4.12	1.17	3.83
Max Chl Dpth (ft)	5.11	Hydr. Depth (ft)	1.03	0.70	1.08
Conv. Total (cfs)	116707.4	Conv. (cfs)	90976.9	287.6	25442.8
Length Wtd. (ft)	415.43	Wetted Per. (ft)	1838.76	30.42	528.08
Min Ch El (ft)	1249.90	Shear (lb/sq ft)	0.47	0.32	0.49
Alpha	1.01	Stream Power (lb/ft s)	1.94	0.37	1.89
Frctn Loss (ft)	3.69	Cum Volume (acre-ft)	29.47	3.62	9.83
C & E Loss (ft)	0.01	Cum SA (acres)	9.71	0.81	2.78

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Marquabala
REACH: Lower Mid Reach RS: 17.6702

INPUT
Description: 17.6702
Station Elevation Data num= 220

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2986.4731249.1572989.3551249.2072994.3821249.2243029.9811248.4083036.1431248.043									
3046.2741247.5383049.6961246.9083059.5911244.8193060.5491244.931 3068.911245.846									
3076.5331246.672 3077.521246.7333078.1691246.8083083.2961247.2893094.3421248.225									
3098.2541248.3053100.171 1248.233112.5411248.2343120.0911244.9933122.685 1243.91									
3127.3811244.7313132.2761245.3823153.6631245.8243157.311 1245.773162.6161244.775									
3165.4681244.4623170.013 1245.23 3171.081245.4053173.077 1245.423187.7261245.744									
3191.981245.8353192.4751245.8493192.758 1245.873203.4091246.7013208.0181246.883									
3231.0051247.0573263.4171247.4743284.3821247.5183341.5031247.4243344.7291247.449									
3366.9931247.5253396.938 1247.83402.6491247.8593403.282 1247.863404.0461247.866									
3423.0341247.9693450.6541247.4293452.2131247.4013454.2471247.4133461.0841247.479									
3493.241247.8273503.9371247.8913588.848 1247.823635.3881247.9213642.2471247.887									
3702.601 1247.553703.0981247.5513767.3641247.577 3781.61247.2473812.5321246.778									
3815.6881246.5493824.3411245.8493832.9681246.6063835.5091246.776 3838.581246.858									
3860.011247.1733875.8551247.419 3895.51247.7283929.4191247.9873936.7471247.939									
4018.1681247.8754023.0741247.8854068.5091247.8664070.6651247.857 4110.61 1247.82									
4154.2521247.7514180.8661247.5884189.3041247.4824236.5931246.8684245 9251246.708									
4255.891246.4844260.3751245.4454264.8251244.6934267.4981245.3044273.6171246.264									
4278.4861246.2214284.8181246.4294292.4511246.5164295.4821246.5414298.0311246.585									
4302.1861246.6854313.1611247.0564323.8781246.9744350.5681246.647 4375.351246.581									
4380.1481246.5944420.8691246.6894429.6671246.6734449.7511246.5284484 5271246.108									
4488.341246.538 4495.431247.0284505.442 1247.124518.8061247.3544524 7271247.234									
4533.5741246.9414544.6021247.2434558.216 1247.354566.1041247.3454567.6761247.303									
4571.2741247.2584581.8061247.1344591.1371247.3184594.8771247.2684595.5641247.292									
4603.4321245.459 4608.741244.4234613.0311245.4864619.2691247.2064630.174 1247.11									
4631.5411247.0524640.3941246.9494641.974 1247.01 4647.61 1246.964650.1441246.968									
4651.6611246.9574657.7261246.7724662.3051247.1414662.6681247.1564663.252 1247.16									
4683.0991247.2454702.9871247.4164704.4081247.4274705.7291247.446 4710.161247.467									
4741.2291247.4854745.9421246.6774754.0031247.2454754.4151247.3614756.1931247.376									
4793.5611247.8034798.3131247.659 4802.371247.6774805.5311247.9214807.8591247.862									
4815.1641247.9564834.4221248.0064837.9791248.0244857.8481247.6724880.859 1246.9									
4908.497 1246.89 4918.281246.9214929.0121245.9254929.7011245.8134931.6641246.062									

```
4936.514 1246.894940.6671246.8744964.5411247.0244977.0511246.862498?.7711246.677
4994.9221245.2135000.3611242.9395003.8641244.9?7 5009.621246.7025013.2531246.291
5013.7251246.2635020.6821246.9255025.7591247.2815056.9721246.0235061.4741245.815
5069.3631246.499 5069.361246.7085071.6381246.7045097.1111247.0025097.9971246.807
5105.7341245.1065111.347 1245.845117.7921246.2265122.1281245.7275129.6231245.432
5130.6291245.7025135.6571246.5315164.7411246.3645173.0591246.3215174.8591246.298
5201.9881246.0465212.638 1246.48  5218.91246.6525285.6931246.8025291.8351246.767
5335.669 1246.34 5350.661246.2195351.7761245.9875358.2751244.9455362.1471246.036
5366.0511246.7345387.3691246.4545391.1231246.3815393.4121246.2355396.6581245.934
5403.7941246.2195422.279 1246.8554431.8881247.4195445.8461247.5225463.7541247.409
5465.1131247.4015485.2431247.5425497.0651247.5235507.2151247.5835509.1081247.563
5517.3381247.5725541.3451247.5465558.7031247.6465605.475 1248.125633.7091248.223
5664.4851248.2565676.9311248.2425685.4241248.3665699.412 1248.525730.3151248.888

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
2986.473    .0354977.051    .085 5009.62    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4977.051 5009.62              558493.6868     475            .1        .3
Left Levee       Station=3098.254       Elevation=1248.305

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1248.05   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.31   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)            1248.36   Reach Len. (ft)            493.69     493.69     493.69
  Crit W.S. (ft)            1247.87   Flow Area (sq ft)         1512.49      73.08     753.71
  E.G. Slope (ft/ft)       0.010936   Area (sq ft)              1512.49      73.08     753.71
  Q Total (cfs)            10000.00   Flow (cfs)                5836.00     225.77    3938.23
  Top Width (ft)            2486.06   Top Width (ft)            1864.09      32.57     589.40
  Vel Total (ft/s)             4.27   Avg. Vel. (ft/s)             3.86       3.09       5.23
  Max Chl Dpth (ft)            4.14   Hydr. Depth (ft)             0.81       2.24       1.28
  Conv. Total (cfs)         95624.5   Conv. (cfs)               55806.4     2158.9    37659.1
  Length Wtd. (ft)           493.69   Wetted Per. (ft)          1866.78      33.27     590.33
  Min Ch El (ft)            1243.94   Shear (lb/sq ft)             0.55       1.50       0.87
  Alpha                        1.08   Stream Power (lb/ft s)       2.13       4.63       4.55
  Frctn Loss (ft)              4.56   Cum Volume (acre-ft)        19.01       2.06       6.85
  C & E Loss (ft)              0.03   Cum SA (acres)

Warning - A flow split was encountered.  The program first calculated the momentum of both channels
                below the junction.  An energy balance was performed across the junction from the stream with
                the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION            RIVER: Harquahala
REACH: Split2               RS: 17.5883

INPUT
Description: 17.5883
Station Elevation Data     num=      70
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4592.2911244.8214599.4491244.6984616.0151244.6784617.7621244.6844621.9251244.117
4630.5441242.9184635.8721243.6254638.4311244.0054661.6951243.5534667.2851243.464
4679.0351243.4814693.1551243.2214698.1711243.0854718.2351242.7254726.0451242.696
4744.716 1242.634748.6431242.6044752.7111242.6094760.3171242.5654774.323 1242.52
4802.8951242.2464805.4421242.2294808.0721242.2214843.3661242.0354869.9881241.939
4889.9311241.7464900.7641241.6924903.073 1241.764904.8141241.6914909.2481241.618
4915.544 1241.67 4925.181240.157 4926.441239.3414926.9591239.2744932.8641240.613
4940.3961242.0164957.2191242.0734964.9411242.1854969.3181242.2254985.2571242.359
4991.2951242.2434991.7681242.2464992.2751242.2354992.7381242.1025000.9521240.138
5009.4481241.8585011.5971242.2285017.7611242.2085026.8341243.1755029.2471243.534
5033.4621243.9395040.1351244.5485047.4561244.8775053.3181245.1935091.4471245.633
5093.4041245.6535098.3981245.5975122.3791245.3055135.8831244.6695139.8971244.463
 5143.751244.5075160.7441244.5985172.3771244.5575178.7941244.5475181.8321244.562
5190.355 1244.745214.4651244.7535217.9531244.7565220.1261244.7395256.6831244.581

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4592.291    .0354915.544    .0755017.761    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4915.5445017.761              439512.2301     523            .1        .3
Left Levee       Station=4638.431       Elevation=1244.005

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1243.93   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.17   Wt. n-Val.                  0.035      0.075      0.035
  E.G. Elev (ft)            1244.10   Reach Len. (ft)            439.00     512.23     523.00
  Crit W.S. (ft)            1243.12   Flow Area (sq ft)          385.10     234.31      13.46
  E.G. Slope (ft/ft)       0.004591   Area (sq ft)               385.10     234.31      13.46
  Q Total (cfs)             1970.00   Flow (cfs)                1392.14     542.93      34.93
  Top Width (ft)             391.16   Top Width (ft)             273.32     102.22      15.62
  Vel Total (ft/s)             3.11   Avg. Vel. (ft/s)             3.62       2.32       2.59
  Max Chl Dpth (ft)            4.66   Hydr. Depth (ft)             1.41       2.29       0.86
  Conv. Total (cfs)         29074.8   Conv. (cfs)               20546.4     8013.0      515.5
  Length Wtd. (ft)           468.22   Wetted Per. (ft)           273.34     103.32      15.72
  Min Ch El (ft)            1239.27   Shear (lb/sq ft)             0.40       0.65       0.25
  Alpha                        1.12   Stream Power (lb/ft s)       1.46       1.51       0.64
  Frctn Loss (ft)              4.63   Cum Volume (acre-ft)        89.72       9.04      51.27
  C & E Loss (ft)              0.03   Cum SA (acres)              38.27       3.04      22.31

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
```

than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split2 RS: 17.4913

INPUT
Description: 17.4913
Station Elevation Data num= 75

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4635.523	1240.337	4640.367	1240.404	4643.521	1240.197	4645.151	1240.198	4648.136	1240.122
4656.252	1240.168	4664.028	1239.564	4673.727	1239.547	4693.308	1238.659	4705.987	1238.786
4723.474	1238.932	4727.459	1238.533	4735.096	1237.822	4741.791	1238.203	4744.657	1238.333
4752.898	1238.283	4773.976	1238.108	4778.569	1238.101	4802.732	1238.251	4835.969	1238.133
4852.643	1238.096	4856.121	1237.854	4859.638	1237.822	4866.161	1238.059	4887.325	1237.995
4902.631	1237.951	4910.876	1234.086	4913.028	1233.182	4918.378	1236.943	4920.256	1238.573
4934.559	1238.454	4954.511	1238.272	4963.231	1238.374	4965.471	1238.416	4977.912	1238.433
4983.919	1238.317	4990.125	1238.34	4999.541	1235.307	5000.561	1234.952	5001.435	1235.126
5011.948	1237.845	5012.005	1237.845	5012.036	1237.825	5015.168	1235.021	5021.123	1238.062
5021.547	1238.282	5022.422	1238.285	5029.967	1238.318	5063.618	1238.464	5069.715	1238.508
5081.917	1239.061	5097.787	1239.217	5099.925	1239.261	5104.086	1239.331	5117.005	1239.583
5133.911	1239.556	5134.441	1239.552	5147.392	1239.453	5148.912	1239.402	5150.454	1239.35
5161.608	1239.08	5164.881	1239.084	5216.407	1239.159	5226.052	1239.252	67.123	1239.227
5289.781	1239.052	5301.327	1238.974	5326.579	1239.109	5339.411	1239.143	5347.188	1239.069
5360.667	1236.903	5378.682	1239.729	5382.283	1239.929	5389.711	1240.008	54211	1240.334

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4635.523	.035	4902.631	.035	5021.547	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4902.631	5021.547	434	500.395	490	.1	.3

Right Levee Station=5117.005 Elevation=1239.583

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1238.96	Element			
Vel Head (ft)	0.48	Wt. n-Val.	0.035	0.075	0.035
E.G. Elev (ft)	1239.44	Reach Len. (ft)	434.00	500.39	490.00
Crit W.S. (ft)	1238.96	Flow Area (sq ft)	161.10	174.62	29.98
E.G. Slope (ft/ft)	0.035197	Area (sq ft)	161.10	174.62	29.98
Q Total (cfs)	1970.00	Flow (cfs)	1003.43	813.16	153.42
Top Width (ft)	409.97	Top Width (ft)	232.86	118.92	58.19
Vel Total (ft/s)	5.39	Avg. Vel. (ft/s)	6.23	4.66	5.12
Max Chl Dpth (ft)	5.78	Hydr. Depth (ft)	0.69	1.47	0.52
Conv. Total (cfs)	10500.5	Conv. (cfs)	5348.5	4334.3	817.8
Length Wtd. (ft)	459.65	Wetted Per. (ft)	232.97	124.52	58.20
Min Ch El (ft)	1233.18	Shear (lb/sq ft)	1.52	3.08	1.13
Alpha	1.06	Stream Power (lb/ft s)	9.46	14.35	5.79
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)	86.97	6.64	51.01
C & E Loss (ft)	0.10	Cum SA (acres)	35.72	1.74	21.87

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split2 RS: 17.3965

INPUT
Description: 17.3965
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4704.153	1234.726	4714.441	1234.661	4733.241	1234.842	4754.407	1234.911	4765.241	1234.844
4771.711	1235.429	4773.615	1235.544	4779.361	1235.361	4787.659	1235.147	4791.289	1234.844
4799.198	1234.175	4811.339	1233.917	4828.011	1233.821	4833.931	1233.893	4853.781	1233.886
4862.932	1233.848	4892.086	1233.738	4905.157	1233.411	4913.672	1233.334	4920.905	1228.385
4923.327	1226.844	4933.573	1232.155	4937.652	1232.547	4941.717	1231.244	4944.734	1231.911
4950.561	1233	4952	1233.163	4964.721	1233.234	4965.737	1233.266	4966.651	1233.298
4980.537	1233.826	4983.628	1233.486	4986.906	1231.849	4999.674	1225.151	5007.28	1230.95
5012.822	1234.678	5029.784	1234.555	5046.628	1234.517	5050.411	1234.497	5053.782	1234.484
5070.705	1234.552	5121.339	1234.788	5123.224	1234.795	5148.841	1235.009	5174.561	1235.136
5192.221	1235.213	5228.739	1235.152	5252.349	1235.071	5270.913	1235.083	5278.841	1235.049
5383.813	1235.422	5386.196	1235.424	5389.477	1235.427	5391.051	1235.424	5448.827	1235.306
5464.461	1235.352	5524.782	1235.308	5529.689	1235.423	5529.751	1235.422	5531.278	1235.318
5538.479	1234.775	5540.528	1234.865	5550.005	1235.163	5552.434	1235.144	5554.256	1235.179
5615.382	1235.649	5634.826	1235.745	5648.624	1235.829				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4704.153	.035	4980.537	.035	5012.822	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4980.537	5012.822	993	1343.966	1000	.1	.3

Left Levee Station=4773.615 Elevation= 1235.54
Right Levee Station=5389.477 Elevation=1235.427

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1235.31	Element			
Vel Head (ft)	0.15	Wt. n-Val.	0.035	0.075	0.035

E.G. Elev (ft)	1235.47	Reach Len. (ft)	993.00	1343.97	1000.00
Crit W.S. (ft)	1234.07	Flow Area (sq ft)	403.84	169.76	124.03
E.G. Slope (ft/ft)	0.002550	Area (sq ft)	403.84	169.76	124.03
Q Total (cfs)	1970.00	Flow (cfs)	1369.16	465.14	135.69
Top Width (ft)	571.76	Top Width (ft)	199.30	32.28	340.18
Vel Total (ft/s)	2.82	Avg. Vel. (ft/s)	3.39	2.74	1.09
Max Chl Dpth (ft)	10.16	Hydr. Depth (ft)	2.03	5.26	0.36
Conv. Total (cfs)	39013.9	Conv. (cfs)	27114.9	9211.7	2687.3
Length Wtd. (ft)	1210.15	Wetted Per. (ft)	203.04	37.45	340.18
Min Ch El (ft)	1225.15	Shear (lb/sq ft)	0.32	0.72	0.06
Alpha	1.23	Stream Power (lb/ft s)	1.07	1.95	0.06
Frctn Loss (ft)	9.09	Cum Volume (acre-ft)	84.16	4.66	50.14
C & E Loss (ft)	0.02	Cum SA (acres)	33.56	0.87	19.63

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for edditional cross sections.

CROSS SECTION RIVER: Marquahala
REACH: Split2 RS: 17.1420

INPUT
Description: 17.1420
Station Elevation Data num= 224

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
3735.1481231.8593741.694 1231.823748.8821231.7013754.1371221.2973762.3781230.478
3762.7281230.4433764.5211230.3993774.3891230.5023776.3491230.5223777.0021230.514
3784.3681230.5683789.6571230.5493804.5391230.3443819.6971230.278 3823.061230.258
3840.0611230.049 3843.141229.9943861.0621229.9593863.5851229.9473880.4171229.722
3882.6531229.6853898.7381229.626 3901.661229.6163918.3131229.495 3939.061229.326
3942.8031229.3073945.3591229.2783963.1221229.1993965.5291229.2163978.0241229.311
3984.3531229.1473998.6231228.9574011.3931228.8884017.3681228.8424032.5631228.889
4037.1951228.8784051.3271228.6744054.6661228.6814071.5381228.7434073.0931228.797
4074.2361228.7964085.8531228.941 4088.421228.8994102.496 1228.814104.7171228.805
4121.7831229.4444124.6671229.5974139.522 1229.25 4145.371229.1714155.4331228.981
4162.3841228.9414171.6621228.9844179.2851229.0024188.2061228.9174197.1651228.877
4205.1081228.9394218.0411228.8824229.4251228.839 4242.281228.7654254.6531228.585
 4265.261228.5084278.0141228.2734286.7521228.0234295.3681227.9074302.4431227.818
 4311.611227.8154312.7781227.7854314.4831227.7924324.5541227.748 4327.28  1227.4
4333.7421227.1784341.1941227.0564349.4441227.204 4352.311227.4474357.7681227.847
4362.4591227.9314363.9341227.9754365.4081227.9874374.7981228.1224376.9961228.021
 4387.471227.7944394.2891227.1544394.439 1227.154394.578 1227.144400.9141227.257
4409.4621227.358 4412.251227.4764423.758 1227.71 4430.331227.7744441.0681227.603
 4451.221227.4594452.7651227.4194463.4361227.4194464.1241227.4254465.3951227.415
 4471.261227.4544485.3291227.309 4504.361227.135 4506.541227.0924507.0421227.085
4514.3561227.1064527.8941227.0474530.9441227.0344550.1641226.3594571.0861226.452
4575.0111226.4224592.5821226.8434594.6051226.8524594.8941226.852 4596.371226.857
4613.9121226.4814617.4241226.4334640.4511225.9834661.3781226.1294667.8051226.094
4687.7411225.9554703.4641225.6854711.0181225.6674726.8731225.2564743.9321225.025
4760.0651225.0774769.3531225.0254784.1331225.0674802.2121225.1344810.9131225.271
4823.2321225.0194833.9491224.7974845.6421224.7874860.7791225.1424884.0621225.326
4889.6611225.412 4894.321225.3994922.5791225.5264926.7121225.5554953.578 1225.75
4961.0751225.8184961.8871225.814 4962.681225.8084973.8351225.5634974.5971225.578
4990.9161225.7174990.964 1225.724991.6541225.734 4998.971225.733 5001.521225.734
5009.2931225.2715024.6561225.4975028.3971225.2915029.6461225.2475043.0481224.997
 5045.341225.0685055.4321225.0275058.0831224.9855061.0971225.0075070.0441224.828
5074.121  1224.85088.109 1224.725094.4951224.6985103.8711224.6065108.6341224.576
5115.2171224.4065123.9131224.4135128.5851224.5535137.9031224.7995147.3161225.071
5153.0351225.1845158.3781225.3085168.2151225.2075178.2721225.1765186.1831225.293
5198.5291225.4965202.6951225.5265220.4361225.8955223.8771225.9935235.7061226.304
5237.8921226.3855252.0271226.9635253.4741226.9935265.3511227.4295266.286 1227.45
5281.8071227.8185281.8561227.8195281.9111227.8195285.3751227.8765296.7971228.007
5313.1141227.9975315.9321228.0165332.1761227.9395344.9391227.9475348.7651227.929
5362.6171227.8715373.8731227.8625376.8841227.8625392.8391227.9855398.085 1228.01
5412.5091228.1715421.8051228.3875433.0291228.5965439.7431228.6335452.751 1228.63
5466.7841228.7385467.8051228.7445485.5151228.6955503.854  1228.75505.815 1228.71
5528.5231228.8285529.3681228.8375547.2561229.015 5549.471229.0495569.6921229.196
5590.626  1229.2 5596.321229.231 5614.391229.2525619.402 1229.295645.0651229.915
5650.2461229.8175654.2081229.8425666.7781229.8215668.2191229.823 5671.561229.884
5683.788 1230.065689.5211230.2455692.152 1230.285692.363 1230.28
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
3735.148    .0354374.798    .0755296.797    .035
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
      4374.7985296.797              490262.0117     645              .1       .3
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1225.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.		0.075	
E.G. Elev (ft)	1226.36	Reach Len. (ft)	0.00	0.00	0.00
Crit W.S. (ft)	1225.98	Flow Area (sq ft)		398.04	
E.G. Slope (ft/ft)	0.093425	Area (sq ft)		398.04	
Q Total (cfs)	1970.00	Flow (cfs)		1970.00	
Top Width (ft)	538.63	Top Width (ft)		538.63	
Vel Total (ft/s)	4.95	Avg. Vel. (ft/s)		4.95	
Max Chl Dpth (ft)	1.57	Hydr. Depth (ft)		0.74	
Conv. Total (cfs)	6445.2	Conv. (cfs)		6445.2	
Length Wtd. (ft)	0.00	Wetted Per. (ft)		538.71	
Min Ch El (ft)	1224.41	Shear (lb/sq ft)		4.31	
Alpha	1.00	Stream Power (lb/ft s)		21.33	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)			
C & E Loss (ft)	0.11	Cum SA (acres)			

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 17.5767

INPUT
Description: 17.5767
Station Elevation Data num= 246

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
2853.9581244.0562860.3341244.1982883.4271243.3022896.3311242.9482912.8951241.557
2915.0181241.375 2916.241241.4212923.8821241.5592932.5451241.6522935.6871241.692
2946.7551242.1722954.1281242.4512965.4941242.818 2967.481242.8752969.6331242.894
2986.8471242.9772990.6451242.6843001.5561241.4683003.6851240.8813007.075 1240.42
 3012.361240.9793021.4371241.9253034.2531241.9913041.8781242.0453067.4261242.349
3135.2691242.9283135.5381242.9193139.9851242.7683210.1561243.4153240.9951243.574
3272.7531243.578 3289.871242.6483297.2541243.5733382.8161242.9133404.998 1242.82
3411.1481242.3933418.7861241.7873422.5051242.251  3429.1 1242.623439.1891242.736
3463.4341242.9723469.1921242.9433488.4791243.0153501.7861243.0633504.8631243.074
3543.0321243.2783545.7951243.2933546.1791243.2923546.248 1243.293546.4061243.286
3548.7521243.2293579.6351242.4473581.5761242.4423582.2821242.2863588.2271241.201
 3599.08 1241.873599.9041241.7883605.7021241.7353624.6361242.7273630.4621242.757
3639.9151242.8953647.2531242.8893656.9881242.8593661.0881242.7333694.0971243.002
3731.5141243.2073763.7031243.1583852.4621242.7233891.0161242.5773925.5261242.489
3981.7891242.4224001.2061242.4154012.2371242.3214013.2581242.3224026.5761242.422
4032.7581241.9834033.658 1241.864046.7281241.9134049.5321241.9764051.835 1241.36
4057.176 1240.134059.3951240.5554065.4781242.0434081.8511241.9994083.3781241.982
4084.8121242.001 4097.881242.362 4102.111242.3274106.9041242.4524116.6371242.483
4116.7451242.483 4117.131242.4954132.7151242.9434146.5831243.4294147.6351243.455
4148.0641243.3294157.2931241.0094164.1681242.2654166.1951242.6954190.3981242.727
4200.4421242.7744228.1881242.6684245.6881242.5354249.2421242.0284253.8611241.186
4261.5821242.5964261.8711242.6534262.8571242.6514277.1121242.6284307.5661242.725
4311.5241242.7354328.9751242.6784362.8391243.2484392.7171243.6144431.8291242.259
4436.8971242.1234439.6671242.104 4454.581242.5444474.7511241.7624507.1511241.688
4513.3821241.7184554.2981242.0364603.4491242.4114645.2921242.2524656.6681242.399
4663.8561242.3624671.1811242.4744675.3381242.3914676.0311242.3124678.1431242.308
4679.4321242.1664680.1081242.3054691.3141242.9974696.1491243.1684702.7721243.092
4715.7791242.8984721.4211242.8454754.2481242.5234772.0531242.4674790.363 1242.23
4796.0931242.1644798.3561242.0944799.9011242.1094815.8711242.252  4817.41242.043
4825.5381241.3624829.9611241.6594836.3311242.1874839.2431242.4134845.9741242.802
4849.6021242.8594858.2581242.9414867.9641242.8524879.8081242.7994888.0731242.737
4898.0351242.7264922.5641242.7784951.3441242.6554951.8241242.6554952.6671242.634
4990.8221242.0074993.8411241.4045000.5361239.9165004.5391240.6435013.2861241.943
5034.3211242.1115053.6241242.2045063.7271242.1465081.3941242.2025126.1141242.105
5141.188 1242.155145.1821241.9825153.3071241.6285153.5951241.5965160.6871240.808
5161.4891240.9145169.5931241.948 5185.311242.0685186.8641242.0795187.6671242.108
5194.2931242.4445199.0061242.7555203.378 1242.765210.4771242.3445215.9461241.856
5223.7451241.999 5235.771242.384 5247.131242.4365251.193 1242.145253.9161242.286
 5259.641242.2175262.2671242.2185263.4851242.2965276.0861242.3775288.5171242.522
5289.408 1242.245295.1041241.2655298.9841242.0555302.3921242.452 5304.031242.906
5306.2151242.788 5314.641242.5315327.8511242.568 5338.141242.4735340.5641242.383
5345.3251242.2725354.6621242.5255360.3561242.9035379.4471242.8145386.9791242.884
5391.2221242.7285393.904 1242.915417.1281243.211 5438.561243.2155453.6361243.287
5472.5931243.3885484.7881243.574 5496.761243.7865511.9381243.6975531.0031243.603
5532.9191243.6025533.4771243.5175538.8671242.0625539.7471242.2645539.8631242.234
5546.492 1243.875550.4391243.9995556.4071243.9935564.2461243.4515566.2161243.343
5570.2071243.4675584.7421243.7185596.6091244.0185597.1251243.8995598.7711243.864
5610.6091243.4645612.7181243.5935619.925 1244.02  5624.21244.2435625.1661244.445
5630.9461244.2745637.559 1244.345656.1911244.2355669.6041244.0855677.4771244.118
5678.8961244.126
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
2853.958    .0354990.822    .0855034.321    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4990.8225034.321              340545.0853     555          .1          .3
Left Levee      Station= 3289.87      Elevation=1243.648
Right Levee     Station= 5496.76      Elevation=1243.786
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1243.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1243.77	Reach Len. (ft)	340.00	545.09	555.00
Crit W.S. (ft)	1243.29	Flow Area (sq ft)	1598.33	89.82	490.15
E.G. Slope (ft/ft)	0.007795	Area (sq ft)	1598.33	89.82	490.15
Q Total (cfs)	8030.00	Flow (cfs)	5860.17	223.46	1946.37
Top Width (ft)	2176.11	Top Width (ft)	1683.67	43.50	448.94
Vel Total (ft/s)	3.69	Avg. Vel. (ft/s)	3.67	2.49	3.97
Max Chl Dpth (ft)	3.63	Hydr. Depth (ft)	0.95	2.06	1.09
Conv. Total (cfs)	90953.2	Conv. (cfs)	66376.2	2531.0	22045.9
Length Wtd. (ft)	420.09	Wetted Per. (ft)	1685.35	43.88	449.48
Min Ch El (ft)	1239.92	Shear (lb/sq ft)	0.46	1.00	0.53
Alpha	1.02	Stream Power (lb/ft s)	1.69	2.48	2.11
Frctn Loss (ft)	3.54	Cum Volume (acre-ft)	136.80	6.44	95.10
C & E Loss (ft)	0.00	Cum SA (acres)	95.63	2.67	55.03

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 17.4734

INPUT
Description: 17.4734
Station Elevation Data num= 262

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2914.007	1240.478	2971.118	1240.073	2987.501	1239.974	3008.607	1239.917	3052.929	1239.813
3126.671	1239.593	3131.962	1239.578	3167.122	1239.746	3180.307	1239.544	3213.959	1239.2
3225.896	1239.092	3268.031	1238.971	3270.705	1238.953	3272.302	1238.954	3282.333	1238.708
3286.234	1238.085	3288.327	1237.837	3296.506	1238.441	3303.607	1238.981	3321.973	1238.798
3339.621	1238.684	3349.73	1238.683	360.729	1238.77	3365.181	1237.832	3366.894	1237.357
3373.278	1238.133	3376.768	1238.427	3380.792	1238.534	3385.398	1238.623	3390.555	1238.727
3396.454	1238.919	3410.808	1238.937	3441.611	1238.958	3447.506	1238.902	3458.872	1238.848
3504.271	1238.697	3504.445	1238.696	3504.611	1238.695	3519.493	1239.056	3531.465	1239.572
3534.615	1238.743	3542.249	1237.391	3545.144	1238.077	3555.536	1239.241	3563.071	1239.351
3575.376	1239.582	3577.432	1239.652	3580.688	1239.699	3602.554	1239.697	3603.708	1239.68
3605.539	1239.381	3608.751	1238.846	3611.942	1239.242	3613.921	1239.593	3619.287	1239.638
3620.038	1239.629	3620.818	1239.571	3625.122	1239.054	3630.665	1239.373	3636.373	1239.879
3648.112	1239.843	3665.103	1239.862	3670.831	1239.798	3672.809	1239.747	3677.286	1239.76
3691.409	1239.756	3696.141	1239.254	3697.447	1239.221	3701.826	1239.813	3702.915	1239.922
3708.094	1240.007	3724.898	1240.203	3729.949	1239.826	3730.899	1239.778	3731.607	1239.83
3741.131	1240.125	3766.883	1239.968	3776.921	1239.833	3787.323	1239.776	3792.131	1239.784
3817.991	1239.853	3864.575	1239.843	3888.843	1239.832	3892.306	1239.763	3901.754	1239.714
3908.775	1239.694	3914.866	1237.785	3915.186	1237.683	3915.534	1237.767	3924.042	1239.648
3972.138	1239.652	3979.391	1239.653	3984.124	1239.669	3986.515	1239.682	4017.747	1239.745
4027.938	1239.228	4030.547	1239.118	4040.346	1238.705	4040.503	1238.703	4048.991	1239.501
4050.801	1239.651	4061.029	1239.823	4089.468	1240.083	4139.849	1239.464	4150.928	1239.247
4157.796	1239.212	4165.161	1239.114	4181.895	1239.135	4241.958	1239.274	4252.092	1239.1
4273.905	1238.615	4287.404	1238.795	4291.517	1238.807	4294.445	1238.314	4298.074	1237.667
4300.515	1238.008	4306.978	1239.136	4328.909	1239.087	4340.231	1239.026	4359.292	1239.16
4369.183	1239.264	4376.672	1239.134	4417.373	1238.257	4423.899	1239.151	4426.061	1239.329
4467.411	1239.597	4481.11	1239.594	4496.708	1239.223	4513.529	1238.934	4532.708	1239.032
4545.227	1239.181	4549.414	1239.455	4551.168	1238.147	4556.207	1238.404	4562.971	1238.873
4568.389	1238.876	4586.966	1238.845	4588.182	1238.995	4590.117	1239.087	4600.627	1239.523
4606.804	1239.714	4612.772	1239.834	4615.804	1239.987	4619.407	1240.231	4633.906	1240.347
4652.734	1240.252	4672.734	1240.122	4700.216	1239.539	4704.021	1239.544	4718.169	1240.316
4726.781	1240.742	4731.025	1240.879	4743.563	1241.147	4749.518	1240.989	4755.922	1240.647
4769.807	1239.921	4772.635	1239.885	4794.024	1239.349	4798.029	1239.021	4810.202	1238.762
4817.407	1238.547	4829.114	1238.785	4849.124	1239.121	4889.663	1239.028	4904.749	1239.077
4913.534	1239.074	4922.424	1239.045	4923.626	1238.984	4931.395	1238.866	4935.588	1239.054
4940.381	1239.478	4961.492	1239.142	4964.775	1239.086	4965.939	1239.081	4967.488	1239.083
4990.898	1238.902	4995.246	1237.557	4999.542	1236.374	5008.443	1238.025	5010.081	1238.403
5012.035	1238.355	5019.935	1238.268	5025.178	1238.450	5034.737	1238.351	5038.051	1238.321
5042.615	1238.072	5045.759	1238.018	5056.186	1238.107	5057.375	1238.078	5063.966	1236.665
5065.529	1236.358	5067.517	1236.667	5077.531	1237.848	5085.291	1238.057	5099.625	1238.18
5102.372	1238.231	5103.928	1238.262	5105.382	1238.329	5110.353	1238.29	5124.461	1238.392
5132.353	1238.599	5138.891	1238.669	5145.994	1239.184	5171.465	1238.685	5175.909	1238.636
5177.141	1238.986	5182.372	1238.248	5184.518	1238.319	5194.702	1239.085	5206.787	1238.743
5215.398	1238.592	5221.331	1237.891	5227.512	1236.897	5231.571	1237.854	5235.27	1238.61
5252.639	1238.793	5280.747	1238.952	5295.172	1238.769	5309.906	1238.505	5312.405	1238.171
5315.959	1237.628	5320.378	1238.374	5323.43	1238.846	5330.075	1238.684	5337.027	1238.551
5345.373	1238.495	5348.418	1238.486	5350.557	1238.125	5358.632	1236.996	5362.097	1237.636
5367.911	1238.628	5373.353	1238.771	5394.49	1238.995	5403.166	1238.904	5407.869	1238.861
5417.167	1239.058	5424.671	1239.091	5440.227	1239.143	5448.657	1239.356	5461.787	1238.219
5463.108	1238.087	5465.024	1238.295	5470.716	1238.951	5473.593	1239.375	5493.854	1239.439
5507.882	1239.459	5541.609	1239.404	5547.203	1239.411	5549.688	1239.416	5551.801	1239.387
5581.611	1239.197	5587.216	1238.485	5590.834	1238.007	5595.809	1238.663	5598.881	1239.218
5619.529	1239.266	5623.511	1239.293	5642.978	1239.538	5661.068	1239.744	5695.715	1240.517
5702.6	1240.471	5722.035	1240.33						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
2914.007	.035	4967.488	.085	5025.178	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4967.488	5025.178	491	598.031	608	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1239.98	Element			
Vel Head (ft)	0.24	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1240.22	Reach Len. (ft)	491.00	598.03	608.00
Crit W.S. (ft)		Flow Area (sq ft)	1250.17	96.40	781.99
E.G. Slope (ft/ft)	0.009194	Area (sq ft)	1250.17	96.40	781.99
Q Total (cfs)	8030.00	Flow (cfs)	4195.57	226.09	3608.34
Top Width (ft)	2497.69	Top Width (ft)	1793.44	57.69	646.56
Vel Total (ft/s)	3.77	Avg. Vel (ft/s)	3.36	2.35	4.61
Max Chl Dpth (ft)	3.62	Hydr. Depth (ft)	0.70	1.67	1.21
Conv. Total (cfs)	83746.4	Conv. (cfs)	43756.4	2357.9	37632.1
Length Wtd. (ft)	542.64	Wetted Per. (ft)	1795.60	58.25	647.97
Min Ch El (ft)	1236.37	Shear (lb/sq ft)	0.40	0.95	0.69
Alpha	1.10	Stream Power (lb/ft s)	1.34	2.23	3.20
Frctn Loss (ft)	3.97	Cum Volume (acre-ft)	125.69	5.27	87.00
C & E Loss (ft)	0.02	Cum SA (acres)	82.06	2.04	48.05

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 17.3602

INPUT
Description: 17.3602
Station Elevation Data num= 277

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2783.031	1236.298	2790.058	1236.42	2798.83	1236.382	2808.771	1236.421	2815.866	1236.397
2828.161	1236.563	2830.845	1236.525	2836.386	1236.431	2886.149	1235.667	2898.303	1235.601

2908.0471235.5532957.7921235.4742966.0791235.1922974.7281234.855 2979.271234.902
2988.7151235.661 2989.41235.6732991.0861235.6823010.667 1235.783022.4411235.698
3036.0191235.3653052.8441235.0813060.6551234.3583061.314 1234.293062.4381234.271
3081.2721233.8813082.924 1233.93089.1761234.0213111.2761234.5283119.7171234.837
3140.3911234.9343142.0221234.9753152.1781235.2083173.4491235.1823174.761 1235.17
3180.0861235.2813210.5281235.925 3215.58 1235.773221.6831235.5943240.2231235.019
3245.1351233.2033246.0311232.8263248.1551233.458 32531235.0353257.6111234.902
3268.3511234.6443298.9691234.837 3303.511235.0533315.4371235.1413352.3781235.231
3385.6131235.1373421.7281235.114 3425.321235.1483433.4451235.1123440.2061235.127
3441.41235.2163443.3141235.208 3449.41235.1523456.6561235.2433463.029 1235.26
3464.7181235.2453483.2441235.1353497.5511235.0593499.5191235.0663501.0711234.773
3504.4881234.339 3506.031234.5893512.5891235.3673522.1351235.7333526.6221235.908
3531.4431233.7053533.088 1233.053533.8751233.2513542.7281235.5943551.0631235.529
3561.7871235.5013568.0461235.5443581.5141235.7073592.9721235.8213616.6171235.853
3625.841235.805 3647.68 1235.853658.0851235.8193670.8721235.7843715.498 1235.76
3754.3711235.6243756.7011235.6173758.6721235.5923810.6971234.8773811.1571234.814
3817.088 1234.113819.2191234.3443827.5371234.8643829.9341234.8853848.5491235.137
3864.8981235.4073896.1271234.704 3898.211234.6573898.981 1234.663931.9071234.682
3940.2771234.785 3956.511234.8093960.745 1234 33962.7281233.9753966.788 1234.34
3974.6561234.7654007.152 1234.87 4024.171235.0354051.3891235.0044075.0141234.928
4088.4561234.8474100.8261234.8564111.0421234.845 4119.971234.6994122.4131234.704
4124.8581234.1144128.813 1233.314135.0931234.4754139.4411235.1824157.2481235.065
4174.0221234.9644182.7481234.9184191.3621235.4744198.7921235.8744223.1321236.026
4230.1491236.0254231.5361236.0574232.584 1236 064251.8221235.9924280.3731235.917
4303.3541235.764 4318.6 1235.654319.9881235.558 4328.91234.8064329.4261234.835
4337.1951235.2134341.8921235.4764355.3951235.3714356.2281235.2684362.2591235.064
4374.7031235.1574380.7911235.2224399.2861235.4784413.3991235.6574417.318 1235.7
4430.7611235.772 4479.791236.1674500.4161236.1534516.8091236.1534551.9821236.034
4575.2271236.1654590.0191236.2674667.2051236.1994679.0251236.1594705.5681236.401
4716.536 1236.464724.619 1236.24765.5471234.7554780.6181234.783 4785.131234.769
4800.0771235.0564813.783 1235 534826.7031235.6254850.4881235.739 4854.971235.707
4878.1621235.364 4882.81234.751 4889.451233.6244896.6181234.1874905.2521234.565
4918.4061234.5914921.7541234.6054930.8911234.1624947.3731234.4724957.5721234.362
4965.8111234.5474979.0121234.7694980.4221234.8274991.9191234.6324993.2111234.611
4993.3641234.6134993.8111234.5275000.9981233.2655001.9731233.4255008.0491234.647
5011.9381233.9075013.8041233.4975016.6241234.3835019.2241234.9925025.9881234.969
5029.3041234.926 5031.651234.636 5037.791234.0725042.5971234.6265044.8391234.881
5048.1981234.7695052.5561233.9675061.8831234.8565063.4261234.8845063.9741234.893
5065.8831234.7795075.8041234.4155078.7261234.4615085.253 1235.125095.3871234.915
5095.6671234.9085095.8131234.9045102.9131234.652 5104.481234.3155108.3811233.071
5110.4411233.4315113.4721233.519 5125.921233.832 5126.81233.6745127.9471233.834
5135.6381234.8775150.947 1234.675166.0451234.5225168.1861234.4385172.9711234.328
5186.6161234.0825196.1691235.0455201.6021235.6415207.6991235.8275218.2991236.004
5226.3591235.9595235.4871236.0055245.7911235.482 5263.061234.761 5275.671234.894
5296.261234.9345330.8051234.4695363.215 1234.185376.6011234.5995376.7881234.602
5396.4921234.5895425.5111234.7975438.5011234.6415454.9491234.6595462.4451234.684
5474.9081234.6465485.9011234.4345503.4751234.6985531.8181234.873 5548.821234.944
5562.6391234.9955575.7111234.681 5591.02 1234.545594.6071234.2295597.5981233.896
5603.2861234.4325608.3631234.7755624.3581235.1885641.1991235.5485657.7261235.646
5708.8211235.9145721.5331235.9875731.6821236.0915740.7462236.2545769.2642236.504
5779.821236.576 5783.951236.5695832.3641236.4425854.3481236.6145883.4661236.695
5919.8571236.9255920.5081236.9315920.655 1236.925921.5471236.9285949.9341236.995
5960.2431237.0755987.9311237.4286011.0741237.6376053.1261237.8936062.7681237.988
6066.8751238.0636073.7851238.148

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
2783.03	.035	4980.422	.035	5019.224	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4980.4	5019.224		401	480.8423	450	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1236.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1236.23	Reach Len. (ft)	401.00	480.84	450.00
Crit W.S. (ft)		Flow Area (sq ft)	1585.02	69.59	848.39
E.G. Slope (ft/ft)	0.006063	Area (sq ft)	1585.02	69.59	848.39
Q Total (cfs)	8030.00	Flow (cfs)	4735.39	138.47	3156.14
Top Width (ft)	2621.73	Top Width (ft)	1873.07	38.80	709.86
Vel Total (ft/s)	3.21	Avg. Vel. (ft/s)	2.99	1.99	3.72
Max Chl Dpth (ft)	3.24	Hydr. Depth (ft)	0.85	1.79	1.20
Conv. Total (cfs)	103123.0	Conv. (cfs)	60812.9	1778.2	40531.9
Length Wtd. (ft)	419.65	Wetted Per. (ft)	1875.84	39.38	710.70
Min Ch El (ft)	1233.27	Shear (lb/sq ft)	0.32	0.67	0.45
Alpha	1.05	Stream Power (lb/ft s)	0.96	1.33	1.68
Frctn Loss (ft)	3.36	Cum Volume (acre-ft)	109.71	4.13	75.62
C & E Loss (ft)	0.01	Cum SA (acres)	61.39	1.37	38.58

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 17.2691

INPUT
Description: 17.2691
Station Elevation Data num= 284

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2916.366	1234.355	2917.814	1234.464	2921.024	1234.457	2924.278	1234.472	2938.071	1234.273
2955.45	1234.033	2968.952	1233.928	2973.369	1233.733	2979.823	1233.13	3001.863	1233.014
3029.152	1233.006	3061.469	1232.689	3062.857	1232.672	3064.864	1232.659	3130.551	1232.028
3160.306	1231.842	3163.337	1231.829	3205.497	1231.807	3216.344	1231.774	3221.87	1229.342
3223.086	1228.885	3227.888	1230.488	3229.971	1231.105	3230.289	1231.225	3252.583	1231.408
3273.423	1231.558	3313.929	1231.734	3315.101	1231.743	3315.527	1231.69	3320.69	1231.054
3346.753	1231.873	350.051	1231.973	352.766	1231.953	366.743	1231.732	3378.979	1231.779
3397.382	1231.502	3403.543	1231.324	3410.134	1230.159	3410.199	1230.154	3410.286	1230.166
3421.301	1231.601	3427.326	1231.734	3437.651	1231.936	3439.509	1232.026	3442.725	1232.057

```
3461.619 1232.043490.6051231.9533493.7941231.8633501.4781231.6753523.8681231 852
3550.8261232.0793561.2431232.0153572.594 1231.963573.0841231.9543589.6811231.831
3635.9071231.7943671.4891232.0383687.9071232.1813693.1811232.2493705.0341232.149
3785.8751232.0063793.5841231.9863787.006 1231.993818.7871231.9673855.3211231.969
3883.911 1231.763892.4211231.6823914.5191231.5943917.7011231.5723920.2291231.584
3921.434 1231.593957.6581231.6853979.7781231.4073990.7061231.3673997.7111231.123
4002.4691230.9164007.1871231.2814010.8741231.5024013.8091231.5274057.3861231.571
4098.9781231.5694103.412 1231.594111.8251231.628 4130.531231.7064131.9311231.435
4139.0361230.7294143.0831231.3184146.3081231.7494170.4681231.8574182.7531231.873
 4184.691231.5854192.5461230.7744201.8831231.4094206.487 1231.724227.9921231.482
  4240.11231.4724252.1791231.4484282.1331231.6624283.1961231.4444287.7491230.682
 4295.341231.6884296.0021231.7664296.5761231.7164301.2551231.4094313.6111231.852
4313.8621231.8674346.9551232.1324363.5551232.1994430.5241232.1954459.1541232.441
4461.6851232.5234503.4161232.7314520.491 1232.73 4531.511232.6614565.5531232.868
4568.0161232.9314600.3461233.0724605.6461233.0944619.0341232.9994641.8021233.439
4664.8611232.7754670.5411232.3924674.1411232.2564682.8551232.2064711.4551231.929
 4714.591231.8624725.0381231.6574747.7141231.5954747.7921231.5954747 9321231.601
4770.1291232.8844788.6871232.5594792.3351232.4914801.6311232.1674810.5631231.839
 4813.941231.8314815.5591231.8264816.5761231.8234842.0181231 7624842 2451231.761
4842.2731231.7624842.3031231.7624858.854 1232.19 4882.771232.3624891.8091232.405
4896.6941232.4174900.6081232.2534928.6681231.2944930.7781231.3874942.5451231.735
4953.517 1231.694967.0921231.5094971.8081230.5054975.8791229.6724981.3241231.157
4985.4111231.9844989.9031231.854 4994.571231.6684998.609 1230.444999.211 1230.19
4999.968 1230.355007.8951231.848  5012.71232.0585016.6161231.6365022.8351231.542
5028.187 1231.985035.5151232.4285042.6411232.3365046.0181232.2325048.9831231.425
5054.6771229.5955058.8211230.5465065.5721232.1665083.2381232.1645098.6131232.121
5107.2841232.0935124.861  1232.15129.8281231.4415132.0441230.9595138.3151231.609
5141.5711231.9355144.5061231.9645147.3431231.8395147.5921232.1725168.0691232.389
5168.746 1232.375169.2151232.3785171.209 1232.355185.5351232.1785189.2241232.085
 5196.441230.4165196.7471230.3585204.7081231.1255206.9771231.6375213.9831231.063
 5216.931230.8335223.905  1231.7    5225 1231.875225.4911231.9495225.9311231.955
5233.6691232.4415249.942 1232.235260.0241232.1025265.6971231.1265266.2081231.071
5270.5431231.1615275.3591231.5345276.3581231.1265280.7961230.3165285.0771230.814
 5292.451231.9315296.6471232.0565299.8291232.0485319.6441231.9245321.0721231.929
 5322.561231.7275330.8691230.6415333.8811231.1975335.553 1231.695348.8321231.551
5351.5711231.5785359.9811231.5245371.1691231.4675374.1841230.9595379.2631230.115
5387.5681231.0125386.2491231.0965388.9281231.1035429.1171231.5775456.9881231.384
5460.6521231.3975479.2521231.4955482.7631231.4485489.4431231.4855506.562 1231.57
5511.2991231.0085513.0081230.766 5516.081231.2615520.4911231.878 5525.081231.969
5527.0031232.0345533.0781230.9655533.5471230.8695534.5041230.9375541.3081231.467
5551.2681231.482 5576.591231.655 5581.771231.7545589.077 1231.895594.7381231.918
5604.9471231.9555617.1791231.8825640.9671231.8655646.0081231.895 5679.551232.364
5708.776 1232.56 5753.921232.8455761.2181232.8675763.3611232.886 5796.71 1233.04
5804.6531233.2395805.9551233.1525826.2371233.3915839.4371233.5425869.2661233.733
5873.7651233.729 5874.691233.7375881.1571233.6935887.703 1233.925903.0661234.331
5912.9851234.4525918.2091234.4165921.5971234.4315935.7171234.4815947.4141234.466
5952.5651234.4025957.3631233.9955960.8511233.7765972.5921232.4875978.354 1232.85
5987.8961233.8996000.2171234.0876022.3041234.2586024.5031234.272
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
2916.366	.0354985	411	.085	5012.7	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4985.411	5012.7		423503.3689	495	.1	.3

Right Levee Station=5935.717 Elevation=1234.481

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1232.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1232.86	Reach Len. (ft)	423.00	503.37	495.00
Crit W.S. (ft)	1232.45	Flow Area (sq ft)	1359.36	31.54	626.57
E.G. Slope (ft/ft)	0.011518	Area (sq ft)	1359.36	31.54	626.57
Q Total (cfs)	8030.00	Flow (cfs)	5328.67	64.54	2636.79
Top Width (ft)	2436.14	Top Width (ft)	1705.45	27.29	703.41
Vel Total (ft/s)	3.98	Avg. Vel. (ft/s)	3.92	2.05	4.21
Max Chl Dpth (ft)	3.72	Hydr. Depth (ft)	0.80	1.16	0.89
Conv. Total (cfs)	74820.4	Conv. (cfs)	49650.5	601.3	24568.6
Length Wtd. (ft)	451.84	Wetted Per. (ft)	1707.70	27.69	705.90
Min Ch El (ft)	1230.19	Shear (lb/sq ft)	0.57	0.82	0.64
Alpha	1.01	Stream Power (lb/ft s)	2.24	1.68	2.69
Frctn Loss (ft)	3.15	Cum Volume (acre-ft)	96.16	3.58	68.00
C & E Loss (ft)	0.03	Cum SA (acres)	44.92	1.01	31.28

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 17.1738

INPUT
Description: 17.1738
Station Elevation Data num= 283

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
3036.5241230.613 3069.991230.5853075.7921230.5573076.8061230.5543077.8031230.546
3086.0321230.5183136.4561230.297 3147.961230.1953172.0371230.0573192.9221230.079
3210.7971229.5683226.4551229.135 3235.091229.3563252.1691229.4173276.9311228.912
3292.0521228.837 3293.741228.8393298.7971228.2933308.6671227.2563311.6411227.594
3317.986 1228.67 3320.051228.6533355.2561229.1143357.5351229.1383357.8131229.145
3358.0071229.1493358.1461229.1543358.3491229.1513359.7921229.1263382.8541228.711
3388.8111228.6063390.8981228.2173395.2461227.2683399.8651228.0243403.3741228.383
3409.7371228.3383427.4611228.3393430.0771227.4373432.9151226.8823438.3541227.695
3442.6691228.3023444.764 1228.363454.2921228.8083478.2041228.8023485.0071228.761
3489.4341228.7423496.698 1228.723512.3881228.7283545.8161228.8953568.125 1228.85
3580.3361228.8383597.2911228.5173613.824 1228.493618.4511228.4673621.1811227.923
3626.4231226.8873629.8911227.5793634.1351228.7053642.3321228.7443693.1961229.002
```

```
  3727.31228.8413764.5551228.6923794.5261228.6043836.4241228.5813853.7711228.598
3865.3231228.6493942.8571228.6973946.394 1228.684017.7031228.4564027.5861228.482
4058.471 1228.564070.7181228.4864098.7871228.1454126.775 1229.15  4144.31228.188
4159.1111228.0234168.8821227.9394193.1531227.0614197.5041227.2864200.4571227.565
4207.8381228.436 4216.931228.7134223.2381228.8924238.6961229.0314241.8661229.093
4244.0211228.868 4253.471227.866 4263.231227.8674272.8921227.8144278.6031227.047
4279.1021226.9864280.3061227.1414285.962 1227.744313.8681227.862 4325.041227.993
4338.5631228.1084374.473 1228.22 4395.021228.368  4404.61228.3274423.6721228.386
 4426.53 1228.364428.3251228.3814442.6791228.282 4464.081228.1494466.6191228.154
4470.4321227.8614478.156 1227.274483.5091227.6814485.8731227.8594488.0731228.038
4521.7261228.7614528.3651228.9834554.5381229.4914589.0981229.4944597.8731229.372
4610.4891229.2724623.0611229.3064658.9521229.4294663.3591229.4434695.0411229.505
4719.1461229.5164728.6931229.5314776.5011229.5124803.4751229.5244809.2991229.493
4812.2711229.2584819.7291228.3144835.7871228.5134841.0681228.6224845.6521228.629
4847.9651228.5744863.4121228.3194869.2221228.8924870.6731229.0024882.1121228.792
4883.5691228.8094883.5881228.8024886.4481228.8054915.617 1228.834929.2211228.376
4957.3371227.4864962.5021227.8074965.4451228.1474967.9431227.9714976.711 1228.31
4980.5351228.5754988.5231228.5734998.9321226.1644999.433 1226.044999.8541226.119
5001.9831226.482 5011.551228.2835013.406 1228.325019.0231228.6555023.7081227.957
5026.3721227.5765029.0331227.7275034.4831227.9175043.3721227.9735056.6881227.987
5061.2411227.6835071.8661227.6885078.6571227.5385079.4641227.499 5080.571227.664
5090.9631229.0215106.5551228.4785113.5141228.4335120.6961228.4315144.1911228.478
5163.3431228.564 5174.07 1228.125175.6311228.012 5181.731228.6225185.3441228.898
5208.3041228.6575222.9741228.4815238.2881228.5915245.1651228.6085246.5021228.606
5272.6751228.5795275.9651228.226 5283.21  1227.55288.4511227.6595292.6331228.037
5313.5321227.9035316.0611227.8575317.5621227.9165329.0971228.0335337.1711227.782
5338.9261227.8635341.1781227.573 5343.971227.4165350.1471228.6045351.094 1228.83
5378.3931228.4945380.3151228.4795381.3291228.4525385.3091228.4655407.6071228.422
 5409.87 1228.32 5410.881228.3475416.6361227.5695418.1321227.357 5421.641227.624
 5426.43 1227.99 5432.391228.0575437.4911228.2225445.8931227.9765452.9791228.007
5455.7751227.7835457.8891227.811 5461.791227.7735469.3531228.4025469.6431228.422
5472.5871228.1825474.0761228.2745476.7961228.0415481.6451227.6185486.1831228.154
 5487.951228.3255489.2461228.3455500.6241228.3115518.4341227.9635527.2621227.664
5535.4021227.7465550.7211227.7645553.7571227.6265556.7061227.4385557.6491227.515
5567.1551228.1715575.473 1228.265575.6831228.261    55871228.3055590.451 1228.37
5593.928 1228.325610.0391228.2155612.5771228.1995618.077 1228.185622.5561228.212
5633.5661228.2235645.241 1228.245648.0781228.0515655.5931227.5615658.9761227.889
5673.4661227.8445678.4481227.8195686.5571228.0485701.9631228.1365705.2581228.136
5705.8691228.1545708.4041228.1035717.1161227.9955724.4331228.1435729.8981228.103
5746.6461228.5495751.448 1228.615757.4961228.6485780.9171228.7765798.6271228.869
5807.4071228.8975832.139 1229.07 5839.981229.0445866.0141228.9935871.6511228.971
5877.1661229.0415889.1091228.1965889.6681228.3115901.2211229.1025901.4821229.143
5903.029 1229.345913.2331229.3095924.2731229.1285935.466 1228.915940.9421228.817
5960.1381229.1915979.3151229.6055981.9911229.6175985.9361229.6636012.9261229.985
6021.3421230.0696034.664 1230.056070.6711230.146

Manning's n Values          num=        3
     Sta   n Val     Sta    n Val     Sta    n Val
3036.524     .0354980.535     .0855019.023     .035

Bank Sta: Left   Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
      4980.5355019.023                380501.3424     530              .1          .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1229.54   Element                  Left OB    Channel    Right OB
  Vel Head (ft)              0.13   Wt. n-Val.                0.035      0.085      0.035
  E.G. Elev (ft)          1229.67   Reach Len. (ft)          380.00     501.34     530.00
  Crit W.S. (ft)                    Flow Area (sq ft)       1590.54      69.20    1113.55
  E.G. Slope (ft/ft)     0.004718   Area (sq ft)            1590.54      69.20    1113.55
  Q Total (cfs)           8030.00   Flow (cfs)              4318.64     121.79    3589.57
  Top Width (ft)          2764.39   Top Width (ft)          1768.68      38.49     957.22
  Vel Total (ft/s)           2.90   Avg. Vel. (ft/s)           2.72       1.76       3.22
  Max Chl Dpth (ft)          3.50   Hydr. Depth (ft)           0.90       1.80       1.16
  Conv. Total (cfs)        116905.6 Conv. (cfs)             62873.4     1773.0    52259.2
  Length Wtd. (ft)          437.69   Wetted Per. (ft)        1770.33      38.99     958.13
  Min Ch El (ft)          1226.04   Shear (lb/sq ft)           0.26       0.52       0.34
  Alpha                      1.03   Stream Power (lb/ft s)     0.72       0.92       1.10
  Frctn Loss (ft)            3.41   Cum Volume (acre-ft)      81.83       2.99      58.11
  C & E Loss (ft)            0.03   Cum SA (acres)            28.05       0.63      21.85

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Harquahala
REACH: Lower Reach        RS: 17.0788

INPUT
Description: 17.0788
Station Elevation Data     num=     288
     Sta     Elev     Ste     Elev     Sta     Elev     Sta     Elev     Sta     Elev
2943.7181226.9972967.0421227.1273005.7871227.2923010.4311227.3383014.3821227.378
3019.5631227.4223024.5681227.4053037.3671227.284 3104.191226.7563135.7641226.457
 3157.781226.2993164.1561226.2493178.2081226.4413184.9721226.5363198.4631226.385
3202.148 1226.281205.7731225.943 3211.131225.4753214.4451225.8293220.2951226.361
3223.0481226.284 3241.591226.4753246.8921226.6313267.808 1226.733276.8111226.653
 3277.741226.6883320.9881226.0383328.3661225.9013331.4321226.0383331.5631226.035
3336.2831225.9513339.9091225.8213344.0651225.1433346.8981224.551  3351.71225.033
3358.7651225.9563374.0931226.0543387.7231226.0893397.7131226.2313415.1331226.673
 3424.061226.7113430.7331225.3953432.8631224.8553436.1581225.395 3441.311226.441
3456.6971226.4493457.1481226.4523457.3061226.4533457.3981226.4563492.3381226.539
3492.7641226.5383493.0271226.5383500.4671226.5053549.989 1226.663569.345  1226.8
3579.0761226.777 3609.951226.7243621.0061226.6673642.6441226.1273684.0891224.716
3684.3841224.7113725.8581224.567 3727.841224.5543730.6291224.6853738.5551225.118
3760.6091226.3263764.417 1225.183770.2631222.9413776.2131223.7853779.5461224.322
3789.2151224.3853792.3051224.3833797.3591224.3733799.8361224.2633816.7931224.072
 3832.571224.2883850.7411224.4173866.3291224.4493889.5241224.4533903.5881224.912
3914.389 1225.463929.6981225.5323931.9791225.5373962.6311224.6383973.6241224.608
```

4005.407 1224.594024.4361225.326 4029.781225.4184039.7431225.2044070.3611224.539
4124.5361224.8734151.1591225.1174157.2631225.1014159.7491224.8294167.1751224 409
4183.0941223.7934188.6211223.244 4196.171222.8914201.2231223.1364209.8261223 292
4214.3951223.2364221.0641223.5514222.9371223.6414229.7641223.9634254.1951224 886
4254.8991224.7754259.924 1223.954261.355 1224.074266.9161224.8544273.4531224.168
4273.694 1224.154273.7871224.1544283.1311224.7214284.6081224.6934298.5721224.467
4302.2291224.2414308.0071223.951 4310.381224.3694313.6831224.9064322.0681224.628
4332.8861224.3624341.4831224.2034341.4961224.2034341.4991224.2034341.643 1224.19
4350.1041223.4684350.3641223.4464360.1391224.8044360.4781224.861 4363.981224.905
4403.692 1225.454416.9121225.471 4435.15 1225.584449.4411225.9444458.7851226.113
4488.9251226.1114509.1331226.1114532.5241225.1294533.5311225.0974535.7711225.106
4538.0761225.144 4585.751225.7314599.3071225.4744613.0941225.0334647.3491224.961
4648.8521224.9544650.8051225.021 4671.71225.7184694.948 1225.984715.464 1226.21
4731.9971226.0354740.7961225.8084754.6361225.5144779.6861225.7724780.1091225.773
4781.2321225.7694801.7591225.7094807.3291225.8064814.0721225.9514838.104 1226.3
4856.8091226.4564868.901 1226.244888.7451225.7584901.9881225.6874910.2941225.683
4913.7771225.4454919.0431225.1324925.8941225.5954929.3961225.8714935.6931225.775
4956.31 1225.834959.9751225.7894968.8751225.6844985.728 1226.34988.3621226.328
4989.1791226.123 4999.551223.6885007.0111224.7345009.7311225.0785014.2471225.085
5031.0041225.129 5042.511224.9555055.1691224.8655072.8041225.0615074.7611225.098
5079.8331225.0385104.0131224.6755107.4241224.4225112.9741224.1775116.2491224.704
5118.9511224.9975129.2031224.6665130.2451224.6345130.4161224.6215130.5971224.635
5131.9691224.7025137.8271225.0645139.7491224.7995145.811 1224.055147.4721224.385
5151.9461225.1735176.6211224.8355182.9561224.7855186.1781224.8335200.2781225.273
5211.1491225.1995224.0581225.0925227.3651225.1215246.3031225.0535264.1411225.093
5282.2811225.198 5302.251225.0825327.4981224.9235345.5431225.0115358.5961224.998
5374.1011224.8715383.567 1224.75389.2491224.6695397.6581224.642 5402.11 1224.48
5407.9571224.7975412.5531224.8735419.1311224.0765428.5181224.4475432.4831224.578
5435.2951224.5675439.3581224.7685443.584 1224.765450.3481225.2685456.2551223.663
5458.1021223.3575462.0451223.9025469.6241224.7765476.2991225.5695478.9561225.471
5487.3461225.3645493.3221224.9115508.4161224.942 5511.031225.0125519.0611225.412
5524.7161225.7525536.9631225.5235543.492 1225.175549.553 1224.745554.304 1224.39
5559.81225.0635564.0161225.595 5587.891225.0815588.875 1225.065589.0411225.062
5597.81224.9935599.6551224.9795599.777 1224.995614.4211226.2245621.2631226.161
5629.9671226.1235641.6491225.4735642.6861225.4075648.6891225.4095667.9431225.462
5688.1391225.421 5709.961225.5675720.3291225.7565734.828 1225.775738.5711225.857
5747.0411225.9525781.2541226.6685784.2841226.7425784.7081226.7435785.1651226.747
5786.7941226.7475834.1211226.694 5855.271226.942 5863.091227.0075863.5431227.011
5884.0381227.223 5896.79 1227.295898.3691227.2935902.3651227.3295920.794 1227.29
5924.8211227.1825928.4371227.1065932.5771227.088 5943.631227.3095944.8381227.335
5945.2581227.3445972.0361227.7266011.4321227.687

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
2943.718	.035	4988.362	.085	5014.247	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4988.362	5014.247	348	487.518	495	.1	.3

Left Levee Station=3267.808 Elevation= 1226.73

CROSS SECTION OUTPUT *Profile #PF#1*

			Left OB	Channel	Right OB
W.S. Elev (ft)	1225.81	Element			
Vel Head (ft)	0.42	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1226.23	Reach Len. (ft)	348.00	487.52	495.00
Crit W.S. (ft)	1225.81	Flow Area (sq ft)	1011.85	27.34	533.66
E.G. Slope (ft/ft)	0.015222	Area (sq ft)	1011.85	27.34	533.66
Q Total (cfs)	8030.00	Flow (cfs)	5530.07	64.16	2435.77
Top Width (ft)	1833.51	Top Width (ft)	1113.33	23.75	696.43
Vel Total (ft/s)	5.11	Avg. Vel. (ft/s)	5.47	2.35	4.56
Max Chl Dpth (ft)	2.92	Hydr. Depth (ft)	0.91	1.15	0.77
Conv. Total (cfs)	65083.8	Conv. (cfs)	44821.7	520.0	19742.1
Length Wtd. (ft)	395.13	Wetted Per. (ft)	1115.08	24.09	697.39
Min Ch El (ft)	1223.69	Shear (lb/sq ft)	0.86	1.08	0.73
Alpha	1.03	Stream Power (lb/ft s)	4.71	2.53	3.32
Frctn Loss (ft)	0.65	Cum Volume (acre-ft)	70.48	2.44	48.09
C & E Loss (ft)	0.11	Cum SA (acres)	15.48	0.27	11.79

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 16.9865

INPUT
Description: 16.9865
Station Elevation Data num= 338

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2236.4	1226.4	762242.7	341226.5	782259.1	481226.1	312265.2	471225.8	91 2268.6	1225.83
2276.945	1225.62	283.529	1225.62	2286.3	821225.6	132310.4	02 1225.37	2314.742	1225.37
2319.8	441225.4	152349.6	151225.4	142351.8	041225.4	022407.5	31 1225.42	412.615	1225.28
2425.2	151225.0	882445.4	671224.7	462454.1	361224.5	212465.9	931224.0	852470.1	441224.174
2478.6	881224.3	662485.3	331224.4	272485.8	781224.4	312493.7	191224.5	712503.5	041224.761
2514.5	011225.2	532521.4	241225.3	492533.3	711225.2	572541.9	011225.2	082545.8	181225.175
2563.0	711225.0	442584.6	751225.0	452589.1	721225.1	142619.7	311224.9	212630.673	1224.86
2661.6	61225.2	832677.2	011225.4	962686.8	921225.0	53 2691.47	1224.8	92694.2	931224.634
2696.842	1224.48	2698.1	431224.3	852732.5	391224.8	982757.6	011225.0	532766.3	751225.031
2801.951	225.0	922817.1	411225.1	212855.0	92 1225.01	2902.09	1224.7	862930.5	691224.632
2938.168	1224.2	542939.2	24 1224.2	12951.5	751224.5	012968.2	11 1224.92	978.117	1225.195
2997.472	1224.4	743009.8	861223.9	863013.1	171223.9	843045.6	981224.4	013087.0	971224.835

```
3092.3561224.8723099.5181224.8833176.6751224.5963199.7811224.3633223.0021224.307
3227.7991224.3633230.8841224.1063240.1691223.9173248.6911224.1443256.9371224.265
3257.3791224.2833259.7411224.2743273.3651224.3733278.212 1222.94 3278.951222.278
3279.3351222.8372288.8461224.2363337.3481224.4873352.1081224.5843353.8021224.589
 3355.941224.5973405.019 1224.713442.8921224.961 3444.331224.9683444.6641224.966
3469.3921224.8263474.6241224.8093510.4621224.5433516.0921224.5513546.3231224.563
3567.3641224.2133568.059  1224.23568.3921224.139 3575.671222.9633582.076 1224.57
3582.7581224.7183596.6891224.6573646.4361224.3583658.9141224.2973671.5291224.325
3684.1061224.0633736.8451222.9623759.9251223.1243773.4361223.1383786.6561223.064
3809.3971223.0133820.1911222.7893833.0731222.3933838.4631222.3763853.5091222.212
3862.1911222.5113868.1981222.5123870.4351222.4323876.5621222.4823886.2431222.448
3889.7511222.0263893.8071221.5843896.2881221.8853903.2041222.4473905.3971222.409
3914.991 1222.413920.8391222.911 3926.371223.0233930.4821223.0463941.6341223.208
3954.1631223.0153957.9331222.8083973.7311222.1443987.0811222.1044015.5461222.055
4026.7911222.2694029.9571222.2754058.764 1222.464067.9331222.5434083.4651222.606
4084.0351222.6084084.1851222.6074085.2931222.5994129.8071222.1864144.3111222.359
4153.7161222.4444163.9321222.4274205.7351221.9464238.484 1221.734238.7911221.726
4240.6141221.7054270.2091221.3724275.4921221.4454285.9381221.5644294.7231221.169
4296.8981221.0894298.1251220.9134303.205 1219.97 4307.31 1220.774310.3991221.439
4314.308 1221.184319.8691220.9674321.7721220.5384324.5221220.2894332.3961221.361
4336.2251222.1854338.2471222.5914356.0271222.7434359.1571222.7584369.0591222.529
4386.5241222.1234393.4771222.0634421.1191221.8924426.143 1221.244432.9741220.631
 4435.531220.8244441.952 1221.254445.4581221.2344458.1791221.6754461.2831221.342
4465.1231220.9954474.3281221.2894475.5481221.3494502.1371221.7964511.9441221.997
4515.0011222.0114615.2821222.0244539.9791222.4534550.2491222.6494557.3491222.788
4560.9931222.7444586.0881222.3484610.9911222.1354616.7321222.0934620.7081221.507
4623.9141221.0954626.566 1220.564626.6321220.5494626.6861220.5564635.5391221.273
4640.7511221.8474678.3361221.7434681.572 1221.754683.0391221.7554718.0591222.132
4723.5651222.1584781.3291222.4844830.6731222.7354849.6591222.6274897.8921222.259
4907.1471222.1994910.7151222.162  4930.4 1222.184935.8941222.238 4938.341222.164
4938.9711221.9344954.0371221.6124954.0891221.6114954.1831221.6154960.2061222.019
4961.9071222.0254968.5161222.0184979.1021222.0254981.694    12224987.5531221.953
4990.8661221.9355003.6451220.6835007.8011220.2845008.6691220.4975009.3131220.583
5014.6221220.8115018.9331221.1335019.9251221.2375026.6151221.6115028.9871221.617
5040.9441221.7085048.7131221.6955056.7051221.6975062.1021221.6255073.0631221.599
5076.1921221.1325078.7461220.8415082.1671221.1975086.0591221.6455103.0921221.893
5107.2891221.9675109.1071221.6435114.4811220.4495116.0361220.7955120.9231221.877
5124.896 1221.895126.8771221.869 5132.011220.6145136.5881219.3995141.0821220.311
5146.6211221.116 5151.011221.8655184.9951222.1325185.2081222.1315185.3521222.133
5186.9551222.1285211.4451222.057 5216.891222.0935246.6051222.2255260.2791222.316
5292.2511222.4325294.6811222.4455295.5541222.4455296.2711222.449 5326.631222.632
5363.4771222.6265376.5161222.5695382.8471222.4245389.8151221.9875403.6191221.171
5409.6961221.6655415.2711222.1085420.7431222.386 5421.071222.4215425.1781222.041
5425.2891222.0325425.4311222.024 5433.971220.8125437.287  1221.35441.4441222.178
5447.3141221.8455452.9391221.7225467.6691221.7035475.1721221.7195489.1541222.334
5489.1991222.3375489.2641222.3385508.8381222.6445515.9191222.8245521.6041222.917
5523.1411222.806  5528.21222.5925530.0291222.6895544.308 1223.115559.7951223.202
5574.951 1223.315590.2561223.4945603.236 1223.245606.5751223.2335635.1351223.404
5648.8391223.4885652.3331223.2545658.3631222.8185669.5281223.349    56761223.741
5688.8051224.0255711.2841224.4065722.4231224.4085733.2891224.3055734.1291224.349
5736.2971224.4775736.974 1224.555743.5541225.0895750.667 1225.075754.5711225.014
5758.0721224.9275762.0881224.7455767.137 1224.585786.8491224.4685826.8461224.529
5850.2031224.535 5908.141224.6335919.4981224.6845924.3511224.6395977.8711224.574
6006.5611224.5256013.9571224.576 6017.24 1224.976028.8461226.1226055.6531226.244
6077.4821226.1176100.7981226.1176101.5291226.1176102.7351226.1236102.8851226.122
6125.1491226.0986129.1221226.1116134.647 1226.05
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
2236.472    .0354979.102    .0855040.944    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
     4979.10250 40.944              281508.1319     548          .1            .3
Left Levee       Station=3099.518       Elevation=1224.883
Right Levee      Station=5743.554       Elevation=1225.089
```

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1224.58	Element			
Vel Head (ft)	0.04	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1224.63	Reach Len. (ft)	508.13	508.13	508.13
Crit W.S. (ft)	1222.95	Flow Area (sq ft)	3121.32	198.48	1468.85
E.G. Slope (ft/ft)	0.000586	Area (sq ft)	3121.32	198.48	1468.85
Q Total (cfs)	8030.00	Flow (cfs)	5368.00	182.47	2479.53
Top Width (ft)	2379.59	Top Width (ft)	1621.31	61.84	696.44
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)	1.72	0.92	1.69
Max Chl Dpth (ft)	5.18	Hydr. Depth (ft)	1.93	3.21	2.11
Conv. Total (cfs)	331697.3	Conv. (cfs)	221737.3	7537.4	102422.7
Length Wtd. (ft)	508.13	Wetted Per. (ft)	1623.08	61.99	697.81
Min Ch El (ft)	1220.28	Shear (lb/sq ft)	0.07	0.12	0.08
Alpha	1.02	Stream Power (lb/ft s)	0.12	0.11	0.13
Prctn Loss (ft)	0.10	Cum Volume (acre-ft)	38.56	1.54	20.94
C & E Loss (ft)	0.01	Cum SA (acres)			

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: I-10 Reach RS: 16.8902

INPUT
Description: 16.8902
Station Elevation Data num= 365

```
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
1882.3181226.014 1896.221225.9861927.9451225.7671949.7911225.574    19511225.257
1954.2441224.7081959.7541225.4151961.507 1225.641965.1641225.6171988.8911225.566
1997.7081225.596 2010.141225.513 2014.991225.1332017.212 1225.02 2030.891225.301
2033.2321225.3542034.4361225.3572059.3881225.5112068.2961225.2062069.1521225.176
 2071.821225.1692154.0241224.8882157.617 1225.092159.541 1225.12 2164.021224.542
```

```
2168.319     12242169.7181224.1612177.3721224 769 2186.911224.711 2190.171224.687
2192.6641224.4562195.5911224.2495198.1981224 409 2202 611224.6042204.944 1224.76
2209.6481224.7052225.368 1224.49 2230.251223.9692231.1281223.8912232.392 1223.99
2240.0721224.6782263.7651224.3852270.2861224.3112272.7941224.1232280.693 1223.76
 2281.08  1223.82288.189 1224.512290.1381224.5492297.2281224.5372313.6441223.981
2316.4571223.8442317.525 1223.822359.2421224.1292399.8291224.562 2403.041224.499
2415.1121224.1322431.1351224.1642453.9911224.2252461.7611224.2322465.5191224.281
2512.4881223.7892518.6641223.7222526.8641222.5852530 661 1222.18 2540.881222.972
 2543.971223.2712558.4681223.4022571.1831223.678 2573.661223.7032578.5991223.591
2578.7041223.5922604.7331224.0512612.755 1224.172628.8221224.2232630.7961224.212
2631.9751224.2062670.2711223.9142674.9941223.9062676.6961223.8742690.0191223.392
2706.224 1222.792722.3081223.0322736.0421223.204 2763.671223.2322778.3381223.264
2783.9191223.3782821.4281223.6662828.2311223.7452831.4751223.7642840.7321223.851
2841.9471223.8432844.5121223.7872857.2541223.5792876.3361223.4732898.4551223.379
2899.2371223.3792899.7851223.3772935.6121223.3382939.4151223.315  2980.61223.635
 2987.621223.7352997.2721223.8483011.9151223.5773050.6151223.0243062.2811222.471
3062.6961222.4533063.4521222.4563116.3491222.5793119.4641222.7063124.6151222.819
3150.1241222.2453155.389 1223.213178.0031223.0973192.3741223.0173195.202 1223.03
3208.4281222.9813228.7741222.9573232.0181223.0063243.2721223.1583258.027  1223.2
3265.1431223.3383268.1261222.6663271.0711221.804 3280.011223.081 3281.031223.279
3286.8791223.2523332.3961223.0383325.2171223.0423346.1721223.064 3426.54 1223.18
 3450.391223.1513484.0381223.1613510.298 1222.993575.4121222.6043596 9651222.543
3633.4541222.4313643.2111222.2673644.8071222.3733645.828 1222.063651.1691220.742
3658.5791222.1053659.3311222.2443672.8831222.2393731.8111222.2293743.7241222.231
3815.494 1221.633825.5351221.5513832.7321221.5193881.9791221.3633904.4421221.234
 3925.951221.0113930.4441221.2163938.8581221.5823953.5781221.7353966.1251221.942
3968.4641221.9753969.5281221.9573976.6191221.2653977.7711221.1963981.7621221.065
3993.128 1221.11 4020.321220.9974036.0341220.8034047.774 1220.674051.5061220.284
4057.3891219.9114064.6891220.483 4067.99 1220.774069.4131220.6774075.8841220.422
4083.254 1220.23 4086.931220.0894098.6361219.669 4106.551220.1794106.8651220.196
4107.359  1220.24143.7651220.5074173.2321220.7224216.9741220.806 4245.271220.357
4259.0181220.3354267.9511220.4914288.9631220.3954306.684  1220.34328.3551220.369
4337.0251219.9064364.2971219.8274367.1671219.792 4378.071219 7634382.3321219.219
4386.5261218.7384391.8861219.4274395.6831219.9144405.5171219.8494407.8051219.841
4413.3451219.8764422.5931219.8634432.919 1219.344436.638 1219.164438.2371219.318
4445.2431220.063 4455.251220.1234459.3711220.1684464.1671219.6054467.8131219.063
4478.742 1219.464479.8131219.5174480.143  1219.54495.3021219.4224497.6251219.171
4502.424 1218.53 4505.881218.9924514.0121220.5264517 781 1220.434532.125 1219.92
4541.9051220.1264553.013 1220.374558.9631219.2284560.138 1219.024566.1521219.663
4569.3261220.0154571.5721219.9864580.2981219.8934584.7441219.8094590.2761219.639
4606.1631219.4444618.3871219.2654633.6741219.3564642.5731219.4314652.7461218.683
4654.1431218.5394655.7781218.7264662.9931219.4914675 7161219.4244678.3391219.431
4697.6051219.6364699.472 1219.664699.6651219.6574699.835 1219.664699.9541219.664
4703.0621219.6824761.3641220.038 4774.191220.0984789.1781220.1474813.6461220.181
4828.8221220.1184829.5991220.0894832.7411220.1334838.3681220.1394866.0061220.191
4893.4821220.1474909.3171220.1284911.8791219.8284919.5921219.128 4922.111219.342
4930.0481219.9814936.2421219.9274944.0751219.7764945.8571219.739 4948.381219.799
4958.3211219.8344961.1661219.8024964.5251219.4724969 0961218.908 4971.011219.191
4975.4541219.899 4985.221219.7054992.5861219.5514994.9851219.0284999.6991219.581
5001.8131218.0035009.406 1220.335013.0291220.0945013.5631220.0755013.8891220.074
5023.5221218.0735025.8471217.4695028.2651218.074 5034.731219.9225040.0211219.665
5040.9731219.6465043.9921219.6315047.3631219.6395060.0471219.766 5069.141219.872
5073.0081218.9685076.343 1218.465080.1451218.9495087.7921219.7935152.0841220.738
5153.2441220.762 5153.711220.7625192.1011220.4955226.622 1220.875229.1711220.898
5246.015 1221.035262.3981221.1515266.6061220.8925269.4711220.7445275.2671220.723
5314.4951220.578 5318.731220.6475328.2971220.7945331.1711220.8195347.5471221.068
5358.0461220.8825362.2271220.7525367.823 1219.795369.7181219.3215373.8241220.162
5378.6851220.9785395.7231220.9095411.1961221.017     54261221.0695435.4831220.847
 5454.771221.0585493.9681221.3795512.625  1221.35512.9451221.2995524.2671221.343
5560.0831221.5425598.3821221.7645609.1991221.7295626.4171221.7085677.6861221.898
5685.5351221.9335687.7931221.9445695.6991221.9645752.6621222.0995759.064     1222
5771.7291222.1425787.2531221.9085788.717 1221.885802.5531221.8615810.6111221.805
 5815.841221.5225818.3951221.3225826.0991221.0435829.0021221.5025829.8671221.506
 5847.621221.6855857.8841221.5675876.4381221.4695903.915 1221.565940.8231221.595
5972.4491221.7765982.8411221.8796013.9541220.822 6015.221220 8566027.6191221.372
 6035.36 1221.786063.8311222.0376075.5331222.0486079.5811222.0236095.9571221.989
6116.4981222.0796170.8631222.1656217.1271221.9346220.6111221.9496249.3891221.974
6282.0691222.391 6293.681222.5566314.9051222.7026367.2741222.8826379.271 1223.19
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1882.318	.035	4985.22	.085	5009.406	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4985.225	009.406		356537.2477	602	.1	.3

Left Levee Station=2159.541 Elevation= 1225.12

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1224.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1224.52	Reach Len. (ft)	356.00	537.25	602.00
Crit W.S. (ft)	1221.33	Flow Area (sq ft)	6979.69	132.43	4244.25
E.G. Slope (ft/ft)	0.000109	Area (sq ft)	6979.69	132.43	4244.25
Q Total (cfs)	10000.00	Flow (cfs)	5934.10	73.73	3992.17
Top Width (ft)	4139.50	Top Width (ft)	2745.45	24.19	2369.87
Vel Total (ft/s)	0.88	Avg. Vel. (ft/s)	0.85	0.56	0.94
Max Chl Dpth (ft)	7.04	Hydr. Depth (ft)	2.54	5.48	3.10
Conv. Total (cfs)	958055.1	Conv. (cfs)	568519.9	7063.4	382471.8
Length Wtd. (ft)	450.36	Wetted Per. (ft)	2747.73	24.85	1372.44
Min Ch El (ft)	1217.58	Shear (lb/sq ft)	0.02	0.04	0.02
Alpha	1.01	Stream Power (lb/ft s)	0.01	0.02	0.02
Prctn Loss (ft)	0.02	Cum Volume (acre-ft)	254.26	35.20	154.05
C & E Loss (ft)	0.00	Cum SA (acres)	62.25	7.28	39.60

Warning - Divided flow computed for this cross-section.
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: I-10 Reach RS: 16.7885

INPUT
Description: 16.7885
Station Elevation Data num= 381

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
1543.0751225.1791557.2341225.1911636.9581225.2861725.6781225.3731762.0821225.281
 1762.661225.2871773.0081225.0331777.4961225.3081786.2841226.568 1792.261226.583
 1792.971226.5871793.8791226.3591799.2441224.9871807.3081224.8421818.8841224.782
1824.4071224.8721841.3281224.852 1855.08 1224.981869.1071224.9451876.7251224.947
 1882.131223.721 1885.051223.3241891.2791224.2841894.9361224.846 1900.861224.815
1907.3111224.7481915.7591224.721 1940.991224.5321944.6781224.5161947.3911224.498
1973.7081224.4471990.0931224.1531997.2881223.994 2003.041223.9842009.0731224.232
2019.6961224.452 2045.781223.8962046.3281223.8892046.9721223.853 2058.261223.297
2059.9341223.2992111.1461223.4922137.2121223.4012182.4011223.2482217.669 1223.13
2236.2441223.0782290.2521222.9532324.1181222.7582331.2751222.7652334.3711222.887
2339.0931222.9142343.8191224.6212344.5071224.7292346.7061224.4492361.0041222.488
2385.5581222.5712403.0351222.6092430.6781222.556 2463.851222.3842468.4991222.366
2491.0881222.0682499.8091221.9762511.9721221.8652534.5291221.6172537.7571221.463
2543.6981221.1632547.5231221.4082550.409 1221.652559.6971221.702 2581.751221.802
2592.2371221.7452597.3651221.7162614.7651221.5442644.2481221.4982648.3851221.458
2652.8881221.5222667.9831221.4532681.5481220.8032686.9611220.5432699.3331220.756
2719.6361221.2072725.0571221.3072727.8891221.3642732.6881221.3552764.4421220.925
2788.5311220.8182790.0891220.8182801.6531220.5512809.4611220.3522810.5411220.385
2812.156 1220.422836.9481220.8442845.2921220.9932862.4411221.2292872.133 1221.13
2879.3581221.1992892.4831221.2482902.4781221.3182916.5581221.4372919.1551221.483
2920.3251221.4852936.9021221.1242937.667 1221.122945.0541221.3342949.6671221.463
2981.8421221.0892987.2141221.0182990.0561221.1272990.1621221.1292994.5981221.202
2998.8391220.9043032.4851221.182 3037.071221.2283039.095 1221.233054.7191221.191
 3062.621221.1543069.5881220.9383074.4981220.6953087.3971222.2083087.8661222.262
3088.1321222.2633097.6941222.366 3101.791221.8663109.0761221.0513116.6411221.305
3130.0881221.4583150.556 1221.353160.3881221.3073186.5761221.4713248.8031221.334
3258.7681221.3373274.2411221.2753282.734 1221 263285.7791220.7283290.3341219.692
3292.1421220.1423297.2961221.0553318.2521221.2233326.6581221.2173368.583 1220.84
3393.7441220.7683463.304 1220.363482.0131220.2253491.2691219.4353493.8131219.352
3501.711 1219.853512.7321219.6753516.2381219.6533536.7491219.987 3543.161220.063
3546.212 1219.96 3547.43 1219.98 3585.951219.8293613.1551219.7253618.5481219.696
 3630.731219.6383654.9121219.6063710.2911219.4943728.6181219.2863734.0121218.365
 3738.311217.6723743.3851218.5643747.333 1219.383759.8371219.3763772.3761219.296
3785.5061219.2983819.3231219.1383872.5931219.0393874.3451219.0323876.4721219.025
3883.6111219.0293930.1941219.0053941.7961219.0053949.3511218.895 3982.171218.761
4013.0961218.6394028.9951218.6364034.8871218.6874041.8281218.7554077.1791218.618
4083.0741218.6334084.7581218.6024090.5241218.5254112.2431218.2614116.0681217.844
4121.6671217.431 4128.711217.8094133.3651218.019 4158.791218.2514161.3871218.291
4163.8921218.2694180.6421218.0994187.182 1217.244188.3181217.104 4191.611217.787
4193.8631218.1074194.809 1218.274236.7361218.2014240.5961218.2214266.3891218.317
4266.7931218.3174268.1291218.3184326.9251218.3314349.9321218.322 4359.061218.326
4365.2651218.2994370.3141218.2464411.1991217.6734414.3131217.635 4415.911217.494
4425.8671216.607 4434.381217.0074437.043  1217.24462.9411217.4114467.542 1217.44
4472.3861217.3834487.2311217.2714493.8141217.337 4508.381217.3244510.5171217.305
4519.7671217.0064525.1091217.1174528.4561217.2154528.7771217.1994540.6491216.715
4544.9121216.4664553.0441217.4454553.7881217.6244555.6391217.6984562.0281217.888
4564.3771217.0224566.1851216.383 4570.291216.8664575.211 1217.364577.1821217.401
4578.6911217.4364581.1231217.2224591.7241216.723 4596.88 1217.164600.1471217.295
4612.9561217.3484615.9071217.3544618.2571217.3414620.6341217.0454625.187 1216.49
4628.3011216.6934640.1571217.3194660.1431217.7014672.7651217.8494687.3881217.707
 4692.71 1217.71 4703.65 1217.834706.5191217.9064710.2361217.6284716.0411216.851
4725.6131217.5344728.1381217.6494733.4271217.7614740.2261217.8394742.9781217.862
4750.4381217.9534753.9261217.4674757.4791216.6334759.6371216.8224766.8631217.647
4767.4871217.6494773.9931217.6174776.2731217.6144777.164  1217.64784.6781217.414
4791.0921217.6324803.138 1218.124811.6091218.1934819.216 1218.4148829.291 1218.47
4837.8271218.2354842.1851218.2614844.0941218.1854848.0731216.9844850.3631216.303
 4853.521217.4264859.2721218.4284859.5971218.503 4859.751218.5014859.957 1218.49
4864.2021218.1764869.854 1217.264872.2921216.9014875.5331217.534 4883.051216.675
4886.565 1216.574889.0081216.8074903.4671218.5264920.0071218.939 4927.411219.101
4932.1551219.0034938.8231218.844 4968.461217.9684974.5631218.163 4978.061218.479
4981.376 1218.364987.4611217.6194999.6791216.3485005.0881216.1375011.5961215.859
 5018.491216.6155025.7381217.6285030.1621217.5565038.6341218.0725039.7721218.139
5040.3291218.1575047.5031218.103 5073.631218.3015094.532 1218.495102.6941218.492
5127.8971218.5365168.6721218.636 5217.491218.6465248.6021218.6625263.7141218.863
5305.4231219.0545306.497 1219.045318.5821219.006 5320.82    12195359.9991219.048
5389.6581218.9885407.9551219.1195427.0141219.2785451.1491219.4775498.5731219.637
5538.8671220.0335609.7611220.285 5652.021220.1815685.9191220.1165716.8281220.297
5733.8251220.341 5766.591219.8585789.6961219.6735795.8871219.727 5803.561219.274
5808.953 1219.045823.0861219.134 5842.571219.1695855.5541219.1875871.1991219.389
 5911.88  1219.35918.8861219.3235921.2191219.284 5923.591219.3225941.1951219.428
5962.3761219.2975998.029  1219.16015.7431218.9946018.4671218.8776022.9411218.727
6034.2081218.2916040.0681218.7876044.6911219.0776047.1251218.9516066.271 1218.48
6085.2651218.6586106.4221218.7196130.7141218.8756146.625 1218.916158.458 1218.88
6184.5541218.8966204.0951218.8856214.7081218.9636241.594 1219.046266.9811219.051
6280.8411219.0266300.3871218.8276301.7321218.931 6310.651219.8736342.1721222.276
6357.1361223.5616362.8751224.0616383.5021225.8876399.8161226.2716427.6751226.964
6448.2551225.891
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
1543.075     .035 4978.06     .0855040.329     .035
```

Bank Sta: Left Right Lengths: Left Channal Right Coeff Contr. Expan.

```
       4978.065040.329              361339.3988     273              .1        .3
Left Levee      Station=1894.936      Elevation=1224.846
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1224.50	Element	Left OB	Channel	Right OB
Vel Mead (ft)	0.00	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1224.50	Reach Len. (ft)	361.00	339.40	273.00
Crit W.S. (ft)	1219.30	Flow Area (sq ft)	13105.16	459.91	6844.14
E.G. Slope (ft/ft)	0.000017	Area (sq ft)	13105.16	459.91	6844.14
Q Total (cfs)	10000.00	Flow (cfs)	6342.05	123.95	3534.00

Top Width (ft)	4416.90	Top Width (ft)	3027.15	62.27	1327.47
Vel Total (ft/s)	0.49	Avg. Vel. (ft/s)	0.48	0.27	0.52
Max Chl Dpth (ft)	8.64	Hydr. Depth (ft)	4.33	7.39	5.16
Conv. Total (cfs)	2453395.8	Conv. (cfs)	1555958.8	30409.2	867031.9
Length Wtd. (ft)	332.29	Wetted Per. (ft)	3030.52	62.52	1327.81
Min Ch El (ft)	1215.86	Shear (lb/sq ft)	0.00	0.01	0.01
Alpha	1.01	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	172.18	31.54	77.43
C & E Loss (ft)	0.00	Cum SA (acres)	38.67	6.74	20.96

Warning - Divided flow computed for this cross-section.

CROSS SECTION RIVER: Harquahala
REACH: I-10 Reach RS: 16.7242

INPUT
Description: 16.7242
Station Elevation Data num= 391

```
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1660.358 1222.581665.8391222.5821671.2721222.6021707.4981222.4851713.535  1222.5
1721.871  1222.51746.885 1222.581759.3911222.5381782.5321222.3811791.4881222.343
 1811.251222.3071821.1891222.2961843.9081222.1181853.4221222.447 1857.921222.423
1874.9271222.5491875.3431222.5481886.6251222.5691894.2081222.577 1894.841222.605
1898.6341222.5071910.6681222.2941911.0341222.2921925.7421221.9981927.3941222.024
1929.3571222.0021946.5711221.7491957.239 1226.371957.975 1226.621959.0121226.621
1969.367 1226.551970.2811226.2261982.3321221.774 1986.17 1221.771987.838 1221.75
 1989.871221.5852002.452 1221.562017.5661221.6192034.6621221.5852041.5741221.581
2065.2551221.6982071.7671221.7272080.1761221.9982100.6561222.2742111.9541222.409
 2122.341222.3782155.9851222.5062162.8841222.5872167.7611222.6232174.9241222.605
2208.5081222.3832214.0261222.2682220.8231222.177 2247.641222.0532254.9221222.035
2262.7081222.0542282.1191221.8592289.378 1221.852305.3011221.8912330.8581221.715
2341.9971221.7722360.6691221.6482373.9811221.6172389.6251221.616 2402.871221.557
2418.5791221.4742433.102 1221.372441.9091221.6262448.8251221.2352456.9821221.147
2474.7871220.879 2480.411220.9772486.911 1220.952500.7021220.9442506.4251220.629
2507.5361220.8572508.3771221.0652517.3551224.1342524.0591224.219 2529.941224.238
2533.873 1222.162537.3851220.367 2550.64 1220.262558.1561220.2332564.8321220.201
2589.4781219.9972598.404 1219.982614.3571220.0632624.587 1220.032631.5391220.016
2660.8691219.959 2675.491219.9572702.9611219.8282721.9391219.6192739.0871219.472
2762.099 1219.312777.8731219.3812798.6271219.1972816.171 1218.942837.243 1218.88
 2853.191218.8872868.9151218.8022894.3611218.6582914.1181218.5892928.6741218.511
2945.1431218.5122956.9171218.424 2968.821218.231 2979.811218.2672989.9751218.291
2993.2651218.3733009.3411218.6113010.3281218.6581012.5681218.5823021.7921218.468
3023.1171218.4893030.1221218.7843043.0871218.6113047.0071218.5593050.4871218.628
3063.2931218.523 3066.131218.4873078.6471222.2073078.8151222.2523079.2771222.252
3090.217 1222.233091.8411222.1413100.1141219.6653103.6771218.5013125.9021218.557
 3128.33 1218.623128.809 1218.623134.5751218.589 3154.591218.668 3155.271218.677
3177.9371218.6453178.9681218.6383202.2061218.8273203.264 1218.82 3224.341218.865
3225.4651218.8623249.0661219.0283249.8661219.0283250.7231219.0233268.4171218.777
3268.8691218.7793283.915 1218.883300.3061218.8613315.3181218.7853337.7751218.833
3348.8561218.7723374.6921218.7683394.0271218.833 3404.251218.875 3421.421218.812
3435.2221218.7083453.3321218.7033460.7991218.8123475.3331218.9413499.7861218.813
3507.035 1218.783522.5941218.4983527.7581218.8583536.2981218.6983542.7971218.715
3559.1111218.485 3564.451218.1213570.8811218.8083571.673 1218.82 3573.491218.824
3577.7831218.738 3579 611218.7643606.5171218.6523606.833 1218.653606.869 1218.65
3607.7461218.6583634.289 1218.883635.012 1218.873656.5981218.5753671.1151217.863
3671.1161217.8633685.9671217.9743687.159 1217.963704.232  1217.83706.3621217.776
3719.1211217.737 3721.761217.6643737.1391217.5593741.4281217.5653752.7151217.187
3762.6561217.0783765.205 1217.083776.1721217.6413777.1491217.6263788.9471217.668
3790.7681217.6683790.9151217.6693812.2571217.6973819.2981217.6683842.1071217.668
3853.985 1217.313875.5641217.3363884.4821217.2073906.3631217.1133919.4861217.072
3930.3871217.0613956.0141216.9783966.0881217.0583988.6191216.9294001.1181216.766
4014.1861216.6794029.8271216.6884040.2861216.5584047.5061216.495 4050.021216.976
4060.3991217.137  4078.61216.8784085.6431216.9084088.0241216.9934106.4731217.136
4108.0641217.1764121.0411217.5114132.5731217.524  4150.4 1217.824163.6261217.226
4171.0721217.1084190.8331216.5144196.3681216.3264205.0561216.5514208.2281216.589
4211.2491216.6274229.3391216.9994248.5011217.1584262.799 1217.244286.5651217.272
4311.9341217.5184316.1961217.513 4347.821217.3144376.3261217.3544381.1321217.289
4399.7931216.8424408.5771216.5984409.5631216.5724429.2751215.5954439.8291215.724
4462.3151216.2184469.5821216.2274499.607 1215.934502.752 1215.874514.4521215.588
4521.0891215.4564521.5451215.4884546.8831216.3184548.3831216.0884555.0761215.028
4564.6111216.0044568.1761216.4244570.7511216.4694587.1321216.493  4589.91216.403
4606.0651216.2054608.1591216.0384614.108    1216.4618.5521216.6044624.4621216.378
4628.021 1216.114628.8011216.0264633.6891215.2494637.9761214.4274641.4581214.461
4648.5071214.5934666.3631214.9394676.1341215.0934704.7061215.2714713.6971215.592
4723.4191215.7684727.0771215.8114744.6911216.0684760.4091216.3444760.5191216.404
 4762.631216.3784765.9021216.2984785.628  1216.34819.1221216.3624855.2981216.753
4886.5631217.0994905.4931217.217 4922.411217.4334923.1831217.4744925.1731217.366
4934.9831216.9184948.7691216.631 4957.251216.1634961.6461215.8814977.0721215.039
 4981.051214.5754991.4711214.6544999.8521216.6485002.2941214.7395007.4791215.853
5012.849 1216.485013.687 1216.525014.6361216.7035018.7441216.9795037.6441217.418
5049.6611217.4525071.6191217.1095090.9051217.0745108.3091217.1325122.9611217.294
5148.1041217.4585169.912 1217.37 5205.531217.422 5228.221217.4165261.9431217.493
5278.5161217.602 5285.751217.4385305.4541217.3455314.3991217.3785338.3821217.285
5359.6671217.3125370.2511217.2915370.8291217.2725382.8321216.2335383.5151216.227
5397.835 1216.485411.7161216.3665422.1521216.5035434.1741216.5565451.9341216.735
5466.7131216.7075481.8571216.7165488.6621216.7425491.6521216.6955497.1241216.694
5504.2381216.5585511.5011216.4845524.7531216.3885538.6491216.324  5545.5 1216.59
 5562.911216.3595569.9111216.5015571.7521216.5395572.5711216.4185590.6461216.968
5610.2851217.013  5613.51216.995 5639.781217.176 5648.63 1217.165674.7991217.643
5677.0741217.6675681.5741217.6275700.5751217.9265716.8411217.9545728.7911218.133
5741.3051217.9575750.2261217.942 5765.361217.4925776.6541217.7465814.5731218.253
5820.1411218.2795823.6051218.2785850.8891218.5575865.2821218.9845866.869 1218.98
5885.1481219.0615910.196  1218.95932.0311218.7425958.4411218.8245958.8081218.822
5985.889 1219.97 6010.841221.2766029.9381221.7526038.0871221.9516067.7981222.748
6099.2741223.615 6123.331224.538  6135.41224.2626159.8681223.2316164.5281223.026
 6166.541222.9536200.6761220.6446215.6161219.8516248.126 1217.786250.9841217.825
6251.217 1217.836254.2771217.8996275.8981218.5786295.7821218.9036302.3311219.001
6306.2931219.039
```

Manning's n Values num= 3

```
     Sta    n Val      Sta    n Val      Sta    n Val
1660.358     .0354923.183     .0855037.644     .035

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
      4923.1835037.644                 70 81.5688       71            .1            .3
Left Levee       Station= 1959.01       Elevation=1226.621
Right Levee      Station= 6123.33       Elevation=1224.538

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1224.49   Element                    Left OB     Channel    Right OB
  Vel Head (ft)              0.00   Wt. n-Val.                   0.035       0.085       0.035
  E.G. Elev (ft)          1224.50   Reach Len. (ft)             70.00       81.57       71.00
  Crit W.S. (ft)          1217.77   Flow Area (sq ft)        17321.63      961.77     6921.48
  E.G. Slope (ft/ft)     0.000008   Area (sq ft)             17321.63      961.77     6921.48
  Q Total (cfs)          10000.00   Flow (cfs)                6889.19      199.79     2911.02
  Top Width (ft)          4147.23   Top Width (ft)            2948.21      114.46     1084.65
  Vel Total (ft/s)           0.40   Avg. Vel. (ft/s)             0.40        0.21        0.42
  Max Chl Dpth (ft)         10.07   Hydr. Depth (ft)             5.88        8.40        6.38
  Conv. Total (cfs)    3472594.3    Conv. (cfs)            2392337.5    69377.9   1010878.8
  Length Wtd. (ft)          72.97   Wetted Per. (ft)          2952.09      114.74     1084.77
  Min Ch El (ft)          1214.57   Shear (lb/sq ft)             0.00        0.00        0.00
  Alpha                      1.02   Stream Power (lb/ft s)       0.00        0.00        0.00
  Frctn Loss (ft)            0.00   Cum Volume (acre-ft)        46.10       26.00       34.30
  C & E Loss (ft)            0.00   Cum SA (acres)              13.91        6.05       13.40

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
          than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Harquahala
REACH: I-10 Reach         RS: 16.7087

INPUT
Description: 16.7087
Station Elevation Data     num=      224
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
1728.3581226.306 1772.321226.2341811.5171226.1581843.7011226.292 1871.551226.345
1886.8691226.4221941.2351226.4491951.1311226.5051965.4941226.6861970.2771226.318
 1974.521226.305198l.6191226.1561989.5961226.0772056.1461225.835 2064.581225.819
2070.8191225.7512078.8431225.6952088.2011225.6382163.7521225.3172176.1911225.237
2189.2011225.2872268.8291225.2342280.8241225.1542291.7161225.1232359.0771224.952
2368.6821225.0162374.2821225.0762381.6391225.0992388.5891225.0672479.7881225.465
2480.4521225.4632480.7531225.4452481.0391225.4842481.4441225.5362483.0991225.536
2489.0781225.5782536.9891225.596 2553.841225.0682575.7861224.8042602.0341224.641
2648.193 1224.392670.6041224.3092723.2451224.1832765.4051224.1592806.733 1224.09
2849.2821224.0562886.7811224.0242910.7271224.1872962.5761224.0712988.8631224.052
3008.5751224.3153014.1481224.5263068.1821224.5143078.6081224.5133082.069 1224.58
3088.5471224.0033092.1231223.9943098.1251223.8363104.5351223.7513201.388 1223.37
3212.7851223.362 3224.371223.2693234.6361223.2083329.9471222.8073350.625 1222.79
 3364.081222.7523449.1411222.5813465.788 1222.55 3475.921222.5143486.6011222.538
3597.0821222.3043608.0921222.3373618.3871222.2563629.8121222.2683721.5191222.172
3733.1831222.1553745.6961222.0373756.7241221.9763861.1721221.5013872.6851221.486
3884.3621221.4433983.9161221.1513997.5651221.1254010.3961221.1224020.2191221.141
4087.625 1220.94 4097.031220.8554099.2511221.0694123.867 1221.084134.6481221.114
4138.7281221.8664142.6871221.9744150.6451222.0344152.042 1222.034198.0391222.206
4207.1711222.2344232.2651222.5234234.7431222.5144297.7471221.8834304.9821221.822
4319.3571221.6884373.216  1221.8 4382.551221.616 4383.131221.463 4385.231221.522
4388.878 1215.24 4390.26  1214.34402.892  1214.34422.369  1214.34423.335  1214.3
4424.217  1214.34425.1541214.8094431.0421221.587 4431.671221.6564440.0671221.878
4513.9431221.9674537.3181221.9674562.8341221.8314631.7921221.8414656.6761221.568
 4667.291221.6784668.1171221.479 4670.221215.3294670.4151214.9064670.804  1214.3
4672.466  1214.3 4674.65  1214.34683.769  1214.34689.745  1214.34695.307  1214.3
4706.465  1214.34707.4021214.9434714.505 1221.534720.493 1221.344726.1391221.681
4736.5741221.8364804.6391221.7994822.9081221.8524839.0721221.8664907.0331221.821
4920.3261221.6534946.7541222.142  4950.91221.7224951.2821221.7674953.1281215.773
4954.645  1214.34968.879  1214.34972.058  1214.34974.295  1214.34988.979  1214.3
4993.946  1214.3 4995.081221.1654996.8981221.9165029.7541221.6345032.4631221.551
5035.2961221.3815051.9761221.563 5057.291221.6845073.9951221.6065094.9061221.707
5113.714 1221.825157.5741221.882 5181.991222.0085228.1541222.3225253.3561222.495
5295.332 1222.895320.5541222.8785335.7921222.8975402.8181223.1495438.8861223.029
5476.024 1223.055529.1171223.0435582.7821223.0445611.3831223.0065656.7591223.072
5671.7191223.0185739.8921223.3015745.1611223.2785792.5791223.4445793.3041223.462
5798.7051223.4615802.5191223.4695813.7691223.4835816.2991223.4715836.7411223.271
5853.5921223.2995879.652  1223.15898.6881223.1345913.9971222.9845940.5121222.517
5970.5091222.5125998.2461222.517  6021.41222.6426036.6061222.6816053.3891222.563
6094.0391222.6616117.7261222.5766135.0671222.3196143.879 1222.096150.7881222.109
6218.6251222.2886229.0261222.2616238.9431222.3966246.8331222.5166255.8731222.511
6332.6461222.8096337.6821222.9386349.0051222.7716358.8881222.6586365.4421222.577
6441.9881222.7926456.6741223.0276473.6291222.9516487.1411222.9426578.8371223.228
 6588.86 1223.266601.1391223.2546612.975 1223.21 6676.041223.1946686.7091223.362
6694.4431223.2686705.127 1223.196796.565 1223.316808.0631223.365

Manning's n Values          num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
1728.358     .0354373.216     .034996.898     .035

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
      4373.2164996.898                 62 73.6675       62            .1            .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1224.46   Element                    Left OB     Channel    Right OB
  Vel Head (ft)              0.03   Wt. n-Val.                   0.035       0.030       0.035
  E.G. Elev (ft)          1224.49   Reach Len. (ft)             62.00       73.67       62.00
  Crit W.S. (ft)          1220.38   Flow Area (sq ft)         3019.92     2578.09     3055.86
  E.G. Slope (ft/ft)     0.000194   Area (sq ft)              3019.92     2578.09     3055.86
  Q Total (cfs)          10000.00   Flow (cfs)                2981.09     4458.61     2560.30
  Top Width (ft)          4102.75   Top Width (ft)            1667.90      623.68     1811.17
  Vel Total (ft/s)           1.16   Avg. Vel. (ft/s)             0.99        1.73        0.84
  Max Chl Dpth (ft)         10.16   Hydr. Depth (ft)             1.81        4.13        1.69
```

Conv. Total (cfs)	717853.8	Conv. (cfs)	213998.6	320062.9	183792.2
Length Wtd. (ft)	73.67	Wetted Per. (ft)	1668.02	649.69	1812.31
Min Ch El (ft)	1214.30	Shear (lb/sq ft)	0.02	0.05	0.02
Alpha	1.35	Stream Power (lb/ft s)	0.02	0.08	0.02
Frcn Loss (ft)		Cum Volume (acre-ft)	29.76	22.69	26.17
C & E Loss (ft)		Cum SA (acres)	10.20	5.36	11.04

CULVERT RIVER: Harquahala
REACH: I-10 Reach RS: 16.7017

INPUT
Description:
Distance from Upstream XS = 15
Deck/Roadway Width = 38
Weir Coefficient = 2.6
Bridge Deck/Roadway Skew =
Upstream Deck/Roadway Coordinates
num= 89

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
1296.2971229.196	1221.31301.0551229.178	1221.31375.8531228.884	1221.3		
1486.4111228.427	1221.31493.0631228.381	1221.31499.8021228.351	1221.3		
1683.0631227.887	1221.31690.1151227.878	1221.31697.1471227.852	1221.3		
1921.169 1227.19	1221.31926.6191227.182	1221.31930.6091227.169	1221.3		
2195.184 1226.76	1221.32202.5841226.755	1221.3 2209.961226.743	1221.3		
2408.1081226.396	1221.3 2414.441226.392	1221.32419.9961226.375	1221.3		
2599.61226.154	1221.32600.6031226.151	1221.32640.2251226.115	1221.3		
2644.6191226.106	1221.32835.4651225.701	1221.32837.083 1225.7	1221.3		
2839.1981225.696	1221.33037.3541225.397	1221.33037.8681225.396	1221.3		
3038.2961225.396	1221.33247.5831224.877	1221.33250.2451224.868	1221.3		
3252.9481224.861	1221.33431.3741224.376	1221.33434.1931224.368	1221.3		
3437.3991224.361	1221.33591.7571223.908	1221.33594.3261223.898	1221.3		
3690.8971223.721	1221.33805.6051223.497	1221.33807.7251223.494	1221.3		
3810.0351223.484	1221.33964.4411222.907	1221.3 4327.121223.633	1221.3		
4425.8281223.565	1221.34431.9281223.569	1221.34483.966 1223.69	1221.3		
4621.5191223.671	1221.34628.2541223.674	1221.34708.7291223.524	1221.3		
4750.1521223.765	1221.34756.1881223.761	1221.34872.1221223.663	1221.3		
4876.7121223.662	1221.34987.1691223.408	1221.34991.5461223.704	1221.3		
4993.5811223.705	1221.35111.7041223.639	1221.35113.1931223.639	1221.3		
5195.4431223.617	1221.35238.4791223.694	1221.35293.181 1223.75	1221.3		
5354.7731223.836	1221.35418.0011223.919	1221.35484.0761223.925	1221.3		
5536.4951223.956	1221.35577.4211223.956	1221.35647.2511224.009	1221.3		
5669.8381224.074	1221.35681.1211224.177	1221.35733.6941224.243	1221.3		
5799.2961224.281	1221.35800.6181224.278	1221.35866.9161224.396	1221.3		
5922.1341224.479	1221.3 5980.11224.587	1221.36038.044 1224.6	1221.3		
6095.7721224.566	1221.36153.4011224.671	1221.36208.7421224.756	1221.3		
6280.5451224.911	1221.36333.0521224.997	1221.36408.7171224.918	1221.3		
6463.1991225.078	1221.36540.9331225.331	1221.36597.6121225.401	1221.3		
6660.9261225.418	1221.36699.9061225.316	1221.36761.007 1225.29	1221.3		
6813.4791225.379	1221.36831.0191225.414	1221.3			

Upstream Bridge Cross Section Data
Station Elevation Data num= 224

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1728.3581226.306	1772.321226.2341811.5171226.1581843.7011226.292	1871.551226.345							
1886.8691226.4221941.2351226.4491951.1311226.5051965.4941226.6861970.2771226.318									
1974.521226.3051981.6191226.1561989.5961226.0772056.1461225.835	2064.581225.819								
2070.8191225.7512078.8431225.6952088.2011225.6382163.7521225.3172176.1911225.237									
2189.2011225.2872268.8291225.2342280.8241225.1542292.7261225.1232359.0771224.952									
2368.6821225.0162374.2821225.0762381.6391225.0992388.5891225.0672479.7881225.465									
2480.4521225.4632480.7531225.4452481.0391225.4842481.4441225.5362483.0991225.536									
2489.0781225.5782536.9891225.596 2553.841225.0682575.7861224.8042602.0341224.641									
2648.193 1224.392670.6041224.3092723.2451224.1832765.4051224.1592806.733 1224.09									
2849.2821224.0562886.7811224.0242910.7271224.1872962.5761224.0712988.8631224.052									
3008.5751224.3153014.1481224.5263068.1821224.5143078.6081224.5133082.069 1224.56									
3088.5471224.0033092.1231223.9943098.3251223.8363104.5351223.7513201.388 1223.37									
3212.7851223.362 3224.371223.2693234.6361223.2083329.9471222.8073350.625 1222.79									
3364.081222.7523449.1411222.5813465.788 1222.55 3475.921222.5143486.6011222.538									
3597.0821222.3043606.0921222.3373618.3871222.2563629.8121222.2683721.5191222.172									
3733.1831222.1553745.6961222.0373756.7241221.9763861.1721221.5013872.6851221.486									
3884.3621221.4433983.9161221.1513997.5651221.1254010.3961221.1224020.2191221.141									
4087.625 1220.94 4097.031220.8554099.2511221.0694123.867 1221.084134.6481221.214									
4138.7281221.8664142.6871221.9744150.6451222.0344152.042 1222.034198.0391222.206									
4207.1711222.2344232.2651222.5234234.7431222.5144297.7471221.8834304.9821221.822									
4319.3571221.6884373.216 1221.8 4382.551221.616 4383.131221.463 4385.231221.522									
4388.878 1215.24 4390.26 1214.34402.892 1214.34422.369 1214.34423.335 1214.3									
4424.217 1214.34425.1541214.8094431.0421221.587 4431.671221.6564440.0671221.878									
4513.9431221.9674537.3181221.9674562.8341221.8314631.7921221.8414656.6761221.568									
4667.291221.6784668.1171221.479 4670.221215.3294670.4151214.9064670.804 1214.3									
4672.466 1214.3 4674.65 1214.34683.769 1214.34689.745 1214.34695.307 1214.3									
4706.465 1214.34707.4021214.9434714.505 1221.534720.493 1221.344726.1391221.681									
4736.5741221.8364804.6391221.7994822.9081221.8524839.0721221.8664907.0331221.821									
4920.3261221.6534946.7541222.142 4950.91221.7224951.2821221.7674953.1281215.773									
4954.645 1214.34968.879 1214.34972.058 1214.34974.295 1214.34988.979 1214.3									
4993.946 1214.3 4995.081221.1654996.8981221.9165029.7541221.6945032.4631221.551									
5035.2961221.3815051.9761221.563 5057.291221.6845073.9951221.6065094.9061221.707									
5113.714 1221.825157.5741221.882 5181.991222.0085228.1541222.3225253.3561222.495									
5295.332 1222.895320.5541222.8785335.7921222.8975402.8181223.1495438.8861223.029									
5476.024 1223.055529.1171223.0435582.7821223.0445611.3831223.0065656.7591223.072									
5671.7191223.0185739.8921223.3015745.1611223.2785792.5791223.4445793.3041223.462									
5798.7051223.4615802.5191223.4695813.7691223.4835816.2991223.4715836.7411223.271									
5853.5921223.2995879.652 1223.15898.6881223.1345913.9971222.9845940.5121222.517									
5970.5091222.5125998.2461222.517 6021.41222.6426036.6061222.6816053.3891222.563									
6094.0391222.6616117.7261222.5766135.0671222.3196143.879 1222.096150.7881222.109									
6218.6251222.2886229.0261222.2616238.9431222.3966246.8331222.5166255.8731222.511									
6332.6461222.8096337.6821222.9386349.0051222.7716358.8881222.6586365.4421222.577									
6441.9881222.7926456.6741223.0276473.6291222.9516487.1411222.9426578.8371223.226									
6588.86 1223.266601.1391223.2546612.975 1223.21 6676.041223.1946686.7091223.362									
6694.4431223.2686705.127 1223.196796.565 1223.316808.0631223.365									

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
1728.358    .0354373.216     .034996.898    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
      4373.2164996.898             .1        .3

Downstream  Deck/Roadway Coordinates
    num=       89
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
1296.2971229.196 1221.071301.0551229.178 1221.071375.8531228.884 1221.07
1486.4111228.427 1221.071493.0631228.381 1221.071499.8021228.351 1221.07
1683.0631227.887 1221.071690.1151227.878 1221.071697.1471227.852 1221.07
1921.169 1227.19 1221.071926.6191227.182 1221.071930.6091227.169 1221.07
2195.184 1226.76 1221.072202.5841226.755 1221.07 2209.961226.743 1221.07
2408.1081226.396 1221.07 2414.441226.392 1221.072419.9961226.375 1221.07
  2599.61226.154 1221.072600.6031226.151 1221.072640.2251226.115 1221.07
2644.6191226.106 1221.072835.4651225.701 1221.072837.083  1225.7 1221.07
2839.1981225.696 1221.073037.3541225.397 1221.073037.8681225.396 1221.07
3038.2961225.396 1221.073247.5831224.877 1221.073250.2451224.868 1221.07
3252.9481224.861 1221.073431.3741224.376 1221.073434.1931224.368 1221.07
3437.3991224.361 1221.073591.7571223.908 1221.073594.3261223.898 1221.07
3690.8971223.721 1221.073805.6051223.497 1221.073807.7251223.494 1221.07
3810.0351223.484 1221.073964.4411223.907 1221.07 4327.121223.633 1221.07
4425.8281223.565 1221.074431.9281223.569 1221.074483.966 1223.69 1221.07
4621.5191223.671 1221.074628.2541223.674 1221.074708.7291223.514 1221.07
4750.1521223.765 1221.074756.1881223.761 1221.074872.1221223.663 1221.07
4876.7131223.662 1221.074987.1691223.408 1221.074991.5461223.704 1221.07
4993.5811223.705 1221.075111.7041223.639 1221.075113.1931223.639 1221.07
5195.4431223.617 1221.075238.4791223.694 1221.075293.181 1223.75 1221.07
5354.7731223.836 1221.075418.0011223.919 1221.075484.0761223.925 1221.07
5536.4951223.956 1221.075577.4211223.956 1221.075647.2511224.009 1221.07
5669.8381224.074 1221.075681.1211224.177 1221.075733.6941224.243 1221.07
5799.2961224.281 1221.075800.6181224.278 1221.075866.9161224.396 1221.07
5922.1341224.479 1221.07  5980.11224.587 1221.076038.044  1224.6 1221.07
6095.7721224.566 1221.076153.4011224.671 1221.076208.7421224.756 1221.07
6280.5451224.911 1221.076333.0521224.997 1221.076408.7171224.918 1221.07
6463.1991225.078 1221.076540.9331225.331 1221.076597.8121225.401 1221.07
6660.9261225.418 1221.076699.9061225.316 1221.076761.007 1225.29 1221.07
6813.4791225.379 1221.076831.0191225.414 1221.07

Downstream Bridge Cross Section Data
Station Elevation Data    num=     213
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
1734.5761226.1421774.4281225.9121791.2031225.8531831.5041225.9481864.4451226.167
1896.2871226.1521917.6321226.2821941.7821226.3041964.5091226.3541967.8851226.363
1991.0461226.5131993.0831226.5051993.5751226.4522014.637 1226.132016.6011226.001
2018.2281225.9842031.6471225.9112031.8661225.9192032.1961225.9172050.6571226.168
2063.3081225.6982074.4121225.6922111.1931225.3092147.3541225.3132189.018  1225.1
 2243.871225.0812275.5171224.9842335.884 1224.972367.0381224.9712409.0541224.836
 2437.81 1225.182466.7271225.4952484.7051225.4392508.5381225.494 2516.251225.627
2558.3991225.8072563.784 1225.792603.9791225.5862642.6451224.9112677.4311224.865
2700.508 1224.832700.633 1224.832700.7981224.8282731.1621224.0462752.676 1224.13
2796.8821224.1072817.0931224.0412841.1791223.9392898.3431223.7892925.4051223.789
2948.6261223.7682967.7771224.0913023.4291223.9983041.9151224.1633059.7111224.352
3066.7941224.5283071.0511224.7143111.1871224.7183128.3391224.6873145.1151224.256
3152.9231223.9153164.5961223.611 3200.011223.4763221.4441223.2323237.5371223.157
3262.2641223.1333317.4941222.967 3338.941222.7883348.5861222.8583358.673 1222.91
 3366.031222.9013437.257 1222.653446.4011222.5673453.624 1222.663460.6971222.689
3466.993 1222.61 3547.681222.4613555.0611222.5363563.0381222.3043570.2371222.206
3577.819 1222.253682.0181221.9473691.1981221.8653700.7811221.816 3709.811221.875
3717.4751221.9213725.0051221.8823832.5191221.6373842.6371221.5553853.7381221.518
3862.9571221.4653926.8371221.342 3935.051221.4443943.8431221.4023951.8621221.359
4014.428 1221.114023.5831221.122 4031.891221.0854040.656 1221.074117.6241221.148
4128.4241221.1974139.2531221.1484178.9041221.0844190.7931221.4844196.8831221.768
4259.546 1221.914266.8531221.9074273.538 1221.954326.213 1222.064350.5831221.662
4390.6671221.8114393.5141221.8224398.8261219.5994401.256 1214.074405.641 1214.07
4434.999 1214.074436.656 1214.074438.9351215.469 4441.891221.441 4443.331221.703
4491.8341221.6834524.502 1221.914541.4451221.9834607.6211221.9974621.2821221.854
4634.6871221.3424644.6841220.5494677.2551220.7224678.5361220.6014681.1541215.917
 4684.27 1214.074690.676 1214.074698.358 1214.074721.182 1214.074722.7171215.649
4724.9911221.389 4725.981221.7084727.099 1221.894728.7441221.9374805.3581221.957
4810.7441221.9844816.073 1222.074895.305 1222.134901.1061222.2044903.8441222.137
4907.146 1221.854918.8521221.5344961.4311221.6454963.248 1221.434968.951 1214.07
 4969.98 1214.074974.042 1214.07  5004.3 1214.075006.0571214.7815010.9361222.052
5016.2531222.0515020.7791222.0755023.4951221.9855045.3261222.441 5064.041221.955
5071.2921222.1715085.6091222.1625136.4081222.1165199.3131222.1665218.102 1222.19
5291.262 1222.415339.6971222.6445366.168 1222.695417.8041222.4535479.854 1222.69
5489.1851222.6925558.9831222.7055588.3631222.746 5625.571222.7875626.1241222.792
5652.7551222.8375692.2361222.8935710.2441222.9295732.477 1222.965733.7891222.929
5741.894 1222.925764.9931222.7985765.1051222.7995848.0991222.9925864.7071223.024
5940.5391223.1696021.9821223.2256026.9391223.2166124.5511223.3756138.3711223.388
6211.4581223.3186222.4941223.2996222.7891223.2966223.1071223.2966317.5911223.195
6318.8111223.1956319.215  1223.26320.0071223.1956410.1931223.2296411.854 1223.24
6413.3821223.2616478.567 1223.486519.1311223.6036526.9671223.616 6592.311223.838
6649.5141223.684 6661.041223.7016678.3751223.659 6737.691224.1656763.0591224.122
6777.3791224.0956809.1021224.1716859.3461224.218

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
1734.576    .0354393.514     .035010.936    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
      4393.5145010.936             .1        .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested
```

```
Number of Culverts =  1

Culvert Name      Shape      Rise    Span
Culvert #1          Box        7      10
FHWA Chart # 58- Rectangular concrete
FHWA Scale # 2 - Side tapered; More favorable edges
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
              7        62       .014                .3                  1
Number of Barrels =  9
Upstream   Elevation =  1214.3
Centerline Stations
    Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.
    4396     4407     4418     4678     4689     4700     4964     4975     4986
Downstream Elevation =  1214.07
Centerline Stations
    Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta      Sta.     Sta.
    4406     4417     4428     4691     4702     4713   4975.5   4986.5   4997.5

CROSS SECTION            RIVER: Harquahala
REACH: I-10 Reach          RS: 16.6948

INPUT
Description: 16.694E
Station Elevation Data     num=      213
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1734.5761226.1421774.4281225.9121791.2031225.8531831.5041225.9481864.4451226.167
1896.2871226.1521917.6321226.2821941.7821226.3041964.5091226.3541967.8851226.363
1991.0461226.5131993.0831226.5051993.5751226.4522014.637 1226.132016.6011226.001
2018.2381225.9842031.6471225.9112031.8661225.9192032.1961225.9172050.6571226.168
2063.3081225.6982074.4121225.6922111.1931225.3092147.3541225.3132189.018  1225.1
 2243.871225.0812275.5171224.9842335.884 1224.972367.0381224.9712409.0541224.836
 2437.81 1225.182466.7271225.4952484.7051225.4392508.5381225.494 2516.251225.627
2558.3991225.8072563.784 1225.792603.9791225.5862642.6451224.9112677.4311224.865
2700.508 1224.832700.633 1224.832700.7981224.8282731.1621224.0462752.676 1224.13
2796.6821224.1072817.0931224.0412841.1791223.9392898.3431223.7892925.4051223.789
2948.6261223.7682967.7771224.0913023.4291223.9983041.9151224.1633059.7111224.352
3066.7941224.5283071.0511224.7143111.1871224.7183128.3391224.6873145.1151224.256
3152.9231223.9153164.5961223.611 3200.011223.4763221.4441223.2323237.5371223.157
3262.2641223.1333317.4941222.967 3338.941222.7883348.5861222.8583358.673 1222.91
 3366.031222.9013437.257 1222.653446.4011222.5673453.624 1222.663460.6971222.689
3466.993 1222.61 3547.681222.4613555.0611222.5363563.0381222.3043570.2371222.206
3577.819 1222.253682.0181221.9473691.1981221.8653700.7811221.816 3709.811221.875
3717.4751221.9213725.0051221.8823832.5191221.6373842.6371221.5553853.7381221.518
3862.9571221.4653926.8371221.342 3935.051221.4443943.8431221.4023951.8621221.359
4014.428 1221.114023.5831221.122 4031.891221.0854040.656 1221.074117.6241221.148
4128.4241221.1974139.2531221.1484178.9041221.0844190.7931221.4844196.8831221.768
4259.546 1221.914266.8531221.9074273.538 1221.954326.213 1222.064350.5831221.662
4390.6671221.8114393.5141221.8224398.8261219.5994401.256 1214.074405.641 1214.07
4434.999 1214.074436.656 1214.074438.9351215.469 4441.891221.441 4443.331221.703
4491.8341221.6834524.502 1221.914541.4451221.9834607.6211221.9974621.2821221.854
4634.6871221.3424644.6841220.5494677.2551220.7224678.5361220.6014681.1541215.917
 4684.27 1214.074690.676 1214.074698.358 1214.074721.182 1214.074722.7171215.649
4724.9911221.389 4725.981221.7084727.099 1221.894728.7441221.9374805.3581221.957
4810.7441221.9844816.073 1222.074895.305 1222.134901.1061222.2044903.8441222.137
4907.146 1221.854918.8521221.5344961.4311221.6454963.248 1221.434968.951 1214.07
 4969.98 1214.074974.042 1214.07  5004.3 1214.075006.0571214.7815010.9361222.052
5016.2531222.0515020.7791222.0755023.4951221.9855045.3261222.441 5064.041221.955
5071.2921222.1715085.6091222.1625136.4081222.1165199.3131222.1665218.102 1222.19
5291.262 1222.415339.6971222.6445366.168 1222.695417.8041222.4535479.854 1222.69
5489.1851222.6925558.9831222.7055588.3631222.746 5625.571222.7875626.1241222.792
5652.7551222.8375692.2361222.8935710.2441222.9295732.477 1222.965733.7891222.929
5741.894 1222.925764.9931222.7985765.1051222.7995848.0991222.9925864.7071223.034
5940.5391223.1696021.9821223.2256026.9391223.2366124.5511223.3756138.3711223.368
6211.4581223.3186222.4941223.2996222.7891223.2966223.1071223.2966317.5911223.195
6318.8111223.1956319.215  1223.26320.0071223.1956410.1931223.2296411.854 1223.24
6413.3821223.2616478.567 1223.486519.1311223.6036526.9671223.616 6592.311223.836
6649.5141223.684 6661.041223.7016678.3751223.659 6737.691224.1656763.0591224.122
6777.3791224.0956809.1021224.1716859.3461224.218

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
1734.576    .0354391.514     .035010.936    .035

Bank Sta: Left   Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
      4393.5145010.936                88101.2588       86              .1        .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1223.02   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.20   Wt. n-Val.                   0.035      0.030      0.035
  E.G. Elev (ft)            1223.22   Reach Len. (ft)              88.00     101.26      86.00
  Crit W.S. (ft)                      Flow Area (sq ft)         1242.51    1738.30     389.21
  E.G. Slope (ft/ft)       0.001815   Area (sq ft)              1242.51    1738.30     389.21
  Q Total (cfs)           10000.00    Flow (cfs)                2448.29    7132.58     419.13
  Top Width (ft)           2557.62    Top Width (ft)            1092.87     617.42     847.32
  Vel Total (ft/s)            2.97    Avg. Vel. (ft/s)             1.97       4.10       1.08
  Max Chl Dpth (ft)           8.95    Hydr. Depth (ft)             1.14       2.82       0.46
  Conv. Total (cfs)       234697.4    Conv. (cfs)              57460.7   167399.8     9836.9
  Length Wtd. (ft)            93.69   Wetted Per. (ft)         1092.90     641.20     847.34
  Min Ch El (ft)           1214.07    Shear (lb/sq ft)             0.13       0.31       0.05
  Alpha                       1.48    Stream Power (lb/ft s)       0.25       1.26       0.06
  Frctn Loss (ft)             0.00    Cum Volume (acre-ft)        26.73      19.04      23.71
  C & E Loss (ft)             0.06    Cum SA (acres)               8.23       4.31       9.15


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
          than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
```

REACH: I-10 Reach RS: 16.6789

INPUT
Description: 16.6789
Station Elevation Data num= 405

```
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
1791.0911220.7651793.2651220.7771795.2761220.7731850.0521220.6611852.4831220.682
1894.5681220.991 1897.721221.0081899.9161221.0121902.6281220.9771950.4011221.063
1954.0171221.0041958.6171220.9911961.8381220.9652000.8231220.8782005.5421220.836
2009.262 1220.772009.9321220.5842011.924  1219.82019.138  1219.82044.695  1219.8
2052.5671220.8332055.511  1221.12078.525 1223.772084.3781224.4862084.8481224.517
  2092.81224.8182094.5251224.7762104.8341224.4462112.3781223.3722115.1561223.033
2128.5271221.8132145.2151220.2692148.5381220.2382160.9961220.2882174.5031220.304
2179.2181220.2992182.6361220.3262234.7371220.6282238.5761220.6282240.777  1220.6
2243.9661220.6292287.0361220.6022292.4651220.6022297.0791220.6252345.4271220.621
2349.0671220.5892352.203 1220.552387.2791220.1372390.6171220.1112393.5211220.106
2395.5831220.1052432.5061219.9442436.8261219.9032458.9761219.8282465.0451219.796
2473.5741219.7772498.3161219.7022505.9471219.7322530.6321220.0312535.8691219.988
2538.5371220.059 2563.93 1220.242564.0571220.2382568.3831219.8962570.6031219.891
2602.4991219.9732607.7081219.9832608.0141219.9822608.1431219.9982635.8341223.476
2642.4561223.6212646.8961223.7062650.6671223.581  2660.11223.3682678.6371221.745
2691.4031220.5912703.1011220.4712705.9551220.4172719.0631219.7122722.2121219.609
 2755.241219.4512756.691 1219.44 2758.611219.418 2799.961219.2672803.3761219.252
2840.3921218.7572843.8041218.7312881.5681218.475 2885.261218.4352890.7271218.412
 2929.191218.1032934.6771218.0752973.7791218.0762979.0161218.0463016.1541217.915
3020.0451217.9093023.3741217.9063049.1351217.6853052.3281217.6553077.3291217.422
3079.1591217.418 3081.13  1217.43108.6651217.3583108.1111217.3853110.1631217.345
3121.0391217.1983140.9491217.2213163.7851217.303 3167.671217.7263175.5521218.834
3177.5651219.1273178.4881219.2783192.6491221.7483202.929 1222.01 3204.961222.054
3207.3071222.1273209.8121222.0023222.6331221.4983240.993 1218.483245.1431217.695
3259.5281217.5733270.7091217.4563274.614 1217.44 3316.871217.2773322.9961217.301
3346.8281217.3253352.7031217.365 3376.241217.2143383.1391217.206 3389.261217.168
3417.6561217.4063423.9851217.412 3463.421217.2023471.9971217.2023512.1751217.176
 3518.261217.1943526.4251217.1643560.0441217.1913566.123 1217.153603.4961217.059
3608.5341217.0213612.5521217.0393654.8541216.8393658.5721216.824 3693.371216.923
3697.9831216.9383719.6861216.6933726.0081216.6533765.5321216.5863770.9551216.587
3818.623 1216.373823.9211216.3443828.6731216.3253872.2381216.0073876.2631215.987
3903.3561215.8413906.5161215.8683954.842 1215.983958.375 1215.983964.5291215.888
4020.1241215.7144024.2861215.7144028.742 1215.714088.309 1215.654092.264 1215.64
4129.8541215.5274134.0441215.536 4182.451215.5374185.7411215.5354187.5951215.525
4227.9671215.5434228.6691215.6014237.668 1216.174239.5691216.1714258.1041216.053
4259.5511216.0644283.8631216.0644284.4071216.082 4296.551216.4074302.8161216.606
4317.8381216.7294318.2841216.7344321.3541216.7434336.3061216.942 4339.811217.081
4346.4051217.6694359.1261218.9244374.8721219.2374380.9631219.4044383.0311219.437
 4392.211216.9294400.0121213.7314428.7361214.336 4433.451214.3774444.9091216.538
 4445.531216.7014447.4061216.6684472.2711216.1294496.6531215.9984511.7341215.846
4593.1581215.4254594.155 1215.444594.7291215.4374595.0921215.4364602.2551215.453
4665.2871215.6264667.805  1215.64670.9471215.559  4674.91215.3744687.4751214.606
4691.3871214.3684699.0731214.3034718.3921214.3134722.8261214.7824728.984 1215.45
4735.2611215.4254739.7331215.4094799.5961215.565 4804.841215.5784809.7971215.597
4859.1351215.7914880.9851215.8694882.8361215.8744885.3991215.883 4945.961215.967
4951.2641215.9684954.9841215.9684958.283 1215.514966.6561214.2564970.341 1214.23
5001.779 1214.285013.1551218.3365022.4141221.6085043.4231221.3755048.0971221.252
5065.0751219.5385097.8671216.4255099.0361216.4895111.5711216.6625119.372 1216.62
5134.1661216.6615148.1851216.7635177.4041216.2235181.5741216.2815186.8381216.376
5203.0211216.1865209.0111216.1195247.7551216.3495248.9191216.3385249.2921216.334
5277.7151216.437 5302.561216.5455303.3071216.536 5312.861216.5595362.1331216.828
5372.4481216.9845390.1461216.9485415.546 1216.855416.2281216.8515417.3931216.884
5418.2811216.8535420.456 1216.885452.0421216.6925453.651 1216.725457.3751216.575
5458.7391216.6245461.6431216.6045465.1291215.9165468.333 1215.545470.7931215.691
5477.9951216.3595480.9791216.194 5480.991216.1965481.5031216.1985503.9271215.978
5508.5041215.8385525.8791215.652 5529.971215.7325537.0831216.1535539.3121216.052
5548.1161216.1945553.9071216.1255559.1551215.6225564.7341215.5855575.0351215.185
5578.9821215.3325579.9771215.288 5590.59 1215.05 5591.081215.0275594.1111215.055
5597.0621215.4045601.4081215.7655602.7841215.6235608.6211215.7135622.3861216.057
 5627.491216.0275629.2381215.9835635.3781216.5435638.1041216.4225640.2531216.695
5644.0021216.8025651.1251216.7445661.1181216.7545677.0331216.6025679.2271216.607
5682.1271216.5825686.5071216.4515689.1041216.4195690.8291216.3795697.6591216.219
5713.2971216.2835715.2281216.2675736.8341216.3965739.3371216.4195739.7441216.427
5752.9931216.5225762.2111216.6675774.7161216.9175788.0881217.4395794.614 1217.48
5811.5921217.6295820.6581217.5545838.9311217.6795845.4891217.6425849.3951217.626
 5865.831217.6285875.4251217.548 5889.73 1217.515906.7581227.5955917.8491217.742
 5935.281217.7325953.6331217.779 5962.451217.8675964.6921217.877 5982.771218.085
 5993.611218.2416004.6791218.2256016.0211218.1716047.388 1218.22 6058.551218.347
6071.1321218.5086086.5591218.5336107.7081218.5736113.533 1218.43 6126.031218.114
6127.2161218.0876130.647 1218.016138.1591217.7936139.4911217.7656149.4871217.448
 6156.291217.241  6160.11217.2846174.6721217.4446179.7241217.2796181.0351217.268
6181.2361217.2466198.4551216.6326208.1221216.1876211.7271216.1426219.2581216.061
6231.2111216.4116236.8621216.4626268.2121216.3056281.605 1216.266304.9171216.634
6319.6891216.7796342.7981217.0336357.0211217.2866361.8511217.5216376.2681217.853
6377.4171217.8496377.7721217.8486388.9961217.8026391.8831217.7346415.1071217.785
 6421.951217.6766425.3391217.6996444.6471217.9896447.1481218.0256449.3521218.071
6467.8531218.3896486.8341218.2996491.9631218.2736522.4021218.027 6527.541217.987
6568.0841218.0356579.3751218.0976611.0291218.1916622.7251218.182 6638.071218.218
6657.2831218.285 6658.251218.2456659.5361218.2136670.7731217.9776681.0941217.575
 6688.611217.7556698.5611218.114 6708.111218.2146713.8261218.2826752.6261219.039
6755.1671219.094 6756.361219.1196757.6371219.1376789.2321219.3556799.5791219.442
6838.1191219.4656855.2791219.4756892.7461219.6166939.4131219.674
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
1791.091    .035 4383.031    .035 5022.414    .035
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
      4383.0315022.414              67 77.7151     68          .1       .3
```

Left Levee Station= 2092.8 Elevation=1224.818

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1223.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.035	0.035	0.035

E.G. Elev (ft)	1223.16	Reach Len. (ft)	67.00	77.72	68.00
Crit W.S. (ft)	1216.91	Flow Area (sq ft)	11417.03	4857.83	10846.35
E.G. Slope (ft/ft)	0.000007	Area (sq ft)	11417.03	4857.83	10846.35
Q Total (cfs)	10000.00	Flow (cfs)	3974.66	2123.93	3901.42
Top Width (ft)	4795.96	Top Width (ft)	2239.58	639.38	1917.00
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)	0.35	0.44	0.36
Max Chl Dpth (ft)	9.42	Hydr. Depth (ft)	5.10	7.60	5.66
Conv. Total (cfs)	3742274.5	Conv. (cfs)	1487426.3	794831.3	1460017.0
Length Wtd. (ft)	71.32	Wetted Per. (ft)	2240.90	642.07	1921.16
Min Ch El (ft)	1213.73	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	1.02	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	13.94	11.37	12.62
C & E Loss (ft)	0.00	Cum SA (acres)	4.87	2.85	6.42

Warning - Divided flow computed for this cross-section.
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: I-10 Reach RS: 16.6642

INPUT
Description: 16.6642
Station Elevation Data num= 206

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
1758.5691225.4451814.8281225.3571840.7391225.4371867.2821225.6991922.4421225.593
1932.1811225.5751978.2821225.3772010.0261225.5412044.1081225.4272065.9281225.474
2080.7971225.5212092.1151225.4922111.5171225.4062125.0921225.3212141.224 1224.87
2180.0091224.7832209.3361224.6062240.5081224.3342271.1531224.3082309.594 1224.25
2343.6411224.1932374.5181224.4082405.9441224.4532436.5131224.2362469.5661224.366
2506.6131224.2912531.2771224.5612550.0471224.6472560.4181224.7852600.9231224.608
2605.4361224.712 2615.091224.8622621.7851224.9632642.223  1224.92651.104 1224.73
2671.7481224.5872697.1031224.593 2717.151224.1362737.912  1223.72779.0461223.708
 2810.971223.6082860.8681223.5042902.407 1223.38 2970.591223.1833015.5641223.358
 3066.421223.3033096.0221223.4953111.5661223.501 3125.691223.6573134.9891223.823
3138.5741223.9953184.2661223.8883208.8451223.8633213.5141223.7993223.9041223.583
3227.8771223.5923245.5931223.2353269.9791222.9573294.256 1222.883333.1251222.392
3362.181 1222.283395.956 1222.173446.9491222.0063472.036 1221.583481.4191221.604
3492.626 1221.583502.4781221.5693609.9381221.362  3622.61221.3333631.7191221.296
3639.6471221.1843646.151 1221.213724.9741221.1043734.8121221.1383742.1011221.147
3752.8851221.0623764.4591220.9623859.6641220.6443875.4311220.6413887.8491220.636
3897.8151220.5463976.647 1220.423985.3991220.5063992.4611220.4974004.8721220.316
4078.069 1219.86  4090.6 1219.924102.6041219.9464111.9771219.935 4168.041219.794
4179.6331219.6754194.5581219.7154256.3991219.5574268.3791220.2794270.3461220.301
4275.4221220.837 4308.891220.7764354.6421220.841 4382.431221.433 4392.471220.895
4394.359 1220.954395.7361215.1354399.761  1213.24416.896  1213.24422.955  1213.2
4431.597  1213.24435.434  1213.24436.5621217.5294440.7571220.5614442.2961220.561
4473.2121220.3874521.4741220.8754584.8251220.8424625.8631220.6224658.0561220.582
4675.5971220.867 4678.541220.8874678.6491220.2914680.245  1213.24682.761  1213.2
4709.335  1213.24712.382  1213.24718.512  1213.2 4718.64  1213.24721.3731217.663
4725.1741220.4544727.0541220.2514754.3411220.2754767.3631219.9494776.5771220.439
4787.1821220.6544802.6471220.622 4873.181220.4384890.4241220.4134905.4671220.537
4954.1381220.4724960.177 1220.654960.5981220.7964963.3561217.2884966.063  1213.2
4968.543  1213.25000.868  1213.25003.189  1213.25007.079  1213.25013.9211221.432
5016.7621221.5545024.6591221.592 5035.291221.7155042.4931221.6215050.4971221.337
5050.5331221.4335098.4261221.4625141.0171221.3935163.7191221.4785213.5481221.475
5224.9571221.4175278.3861221.1985281.4391221.1675281.7081221.1675281.9931221.163
5304.4651221.2575362.3341221.4755367.0921221.4695427.1641221.5095501.745 1221.44
5502.227 1221.44 5571.481221.642 5581.761221.6535629.5941221.8615643.1221221.874
5699.3341221.9755747.7311222.0895766.0511222.0985815.7031221.8125830.0581221.703
5837.5521221.7225924.2891221.9525924.7351221.9535924.8451221.9535924.8961221.954
5924.9741221.9535934.6621221.9395994.4791221.8246001.8961221.8436073.9861221.887
6085.7561221.9036149.4241221.9926223.0081221.9656235.4451221.9566301.6071222.128
 6318.351222.1766387.0351222.2926405.9721222.2736488.8681222.2656511.173 1222.35
6571.7061222.6226595.6321222.5756654.7681222.5546715.7031222.7386743.3961222.833
6810.5261222.8636818.9661222.8756879.1791223.0766893.1631223.076 6952.061222.836
 6999.421222.672
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
1758.569    .035 4382.43     .035013.921    .035
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
       4382.435013.921                76 90.3017      79              .1       .3
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1223.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.035	0.030	0.035
E.G. Elev (ft)	1223.15	Reach Len. (ft)	76.00	90.30	79.00
Crit W.S. (ft)	1221.03	Flow Area (sq ft)	2383.49	2547.28	2143.53
E.G. Slope (ft/ft)	0.000304	Area (sq ft)	2383.49	2547.28	2143.53
Q Total (cfs)	10000.00	Flow (cfs)	2909.38	5421.30	1669.32
Top Width (ft)	3742.26	Top Width (ft)	1125.27	631.49	1985.50
Vel Total (ft/s)	1.41	Avg. Vel. (ft/s)	1.22	2.13	0.78
Max Chl Dpth (ft)	9.90	Hydr. Depth (ft)	2.12	4.03	1.08
Conv. Total (cfs)	573622.3	Conv. (cfs)	166888.8	310977.6	95755.9
Length Wtd. (ft)	90.30	Wetted Per. (ft)	1125.34	658.27	1985.95
Min Ch El (ft)	1213.20	Shear (lb/sq ft)	0.04	0.07	0.02
Alpha	1.50	Stream Power (lb/ft s)	0.05	0.16	0.02
Frctn Loss (ft)		Cum Volume (acre-ft)	3.33	4.77	2.48
C & E Loss (ft)		Cum SA (acres)	2.28	1.72	3.37

CULVERT RIVER: Harquahala
REACH: I-10 Reach RS: 16.6556

INPUT
Description:

Distance from Upstream XS = 15
Deck/Roadway Width = 38
Weir Coefficient = 2.6
Bridge Deck/Roadway Skew =
Upstream Deck/Roadway Coordinates
num= 97

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
1816.1391226.294	1220.21927.866	1226.11	1220.21971.5141225.991		1220.2
2039.3371225.901	1220.2	2096.981225.792	1220.22187.1661225.656		1220.2
2252.6751225.541	1220.2	2310.941225.464	1220.22432.5951225.355		1220.2
2514.0481225.272	1220.22566.9391225.155		1220.22623.9691225.155		1220.2
2751.1471224.887	1220.22795.311	1224.76	1220.2	2854.451224.661	1220.2
2955.1971224.436	1220.23021.4311224.332		1220.23077.4681224.149		1220.2
3125.1221224.076	1220.23239.9531223.861		1220.23287.9811223.847		1220.2
3333.9251223.663	1220.23420.4381223.446		1220.2	3471.011223.226	1220.2
3524.2331223.134	1220.23647.1141222.801		1220.23690.7041222.628		1220.2
3734.3541222.506	1220.23777.9761222.451		1220.23874.4141222.257		1220.2
3923.729 1222.21	1220.23969.3031222.141		1220.24317.6661222.284		1220.2
4323.5381222.338	1220.2	4326.881222.343	1220.24365.1061222.407		1220.2
4398.141222.448	1220.24417.066	1222.57	1220.24420.7541222.569		1220.2
4465.4241222.526	1220.24568.2411222.496		1220.24585.4851222.488		1220.2
4671.0441222.363	1220.24681.7321222.346		1220.24692.5661222.344		1220.2
4789.7371222.331	1220.24796.3421222.323		1220.24860.1141222.256		1220.2
4906.5561222.199	1220.24910.8131222.199		1220.24913.8381222.185		1220.2
4987.2421222.227	1220.24989.9931222.234		1220.25030.3181222.212		1220.2
5031.7121222.215	1220.2	5125.191222.324	1220.25139.5911222.374		1220.2
5153.0241222.361	1220.25267.4171222.349		1220.2	5277.631222.366	1220.2
5293.2921222.396	1220.25372.4671222.587		1220.25391.7371222.599		1220.2
5459.1321222.709	1220.25509.6051222.646		1220.2	5537.561222.648	1220.2
5594.546 1222.85	1220.25614.3171222.859		1220.25649.1011223.088		1220.2
5665.2031223.109	1220.25714.2681223.244		1220.2	5760.271223.224	1220.2
5789.061223.256	1220.25845.3191223.227		1220.25874.501 1223.23		1220.2
5939.6611223.122	1220.26015.2961223.286		1220.26052.573 1223.35		1220.2
6087.2291223.451	1220.26147.4331223.534		1220.26174.8731223.497		1220.2
6201.4981223.501	1220.26290.7261223.536		1220.26315.6671223.599		1220.2
6384.8651223.581	1220.26420.0911223.588		1220.26501.379 1223.83		1220.2
6524.9391223.888	1220.26601.5771223.895		1220.26627.6981223.865		1220.2
6700.941224.114	1220.26733.5011224.207		1220.26831.1781224.122		1220.2
6854.1481224.171	1220.2	6957.93 1224.36	1220.26983.2711224.363		1220.2
7010.3921224.401	1220.2				

Upstream Bridge Cross Section Data
Station Elevation Data num= 206

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1758.5691225.4451914.8281225.3571840.7391225.4371867.2821225.6991922.4421225.593									
1932.1911225.5751978.2821225.3772010.0241225.5412044.1081225.4272065.9281225.474									
2080.7971225.5212092.1151225.4922111.5171225.4062125.0921225.3212141.224 1224.87									
2180.0091224.7832209.3361224.6062240.5081224.3342271.3531224.3082309.594 1224.25									
2343.6411224.1932374.5181224.4082405.9441224.4532436.5131224.3362469.5661224.366									
2506.6131224.2912531.2771224.5622550.0471224.6472560.6181224.7852600.9231224.608									
2605.4361224.712 2615.091224.8622621.7851224.9632642.223 1224.92651.104 1224.73									
2671.7481224.5872697.1031224.593 2717.151224.1362737.912 1223.72779.0461223.708									
2810.991223.6082860.8681223.5042902.407 1223.38 2970.591223.1833015.5641223.358									
3066.421223.3033096.0221223.4953111.5662223.501 3125.691223.6573134.9891223.823									
3138.5741223.9953184.2661223.8883208.8451223.8633213.5141223.7993223.9041223.583									
3227.8771223.5923245.5931223.2353269.9791222.9573294.256 1222.883333.1251222.392									
3362.181 1222.283395.956 1222.173446.9491222.0063472.036 1221.583481.4191221.604									
3492.626 1221.583502.4781221.5693609.9381221.362 3622.61221.3333631.7191221.296									
3639.6471221.1843646.151 1221.213724.9741221.1043734.8121221.1383742.1011221.147									
3752.8851221.0623764.4591220.9623859.6641220.6443875.4311220.6413887.8491220.636									
3897.8151220.5463976.647 1220.423985.3991220.5063992.4611220.4974004.8721220.316									
4078.069 1219.86 4090.6 1219.924102.6041219.9464111.9771219.935 4168.041219.794									
4179.6331219.6754194.5581219.7154256.3991219.5574268.3791220.2794270.3461220.301									
4275.4221220.837 4308.891220.7764354.6421220.841 4382.431221.433 4392.471220.895									
4394.359 1220.954395.7361215.1354399.761 1213.24416.896 1213.24422.955 1213.2									
4431.597 1213.24435.434 1213.24436.5621217.5294440.7571220.5614442.2961220.561									
4473.2121220.3874521.4741220.8754584.8251220.8424625.8631220.622465B.0561220.582									
4675.5971220.867 4678.541220.8874678.6491220.2914680.245 1213.24682.761 1213.2									
4709.335 1213.24712.382 1213.24718.512 1213.2 4718.64 1213.24721.3731217.663									
4725.1741220.4544727.0541220.2514754.3411220.2754767.3631219.9494776.5771220.439									
4787.1821220.6544802.6471220.622 4873.181220.4384890.4241220.4134905.4671220.537									
4954.1391220.4724960.177 1220.654960.5981220.7964963.3561217.2884966.083 1213.2									
4968.543 1213.25000.868 1213.25003.189 1213.25007.079 1213.25013.9211221.432									
5016.7611221.5545024.6591221.592 5035.291221.7155042.4931221.6215050.4971221.337									
5080.5331221.4335098.4261221.4625141.0171221.3935163.7191221.4785213.5481221.475									
5224.9571221.4175276.3861221.1985281.4391221.1675281.7081221.1675281.9931221.163									
5304.4651221.2575362.3341221.4755367.0921221.4695427.1641221.5095501.745 1221.44									
5502.227 1221.44 5571.481221.642 5581.761221.6535629.5941221.8615643.1221221.874									
5695.3341221.9755747.7321222.0895766.0511222.0985815.7031221.8125830.0581221.703									
5837.5521221.7225924.2891221.9525924.7351221.9535924.8451221.9535924.8961221.954									
5924.9741221.9535934.6621221.9395994.4791221.8246001.8961221.8436073.9861221.887									
6085.7561221.9036149.4241221.9926223.0081221.9656235.4451221.9566301.6071222.128									
6318.351222.1766387.0351222.2926405.9721222.2736488.8681222.2656511.173 1222.35									
6571.7061222.6226595.6321222.5756654.7681222.5546715.7031222.7386743.3961222.833									
6810.5261222.8636818.9661222.8756879.1791223.0766893.1631223.076 6952.061222.836									
6999.421222.672									

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1758.569	.035	4382.43	.035	5013.921	.035

Bank Sta: Left	Right	Coeff Contr.	Expan.
4382.435	5013.921	.1	.3

Downstream Deck/Roadway Coordinates
num= 97

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
1816.1391226.294	1219.971927.866	1226.11	1219.971971.5141225.991		1219.97
2039.3371225.901	1219.97	2096.981225.792	1219.972187.1661225.656		1219.97
2252.6751225.541	1219.97	2310.941225.464	1219.972432.5951225.355		1219.97
2514.0481225.272	1219.972566.9391225.155		1219.972623.9691225.155		1219.97

```
2751.1471224.887 1219.972795.311 1224.76 1219.97 2854.451224.661 1219.97
2965.1971224.436 1219.973021.4311224.332 1219.973077.4681224.149 1219.97
3135.1121224.076 1219.973239.9531223.861 1219.973287.9811223.847 1219.97
3338.9251223.663 1219.973420.4381223.446 1219.97 3471.011223.326 1219.97
3524.2331223.134 1219.973647.1141222.801 1219.973690.7041222.628 1219.97
3734.3541222.506 1219.973777.9761222.451 1219.973874.4141222.257 1219.97
3923.729 1222.21 1219.973969.3031222.141 1219.974317.6661222.284 1219.97
4323.5381222.338 1219.97 4326.881222.343 1219.974365.1061222.407 1219.97
 4398.141222.448 1219.974417.066 1222.57 1219.974420.7541222.569 1219.97
4465.4241222.526 1219.974568.2411222.496 1219.974585.4851222.488 1219.97
4671.0441222.363 1219.974681.7221222.346 1219.974692.5661222.344 1219.97
4789.7371222.331 1219.974796.3421222.323 1219.974860.1141222.258 1219.97
4906.5561222.199 1219.974910.8131222.199 1219.974913.8381222.185 1219.97
4987.2421222.227 1219.974989.9931222.234 1219.975030.3181222.212 1219.97
5031.7121222.215 1219.97 5125.191222.324 1219.975139.5911222.374 1219.97
5153.0241222.361 1219.975267.4171222.349 1219.97 5277.631222.366 1219.97
5293.2921222.396 1219.975372.4671222.587 1219.975391.7371222.599 1219.97
5459.1321222.709 1219.975509.6051222.646 1219.97 5537.561222.648 1219.97
5594.546 1222.85 1219.975614.3171222.859 1219.975649.1011223.088 1219.97
5665.2031223.109 1219.975714.2681223.244 1219.97 5760.271223.224 1219.97
 5789.061223.256 1219.975845.3191223.227 1219.975874.501 1223.23 1219.97
5939.6611223.122 1219.976015.2961223.286 1219.976052.573 1223.35 1219.97
6087.2291223.451 1219.976147.4331223.534 1219.976274.8731223.497 1219.97
6201.4981223.501 1219.976290.7261223.536 1219.976315.6671223.599 1219.97
6384.8651223.581 1219.976420.0911223.588 1219.976501.379 1223.83 1219.97
6524.9391223.668 1219.976601.5771223.895 1219.976627.6981223.865 1219.97
 6700.941224.114 1219.976733.5011224.207 1219.976831.1781224.122 1219.97
6854.1481224.171 1219.97 6957.93 1224.36 1219.976983.2711224.363 1219.97
7010.3921224.401 1219.97
```

Downstream Bridge Cross Section Data
Station Elevation Data num= 291

```
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1812.7541222.4941818.7221222.5371822.4691222.6621827.5941222.6821832.3571222.576
1865.1091222.4581869.9411222.5091876.1521222.4841884.7511222.4261916.1031222.411
1925.2391222.3811931.9011222.247 1940.291222.318 1978.811222.3871987.3861222.218
1995.6851222.2042001.1341222.214 2025.161222.3122032.8161222.4762037.9211222.663
2053.646 1222.812057.6511222.9522060.9521223.0912073.2461223.0392093.2521223.594
2093.7631223.3552097.8341219.3392100.9141219.3312114.7871219.1982116.326  1219.2
2128.6461219.1882136.5871223.9432136.9561224.2272137.0561224.2242137.1471224.222
2143.2331223.5072145.5871223.6532151.9581223.2832167.7041223.0372175.8881223.027
2193.5791223.0482223.2381222.5322260.2851221.9572260.4981221.958 2270.031221.915
  2278.71222.0932314.166 1221.992324.4471221.8482336.5621221.6082349.8011221.749
2385.1331221.8152394.0451221.6282405.427 1221.872413.6041221.886 2441.661221.819
 2449.561221.8792458.5421221.8452487.8221221.6952504.0541221.6522527.8731221.742
2546.575 1222.042571.3651222.278 2587.161222.5522607.988 1222.732627.8491222.992
2635.771223.048 2641.24 1223.112651.8791223.4652653.6511223.2772655.7011219.576
2656.843  1218.42660.1831218.3712685.8411218.3712689.519  1218.42690.7581220.133
2693.6371223.4752697.3261223.4332712.8881222.3852723.9051222.3622746.574  1222.1
2771.2211222.0082795.7681221.4932816.4771221.0172865.8621220.9372872.8381220.931
2923.8021220.9512966.7281220.8282973.0471220.8053015.3861220.7533046.2651220.805
3057.6811220.772 3090.921220.9213113.8561221.2343129.1851221.3063148.7881221.426
3190.3181222.0893200.1091222.2883205.2491222.3395205.6991222.2883209.7141217.687
3210.259  1217.23215.132  1217.23242.117  1217.23243.4191218.7563245.1461222.324
3246.7711222.5183262.1651222.0843317.9651221.4093385.8991220.3313394.0421220.282
3435.1891220.174 3470.651219.9273484.1981219.8983487.1981219.9443489.8881219.918
3537.5721219.7043541.8261219.681 3548.091219.5453554.3251219.4923607.8721219.392
 3611.191219.2623618.9341219.3823626.356 1219.243677.4171219.1423684.7541219.135
3690.621 1219.123698.0591219.2143744.1371219.1733752.3541219.1073762.6531219.235
 3808.361219.2993815.3721219.3233822.0681219.1783829.3961219.1993874.4771219.135
3880.3511219.0993890.8321219.0013924.7751218.8523931.6461218.921 3940.051218.893
 3976.961218.7973985.5951218.7273992.0731218.7344046.3511218.7774052.6741218.732
4059.7461218.771 4067.811218.7614083.3161217.877 4103.34 1217.614121.4381217.973
4216.1541217.7584230.8061217.7534244.5511217.6754258.093 1217.684270.3621217.602
4287.6361217.8664313.8211218.0284325.6541218.1294327.6811218.6464334.3931218.716
4347.0121219.0124351.5271219.1094355.6711218.9584358.5311218.657 4360.851218.659
4365.0691218.7974386.3721218.865 4386.881218.8724388.4411217.8294395.8521213.595
4396.4251213.5914398.347 1212.974419.578 1212.974436.218 1212.974442.6531214.026
4447.3741218.8554449.8351219.0314450.4811219.0464451.4331219.0464469.3011219.048
 4556.531219.1354577.2911219.2154645.2361219.4314672.5551219.6384676.8641219.445
4679.1871216.7644681.529 1212.974698.618 1212.974709.594 1212.974722.639 1212.97
4726.573  1216.24728.2181219.9464730.4641220.0824768.1161219.7464783.1611219.632
 4819.851220.1954841.3021220.2224901.5631220.3254934.2811220.4964959.8451220.576
4961.147 1220.564962.1831220.1594964.1181216.0954966.869 1212.974974.563 1212.97
4982.114 1212.975004.814 1212.975005.9241215.0515009.8031220.7565017.5421220.942
5023.8511220.553 5063.381220.3225111.8811220.7335170.5851220.7585188.2271220.924
5195.0061221.003 5211.161221.009 5280.161220.9715287.6131220.7635300.9411220.867
5316.7861220.9245393.6521221.0965403.9631221.0675420.9651221.0415492.1561220.976
5503.1661220.9745552.0121220.9535554.1581220.9255556.7421220.9625568.3961221.143
5596.573 1221.355608.9811221.4395640.9171221.4825656.9711221.4175675.5891221.577
5718.4091221.6495722.6321221.6775731.3531221.7445759.8741221.2245776.1791221.022
5796.2181220.3215808.7861220.061 5828.751219.3935832.3371219.3215860.4021219.443
5879.7211219.1435890.1251218.7165902.2591218.7255924.1651218.714  5944.61218.585
5964.3371218.9345991.497 1219.116030.7481219.2256069.4611219.303 6101.541219.294
6145.1781219.3326176.4061219.3296191.5551219.3236218.1881219.3936233.0031219.029
 6241.791218.8976285.6171218.9266308.7811219.4816335.0021219.4166362.5851219.504
6402.0651219.4766417.2681219.4996433.467 1219.71  6449.11219.5136494.6531219.588
6515.1661219.486 6533.721219.4316563.2371219.3986596.9271219.3896614.5331219.686
6635.7211219.3366674.298 1219.366703.6381219.487 6735.051219.5486773.9631219.617
6809.4761219.5836844.7091219.9586884.8811219.9226907.4381219.8176923.9371220.082
6943.7221220.1136965.3441219.9996985.9461220.1437008.4291220.2717030.1011220.603
7054.6581220.654
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
1812.754     .035 4386.88     .035009.803     .035
```

Bank Sta: Left Right Coeff Contr. Expan.

```
       4386.885009.603              .1          .3
Left Levee      Station=3205.249       Elevation=1222.518
```

```
Upstream Embankment side slope                =       0 horiz. to 1.0 vertical
Downstream Embankment side slope              =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =      .95
Elevation at which weir flow begins           =
Energy head used in spillway design           =
Spillway height used in design                =
Weir crest shape                              = Broad Crested

Number of Culverts =  1

Culvert Name      Shape      Rise    Span
Culvert #1          Box        7      10
FHWA Chart # 58- Rectangular concrete
FHWA Scale # 2 - Side tapered; More favorable edges
Solution Criteria = Highest U.S. BG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                 14      62      .014                   .3                1
Number of Barrels =  9
Upstream   Elevation =  1213.2
Centerline Stations
    Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.
    4405     4416     4427     4689     4700     4711     4975     4986     4997
Downstream Elevation =  1212.97
Centerline Stations
    Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.
    4405     4416     4427     4690     4701     4712     4974     4985     4996

CROSS SECTION            RIVER: Harquahala
REACH: I-10 Reach          RS: 16.6470

INPUT
Description: 16.6470
Station Elevation Data     num=      291
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1812.7541222.4941818.7221222.5371822.4691222.6621827.5941222.6821832.3571222.576
1865.1091222.4581869.9411222.5091876.1521222.4841884.7511222.4261916.1031222.411
1925.2391222.3811931.9011222.247 1940.291222.318 1978.811222.3871987.3861222.218
1995.6851222.2042001.1341222.214 2025.161222.3122032.8161222.4762037.9211222.663
2053.646 1222.612057.6511222.9522060.9521223.0912073.2461223.0392093.2521223.594
2093.7631223.3552097.8341219.1392100.9141219.1312114.7871219.1982116.326  1219.2
2128.6461219.1882136.5971223.8432136.9561224.2272137.0561224.2242137.1471224.222
2143.2331223.5072145.5871223.6532151.9581223.2832167.7041223.0372175.8881223.027
2193.5791223.0482223.2281222.5322260.2851221.9572260.4981221.958 2270.031221.915
  2278.71222.0932314.166 1221.992324.4471221.8482336.5621221.6082349.8011221.749
2385.1331221.8152394.0451221.6282405.427 1221.872413.6041221.886 2441.661221.819
 2449.561221.8792458.5421221.8452487.8221221.6952504.0541221.6522527.8731221.742
2546.575 1222.042571.3651222.278 2587.161222.5522607.988 1222.732627.8491222.992
2635.7711223.048 2641.24 1223.112651.8791223.4652653.6511223.2772655.7011219.576
2656.843  1218.42660.1831218.3712685.8411218.3712689.519  1218.42690.7581220.133
2693.6371223.4752697.3261223.4332712.8881222.3852723.9051222.3622746.574  1222.1
2771.2211222.0082795.7681221.4932816.4771221.0172865.8621220.9372872.8381220.931
2923.8021220.9512966.7281220.8282973.0471220.8053015.3861220.7533046.2651220.805
3057.6811220.772 3090.921220.9213113.8561221.2343129.1851221.3063148.7881221.426
3190.3181222.0893200.1091222.2883205.2491222.3393205.6991222.2883209.7141217.687
3210.259  1217.23215.132  1217.23242.117  1217.23243.4191218.7563245.1461222.324
3246.7711222.5183262.1651222.0843317.9651221.4093385.8991220.3313394.0421220.282
3435.1891220.174 3470.651219.9273484.1981219.8983487.1981219.9443489.8881219.918
3537.5721219.7043541.8261219.681 3548.091219.5453554.3251219.4923607.8721219.392
 3611.191219.2623618.9341219.3823626.356 1219.243677.4171219.1423684.7541219.135
3690.621 1219.123698.0591219.2143744.1371219.1733752.3541219.1073762.6531219.235
 3808.361219.2993815.3721219.3233822.0681219.1783829.3961219.1993874.4771219.135
3880.3511219.0993890.8321219.0013924.7751218.8523931.6461218.921 3940.051218.893
 3976.961218.7973985.5951218.7273992.0731218.7344046.3511218.7774052.6741218.732
4059.7461218.771 4067.811218.7614083.3161217.877 4103.34 1217.614121.4381217.973
4216.1541217.7584230.8061217.7534244.5511217.6754258.093 1217.684270.3611217.601
4287.6361217.8664313.8211218.0284325.6541218.1294327.6811218.6464334.3931218.716
4347.0121219.0124351.5271219.1094355.6711218.9584358.5311218.657 4360.851218.659
4365.0691218.7974386.3721218.865 4386.881218.8724388.4411217.8294395.8521213.595
4396.4251213.5914398.347 1212.974419.578 1212.974436.118 1212.974442.6531214.026
4447.3741218.8554449.8351219.0314450.4811219.0464451.4331219.0464469.3011219.048
 4556.531219.1354577.2911219.2154645.2361219.4314672.5551219.6384676.8641219.445
4679.1871216.7644681.529 1212.974698.618 1212.974709.594 1212.974722.639 1212.97
4726.573  1216.24728.2181219.9464730.4641220.0824768.1161219.7464783.1611219.632
 4819.851220.1954841.3021220.2224901.5631220.3254934.2811220.4964959.8451220.576
4961.147 1220.564962.1831220.1594964.1181216.0954966.869 1212.974974.563 1212.97
4982.114 1212.975004.814 1212.975005.9241215.0515009.8031220.7565017.5421220.942
5023.8511220.553 5063.381220.3225111.8811220.7335170.5851220.7585188.2271220.924
5195.0061221.003 5211.161221.009 5280.161220.9715287.6131220.7635300.9411220.867
5316.7861220.9245393.6521221.0965403.9631221.0675420.9651221.0415492.1561220.976
5503.1661220.9745552.0121220.9535554.1581220.9255556.7421220.9625568.3961221.143
5596.573 1221.355608.9811221.4395640.9171221.4825656.9711221.4175675.5891221.577
5718.4091221.6495722.6321221.6775731.3531221.7445759.8741221.2245776.1791221.022
5796.2181220.3215808.7861220.061 5828.751219.3935832.3371219.3215860.4021219.443
5879.7211219.1435890.1251218.7165902.2591218.7255924.1651218.714  5944.61218.585
5964.3371218.9345991.497 1219.116030.7481219.2256069.4611219.303 6101.541219.294
6145.1781219.3326176.4061219.3296191.5651219.3236218.1881219.3936233.0031219.029
 6241.791218.8976285.6171218.9266308.7811219.4816335.0021219.4166362.5851219.504
6402.0651219.4766417.2681219.4996433.467 1219.71  6449.11219.5136494.6531219.588
6515.1661219.486 6533.721219.4316563.2371219.3986596.9271219.3896614.5331219.686
6635.7211219.3366674.298 1219.366703.6381219.487 6735.051219.5486773.9631219.617
6809.4761219.5836844.7091219.9586884.8811219.9226907.4381219.8176923.9371220.082
6943.7221220.1136965.3441219.9998985.9461220.1437008.4291220.2717030.1011220.603
7054.6581220.654

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
1812.754     .035 4386.88      .035 5009.803     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
       4386.885009.803                38  57.874      52              .1        .3
Left Levee       Station=3205.249       Elevation=1222.518
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1219.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.	0.035	0.030	0.035
E.G. Elev (ft)	1220.13	Reach Len. (ft)	38.00	57.87	52.00
Crit W.S. (ft)	1219.67	Flow Area (sq ft)	902.83	1056.91	348.55
E.G. Slope (ft/ft)	0.004692	Area (sq ft)	902.83	1056.91	348.55
Q Total (cfs)	10000.00	Flow (cfs)	2745.20	6704.28	550.52
Top Width (ft)	2265.70	Top Width (ft)	880.49	395.64	989.57
Vel Total (ft/s)	4.33	Avg. Vel. (ft/s)	3.04	6.34	1.58
Max Chl Dpth (ft)	6.70	Hydr. Depth (ft)	1.03	2.67	0.35
Conv. Total (cfs)	145985.3	Conv. (cfs)	40075.9	97872.6	8036.8
Length Wtd. (ft)	53.40	Wetted Per. (ft)	883.02	413.44	989.61
Min Ch El (ft)	1212.97	Shear (lb/sq ft)	0.30	0.75	0.10
Alpha	1.58	Stream Power (lb/ft s)	0.91	4.75	0.16
Frctn Loss (ft)	0.37	Cum Volume (acre-ft)	0.46	1.03	0.22
C & E Loss (ft)	0.00	Cum SA (acres)	0.53	0.65	0.67

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION RIVER: Harquahala
REACH: I-10 Reach RS: 16.6361

INPUT
Description: 16.6361
Station Elevation Data num= 357

```
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
1837.5861219.1691856.3921219.201 1862.291219.231  1864.41219.2731874.6481219.499
1889.2421219.6441895.437 1219.75 1907.751219.9641927.1141220.1651937.2021220.359
1965.6491220.3841978.0751220.3611995.561 1220.332016.0371220.2952028.8581220.176
 2046.761219.8712057.8811219.5092067.3781219.558 2076.25 1219.522094.9871219.383
2105.2021219.2622110.6521219.3782111.8371219.2072132.0441219.0372145.2161218.826
2156.022  1218.92167.2621218.8392169.555 1218.892177.1721218.8492182.659 1218.99
2198.0651219.2412207.2811219.2592229.436 1219.442241.5671219.3512256.0521219.328
 2266.171219.3312275.8331219.3662306.7721219.417 2310.441219.531  2319.51219.448
2330.4071219.407 2354.241219.4512364.885 1219.42 2376.091219.4592403.8831219.405
 2411.931219.2632422.2211219.3252451.483 1219.242459.8011219.1062469.4351219.135
 2480.581219.1062510.523 1219.032519.9371218.9842534.1031218.9932564.7711218.927
2573.7791218.7742583.6761218.6742600.5341218.7432611.6141218.7242624.7881218.551
2643.5021218.4362646.8521218.4342667.403 1218.652678.2491218.4652701.0911218.254
2702.3621218.2372702.9471218.2312703.9121218.2292731.5321218.3822739.2331217.969
2747.4581217.9122760.3011218.1972773.9771218.0792787.6051217.9252801.1811217.763
2814.6711217.6932819.5241217.5862826.5771217.7262836.4171217.6332845.7731217.743
2856.3861217.7312863.6761217.7242879.1581217.7512889.3541217.8982908.7091217.861
2917.8541217.783 2927.241217.5932948.0711217.516 2957.471217.397 2973.481217.345
2981.8211217.3182988.1661217.3313004.2951217.2773009.3131217.3923015.7591217.503
3023.8411217.592 3030.891217.5143049.466 1217.453058.4391217.4273078.1011217.345
3084.6541217.366 3090.731217.3513118.1951217.3193121.0121217.1783129.9741217.069
3140.1521216.9993145.7931217.0893149.7341216.8393152.0861216.3273154.3221215.725
 3156.651215.8983162.5881216.075  3164.3 1216.153168.2631216.1513178.7581216.346
3189.8671216.5343194.986  1216.63205.8531216.626  3208.41216.673 3211.741216.701
3221.7641216.5623224.6451216.761 3239.741216.7643274.358    12173282.9361216.999
3291.4141215.8973298.3631215.9273314.3851215.8053314.9061215.7853335.4331215.547
3343.1321215.5023346.5931215.4083355.471 1215.423368.9231215.4883377.4151215.451
3383.5721215.519 3387.251215.5263392.368 1215.573396.753 1215.633400.4751215.621
3421.2931215.8583438.2971215.8393449.5831215.866 3467.81 1215.843480.6011215.907
 3493.66 1216.033508.4431216.2163520.5371216.1853532.7141216.2363546.2371216.321
  3558.1 1216.273584.5111215.8233593.685 1215.753596.9811215.4763602.6211214.876
3603.0611214.8413603.5061214.8863611.5851215.6393613.0611215.6433617.1881215.665
3629.0751215.6733637.3631215.736 3658.031215.6663672.2621215.5213685.8821215.406
3712.6581215.379 3723 981215.3783738.1451215.5353759.2841215.7113774.6521215.708
 3793.66 1215.783815.5421215.8163828.2981215.6783851.0241215.6053865.032  1215.6
3878.7711215.5663897.493 1215.553908.6091215.4393927.3871215.4163943.6291215.351
3955.4641215.4263972.2431215.4163985.6581215.4764003.2731215.479 4018.381215.209
4032.1291214.939 4042.83 1214.814046.8621214.6344056.191 1214.254057.1771214.213
4057.9791214.2454071.8081214.4484081.5711214.6984108.8691214.8624125.702 1214.94
4147.5081214.6554171.9131214.6024194.1071214.7544212.282  1214.84229.8021214.862
4246.0921214.8594271.0991214.9264285.0151214.8534298.2891214.8354314.704 1214.85
4328.3511214.8684335.4841215.0644349.4961215.6854357.1041215.5434387.279 1214.74
4389.5331214.7724390.4381214.7624390.9681214.7184392.6161214.5964406.803  1212.7
4408.943  1212.74421.626  1212.74430.169  1212.74447.2741215.5614449.7351215.835
 4450.091215.8474450.1941215.8514451.0471215.8344456.8361215.891 4467.84  1215.6
4474.374 1215.444475.2661215.4274484.7991215.0564486.9381214.9814486.4731214.984
4511.7591215.1394517.2251215.0594539.7041215.2394544.0731215.261 4558.031215.109
4565.5831215.0164565.9641215.0354589.5781214.9424589.6311214.9434589.6811214.942
4596.3151214.9564613.7821214.9934614.4281214.9974643.6991215.3474647.9971215.225
4656.8871215.1654661.4461215.0194684.767  1212.74686.413  1212.74686.583  1212.7
 4687.54  1212.74697.552  1212.74701.972  1212.74718.091  1212.74724.7051213.801
4731.9161214.594 4739.881214.4754753.6911214.5124759.9731214.7244762.6211214.589
4766.6561214.5684770.883 1214.614780.6511214.7044796.0371214.7184814.2971214.718
4825.9221214.6684847.3691214.7194858.5711214.8054884.8031214.9214893.9931215.034
4910.5891215.243 4923.431215.2054943.5351215.0564946.5011215.0454946.8831215.028
4955.1921214.6364960.175  1212.74962.385  1212.74966.986  1212.74968.355  1212.7
    5001  1212.75005.404  1212.7 5015.691218.247 5020.571220.2615038.4671220.286
5038.8871220.2765039.9461220.0925059.7821216.6845069.638 1215.995075.0371215.614
5099.6691215.4045103.8611215.3255109.4531215.3715115.0511215.279 5139.291215.593
5146.004 1216.525151.0221217.1635157.6911217.1045165.0851217.0225170.4871215.351
5177.1141214.9685182.159 1215.425186.865 1215.495195.3861215.5845215.0911215.859
```

5221.9571216.4365221.2091215.3265247.7771215.143 5251.461215.1565304.997 1214.93
5312.2621214.9975353.1061214.5965353.2671214.9965391.7841215.5035396.6291215.465
5405.9221219.6845413.8161215.6575425.2321215.8975442.2741216.1885454.2751216.292
5455.8771216.3255471.2381217.379 5479.571218.0565494.1771219.2895503.4371220.022
5518.4171221.0415533.2771219.2565551.7991217.4295558.8721216.7425580.138 1216.47
5575.306 1216.075591.5321216.1665607.394 1216.195616.8691216.1815647.2921216.249
5649.7321216.2545661.2171216.2585692.2111216.5925698.3111216.6525734.4241216.974
5740.7031217.082 5771.041217.3785783.9021217.747 5805.541218.223 5832.421219.003
5836.5721219.1535857.4331219.9825862.6211220.018 5865.141220.0585875.7921220.223
5922.2381220.9495930.7561220.9965959.6871221.624 5975.71220.9385979.5941220.833
5982.7531220.7575984.3761220.682

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1837.586	.035	4349.496	.035	5020.57	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4349.496	5020.57	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1215.24	Element			
Vel Head (ft)	3.78	Wt. n-Val.	0.035	0.035	0.035
E.G. Elev (ft)	1219.02	Reach Len. (ft)			
Crit W.S. (ft)	1216.05	Flow Area (sq ft)	149.02	497.50	27.06
E.G. Slope (ft/ft)	0.190040	Area (sq ft)	149.02	497.50	27.06
Q Total (cfs)	10000.00	Flow (cfs)	1626.66	8206.40	166.94
Top Width (ft)	1062.00	Top Width (ft)	331.23	589.61	141.17
Vel Total (ft/s)	14.85	Avg. Vel. (ft/s)	10.92	16.50	6.17
Max Chl Dpth (ft)	2.54	Hydr. Depth (ft)	0.45	0.84	0.19
Conv. Total (cfs)	22939.2	Conv. (cfs)	3731.4	18824.8	382.9
Length Wtd. (ft)		Wetted Per. (ft)	331.30	591.25	141.19
Min Ch El (ft)	1212.70	Shear (lb/sq ft)	5.34	9.98	2.27
Alpha	1.10	Stream Power (lb/ft s)	58.25	164.67	14.03
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)			
C & E Loss (ft)	0.33	Cum SA (acres)			

Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

SUMMARY OF MANNING'S N VALUES

River:Harquahala

Reach	River Sta.	n1	n2	n3
Upper Reach A	20.0000	.03	.03	.03
Upper Reach A	19.9735	.03	.031	.03
Upper Reach A	19.9458	.035	.085	.035
Upper Reach A	19.9052	.035	.085	.035
Upper Reach A	19.8387	.035	.085	.035
Upper Reach A	19.8173	.035	.085	.035
Upper Reach B	19.7349	.035	.085	.035
Upper Reach B	19.6465	.035	.085	.035
Upper Reach B	19.5602	.035	.085	.035
Upper Reach B	19.4887	.035	.085	.035
Upper Reach B	19.3761	.035	.085	.035
Upper Reach B	19.2665	.035	.085	.035
Upper Reach B	19.1607	.035	.085	.035
Upper Reach B	19.0557	.035	.085	.035
Split1	19.6872	.035	.065	.035
Split1	19.6513	.035	.065	.035
Split1	19.5997	.035	.065	.035
Split1	19.5616	.035	.065	.035
Split1	19.5223	.035	.065	.035
Split1	19.4869	.035	.065	.035
Split1	19.3980	.035	.065	.035
Split 1A	19.3216	.035	.065	.035
Split 1A	19.2398	.035	.065	.035
Split 1A	19.1676	.035	.065	.035
Split 1A	19.0811	.035	.065	.035
Split 1A	18.9967	.035	.065	.035
Split 1A	18.9165	.035	.065	.035
Split 1B	19.3158	.035	.065	.035
Split 1B	19.2400	.035	.065	.035
Split 1B	19.1631	.035	.065	.035
Split 1B	19.0836	.035	.065	.035
Split 1B	19.0153	.035	.065	.035
Split 1B	18.9337	.035	.065	.035
Split 1B	18.8560	.035	.065	.035
Split 1B	18.7744	.035	.065	.035
Split 1B	18.7184	.035	.065	.035
Split 1B	18.6384	.035	.065	.035
Split 1B	18.5485	.035	.065	.035
Upper Mid Reach	18.9676	.035	.085	.035
Upper Mid Reach	18.8526	.035	.085	.035
Upper Mid Reach	18.7424	.035	.085	.035
Upper Mid Reach	18.6296	.035	.085	.035
Lower Mid Reach	18.5237	.035	.085	.035
Lower Mid Reach	18.3861	.035	.085	.035
Lower Mid Reach	18.2834	.035	.085	.035
Lower Mid Reach	18.1956	.035	.085	.035
Lower Mid Reach	18.0888	.035	.085	.035

Lower Mid Reach	17.9877	.035	.085	.035
Lower Mid Reach	17.8771	.035	.085	.035
Lower Mid Reech	17.7710	.035	.085	.035
Lower Mid Reach	17.6702	.035	.085	.035
Split2	17.5883	.035	.075	.035
Split2	17.4913	.035	.075	.035
Split2	17.3965	.035	.075	.035
Split2	17.1420	.035	.075	.035
Lower Reach	17.5767	.035	.085	.035
Lower Reach	17.4734	.035	.085	.035
Lower Reach	17.3602	.035	.085	.035
Lower Reach	17.2691	.035	.085	.035
Lower Reach	17.1738	.035	.085	.035
Lower Reach	17.0788	.035	.085	.035
Lower Reach	16.9865	.035	.085	.035
I-10 Reach	16.8902	.035	.085	.035
I-10 Reach	16.7885	.035	.085	.035
I-10 Reach	16.7242	.035	.085	.035
I-10 Reach	16.7087	.035	.03	.035
I-10 Reach	16.7017	Culvert		
I-10 Reach	16.6948	.035	.03	.035
I-10 Reach	16.6789	.035	.035	.035
I-10 Reach	16.6642	.035	.03	.035
I-10 Reach	16.6556	Culvert		
I-10 Reach	16.6470	.035	.03	.035
I-10 Reach	16.6361	.035	.035	.035

SUMMARY OF REACH LENGTHS

River. Harquahala

Reach	River Sta.	Left	Channel	Right
Upper Reach A	20.0000	140	140	140
Upper Reach A	19.9735	139	146.2242	139
Upper Reach A	19.9458	149	214.1756	183
Upper Reach A	19.9052	305	351.3504	259
Upper Reach A	19.8387	100	113.028	166
Upper Reach A	19.8173	347	435.1131	500
Upper Reach B	19.7349	398	466.6451	399
Upper Reach B	19.6465	523	455.3716	397
Upper Reach B	19.5602	375	377.9404	331
Upper Reach B	19.4887	570	594.3238	517
Upper Reach B	19.3761	578	578.96	500
Upper Reach B	19.2665	534	558.4567	540
Upper Reach B	19.1607	422	554.2729	519
Upper Reach B	19.0557	446	465.0548	437
Split1	19.6872	167	189.4667	230
Split1	19.6513	194	272.8115	298
Split1	19.5997	166	200.6815	260
Split1	19.5616	175	207.8089	272
Split1	19.5223	178	186.7914	295
Split1	19.4869	459	469.5331	543
Split1	19.3980	399	433.8286	377
Split 1A	19.3216	338	431.8443	325
Split 1A	19.2398	377	381.3855	359
Split 1A	19.1676	441	456.6185	438
Split 1A	19.0811	421	445.8344	442
Split 1A	18.9967	407	423.507	419
Split 1A	18.9165	354	346.1658	218
Split 1B	19.3158	371	400.1655	350
Split 1B	19.2400	384	406.012	396
Split 1B	19.1631	390	419.9715	385
Split 1B	19.0836	337	360.4106	372
Split 1B	19.0153	395	431.1926	422
Split 1B	18.9337	391	410.0502	393
Split 1B	18.8560	365	431.1173	427
Split 1B	18.7744	292	295.6265	292
Split 1B	18.7184	378	422.3776	347
Split 1B	18.6384	452	474.4267	303
Split 1B	18.5485	660	632.2013	440
Upper Mid Reach	18.9676	559	607.2765	521
Upper Mid Reach	18.8526	533	581.9578	508
Upper Mid Reach	18.7424	586	595.6793	540
Upper Mid Reach	18.6296	501	559.1249	525
Lower Mid Reach	18.5237	690	726.5636	654
Lower Mid Reach	18.3861	520	542.3258	497
Lower Mid Reach	18.2834	460	463.5521	404
Lower Mid Reach	18.1956	511	563.677	427
Lower Mid Reach	18.0888	557	533.7156	426
Lower Mid Reach	17.9877	523	584.0235	526
Lower Mid Reach	17.8771	446	560.1197	525
Lower Mid Reach	17.7710	400	532.6463	445
Lower Mid Reach	17.6702	558	493.6868	475
Split2	17.5883	439	512.2301	523
Split2	17.4913	434	500.395	490
Split2	17.3965	993	1343.966	1000
Split2	17.1420	490	262.0117	645
Lower Reach	17.5767	340	545.0853	555
Lower Reach	17.4734	491	598.031	608
Lower Reach	17.3602	401	480.8423	450
Lower Reach	17.2691	423	503.3689	495
Lower Reach	17.1738	380	501.3424	530
Lower Reach	17.0788	348	487.5188	495
Lower Reach	16.9865	281	508.1319	548
I-10 Reach	16.8902	356	537.2477	602
I-10 Reach	16.7885	361	339.3988	273
I-10 Reach	16.7242	70	81.5688	71

I-10 Reach	16.7087	62	73.6675	62
I-10 Reach	16.7017	Culvert		
I-10 Reach	16.6948	88	101.2588	86
I-10 Reach	16.6789	67	77.7151	68
I-10 Reach	16.6642	76	90.3017	79
I-10 Reach	16.6556	Culvert		
I-10 Reach	16.6470	38	57.874	52
I-10 Reach	16.6361	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Harquahala

Reach	River Sta.	Contr.	Expan.
Upper Reach A	20.0000	.1	.3
Upper Reach A	19.9735	.1	.3
Upper Reach A	19.9458	.1	.3
Upper Reach A	19.9052	.1	.3
Upper Reach A	19.8387	.1	.3
Upper Reach A	19.8173	.1	.3
Upper Reach B	19.7349	.1	.3
Upper Reach B	19.6465	.1	.3
Upper Reach B	19.5602	.1	.3
Upper Reach B	19.4887	.1	.3
Upper Reach B	19.3761	.1	.3
Upper Reach B	19.2665	.1	.3
Upper Reach B	19.1607	.1	.3
Upper Reach B	19.0557	.1	.3
Split1	19.6872	.1	.3
Split1	19.6513	.1	.3
Split1	19.5997	.1	.3
Split1	19.5616	.1	.3
Split1	19.5223	.1	.3
Split1	19.4869	.1	.3
Split1	19.3980	.1	.3
Split 1A	19.3216	.1	.3
Split 1A	19.2398	.1	.3
Split 1A	19.1676	.1	.3
Split 1A	19.0811	.1	.3
Split 1A	18.9967	.1	.3
Split 1A	18.9165	.1	.3
Split 1B	19.3158	.1	.3
Split 1B	19.2400	.1	.3
Split 1B	19.1631	.1	.3
Split 1B	19.0836	.1	.3
Split 1B	19.0153	.1	.3
Split 1B	18.9337	.1	.3
Split 1B	18.8560	.1	.3
Split 1B	18.7744	.1	.3
Split 1B	18.7184	.1	.3
Split 1B	18.6384	.1	.3
Split 1B	18.5485	.1	.3
Upper Mid Reach	18.9676	.1	.3
Upper Mid Reach	18.8526	.1	.3
Upper Mid Reach	18.7424	.1	.3
Upper Mid Reach	18.6296	.1	.3
Lower Mid Reach	18.5237	.1	.3
Lower Mid Reach	18.3861	.1	.3
Lower Mid Reach	18.2834	.1	.3
Lower Mid Reach	18.1956	.1	.3
Lower Mid Reach	18.0888	.1	.3
Lower Mid Reach	17.9877	.1	.3
Lower Mid Reach	17.8771	.1	.3
Lower Mid Reach	17.7710	.1	.3
Lower Mid Reach	17.6702	.1	.3
Split2	17.5883	.1	.3
Split2	17.4913	.1	.3
Split2	17.3965	.1	.3
Split2	17.1420	.1	.3
Lower Reach	17.5767	.1	.3
Lower Reach	17.4734	.1	.3
Lower Reach	17.3602	.1	.3
Lower Reach	17.2691	.1	.3
Lower Reach	17.1738	.1	.3
Lower Reach	17.0788	.1	.3
Lower Reach	16.9865	.1	.3
I-10 Reach	16.8902	.1	.3
I-10 Reach	16.7885	.1	.3
I-10 Reach	16.7242	.1	.3
I-10 Reach	16.7087	.1	.3
I-10 Reach	16.7017	Culvert	
I-10 Reach	16.6948	.1	.3
I-10 Reach	16.6789	.1	.3
I-10 Reach	16.6642	.1	.3
I-10 Reach	16.6556	Culvert	
I-10 Reach	16.6470	.1	.3
I-10 Reach	16.6361	.1	.3

Profile Output Table - Standard Table 1

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)	
Upper Reach A	20.0000	10000.00	1410.36	1415.54	1415.54	1418.15	0.008287	12.95	772.16	149.71	1.00

Upper Reach A	19.9735	10000.00	1390.09	1392.00	1395.04	1412.81	0.336370	36.61	273.13		
180.60	5.25										
Upper Reach A	19.9458	10000.00	1389.05	1394.74	1395.26	1396.78	0.030783	8.30	899.71		
375.36	0.69										
Upper Reach A	19.9052	10000.00	1379.10	1389.84	1390.11	1391.24	0.026574	9.33	1080.43		
538.34	0.66										
Upper Reach A	19.8387	10000.00	1374.30	1382.58	1382.69	1383.46	0.024285	7.29	1351.39		
889.05	0.61										
Upper Reach A	19.8173	10000.00	1372.55	1378.97	1379.09	1379.98	0.023330	5.34	1304.63		
811.53	0.56										
Upper Reach B	19.7349	9480.00	1366.33	1372.36	1371.96	1373.29	0.012764	6.03	1251.31		
465.44	0.46										
Upper Reach B	19.6465	9480.00	1359.85	1365.74	1365.72	1366.90	0.019058	6.82	1118.91		
501.09	0.55										
Upper Reach B	19.5602	9480.00	1353.58	1357.84	1357.84	1359.06	0.013272	4.65	1138.45		
447.01	0.44										
Upper Reach B	19.4887	9480.00	1347.87	1351.58	1351.82	1353.03	0.020555	5.36	1001.98		
494.95	0.53										
Upper Reach B	19.3761	9480.00	1340.81	1342.97	1342.97	1343.53	0.011709	2.63	1603.60		
1078.51	0.36										
Upper Reach B	19.2665	9480.00	1331.06	1333.32	1333.76	1334.77	0.024226	2.32	1039.66		
694.04	0.46										
Upper Reach B	19.1607	9480.00	1324.61	1326.12	1326.12	1326.43	0.006491	1.19	2143.56		
1578.95	0.24										
Upper Reach B	19.0557	9480.00	1315.79	1317.79	1318.44	1319.56	0.047943	3.92	928.50		
957.67	0.67										
Split1	19.6872	520.00	1372.00	1373.39	1374.28	1378.40	0.644164	17.96	28.95	38.30	
3.64											
Split1	19.6513	520.00	1369.17	1371.45	1371.45	1371.68	0.038044	3.82	136.01	171.07	
0.76											
Split1	19.5997	520.00	1365.14	1368.47	1367.44	1368.56	0.005296	2.39	217.91	126.17	
0.32											
Split1	19.5616	520.00	1363.27	1366.39	1365.77	1366.71	0.018469	4.54	114.51	64.42	
0.60											
Split1	19.5223	520.00	1360.68	1363.81		1363.92	0.009900	2.63	198.04	159.19	
0.41											
Split1	19.4869	520.00	1357.30	1360.81	1360.46	1361.12	0.024914	4.46	116.51	83.99	
0.67											
Split1	19.3980	520.00	1352.11	1354.51	1353.73	1354.64	0.008634	2.91	178.95	111.11	
0.40											
Split 1A	19.3216	100.00	1346.76	1348.08	1347.49	1348.14	0.007231	1.91	52.23	53.25	
0.34											
Split 1A	19.2398	100.00	1341.01	1342.16	1342.00	1342.26	0.034600	2.49	40.12	89.28	
0.66											
Split 1A	19.1676	100.00	1336.01	1336.38	1336.25	1336.47	0.008544	0.69	43.36	99.77	
0.28											
Split 1A	19.0811	100.00	1327.96	1329.46	1329.27	1329.64	0.034447	3.48	28.72	38.46	
0.71											
Split 1A	18.9967	100.00	1321.21	1322.72	1322.50	1322.78	0.008810	1.70	52.63	109.75	
0.36											
Split 1A	18.9165	100.00	1314.34	1315.81	1315.81	1315.98	0.040398	3.48	30.42	78.87	
0.75											
Split 1B	19.3158	420.00	1346.28	1347.89	1347.87	1348.21	0.037009	4.59	93.81	132.61	
0.78											
Split 1B	19.2400	420.00	1339.34	1341.85	1341.66	1341.96	0.008906	2.78	164.31	263.37	
0.40											
Split 1B	19.1631	420.00	1334.12	1335.86	1335.86	1336.08	0.029168	3.48	112.02	254.24	
0.67											
Split 1B	19.0836	420.00	1324.91	1328.34	1328.04	1328.41	0.006116	1.84	206.42	327.81	
0.32											
Split 1B	19.0153	420.00	1320.41	1322.13	1322.13	1322.49	0.023493	3.10	90.69	140.75	
0.59											
Split 1B	18.9337	420.00	1314.24	1316.29	1316.06	1316.38	0.008576	2.15	178.01	351.93	
0.37											
Split 1B	18.8560	420.00	1309.33	1310.88	1310.88	1311.25	0.022031	2.82	88.45	123.13	
0.56											
Split 1B	18.7744	420.00	1304.12	1305.25	1305.05	1305.34	0.008211	1.41	172.70	333.42	
0.33											
Split 1B	18.7184	420.00	1300.43	1301.34	1301.34	1301.52	0.023713	2.03	123.77	332.35	
0.54											
Split 1B	18.6384	420.00	1295.32	1296.56	1296.33	1296.65	0.007034	1.38	173.94	304.89	
0.31											
Split 1B	18.5485	420.00	1290.17	1292.20	1292.20	1292.40	0.029812	3.41	118.13	319.35	
0.67											
Upper Mid Reach	18.9676	9580.00	1309.70	1312.27	1312.27	1312.82	0.015029	1.97	1688.72		
1689.81	0.37										
Upper Mid Reach	18.8526	9580.00	1302.10	1305.33	1305.11	1305.67	0.010125	2.25	2123.99		
1992.57	0.33										
Upper Mid Reach	18.7424	9580.00	1294.41	1298.07	1298.07	1298.60	0.019245	4.17	1646.79		
1625.39	0.49										
Upper Mid Reach	18.6296	9580.00	1287.21	1291.32	1291.04	1291.65	0.007932	3.03	2105.26		
1751.74	0.32										
Lower Mid Reach	18.5237	10000.00	1282.22	1285.66	1285.55	1286.23	0.011893	2.93	1737.27		
1277.88	0.37										
Lower Mid Reach	18.3661	10000.00	1277.51	1279.30	1279.03	1279.68	0.008280	1.87	2089.49		
1565.60	0.29										
Lower Mid Reach	18.2834	10000.00	1272.75	1273.98	1273.92	1274.47	0.013429	1.54	1823.63		
1701.93	0.33										
Lower Mid Reach	18.1956	10000.00	1267.06	1270.10	1269.72	1270.40	0.007411	2.07	2272.51		
1745.13	0.29										
Lower Mid Reach	18.0888	10000.00	1262.50	1265.66	1265.54	1266.06	0.012916	3.54	1987.88		
1851.11	0.40										
Lower Mid Reach	17.9877	10000.00	1256.92	1261.40	1260.98	1261.65	0.006260	2.82	2501.65		
1912.87	0.29										
Lower Mid Reach	17.8771	10000.00	1252.57	1256.29	1256.27	1256.78	0.014728	3.26	1837.00		
1764.26	0.41										
Lower Mid Reach	17.7710	10000.00	1249.90	1251.80	1251.52	1252.05	0.007342	1.17	2484.15		
2393.31	0.25										
Lower Mid Reach	17.6702	10000.00	1243.94	1248.05	1247.87	1248.36	0.010936	3.09	2339.28		
2486.06	0.36										
Split2	17.5883	1970.00	1239.27	1243.93	1243.12	1244.10	0.004591	2.32	832.87	391.16	

0.27										
Split2	17.4913	1970.00	1233.18	1238.96	1238.96	1239.44	0.035197	4.66	365.70	409.97
0.68										
Split2	17.3965	1970.00	1225.15	1235.31	1234.07	1235.47	0.002550	2.74	697.63	571.76
0.21										
Split2	17.1420	1970.00	1224.41	1225.98	1225.98	1226.36	0.093425	4.95	398.04	538.63
1.01										
Lower Reach	17.5767	8030.00	1239.92	1243.55	1243.29	1243.77	0.007795	2.49	2175.30	2176.11
0.31										
Lower Reach	17.4734	8030.00	1236.37	1239.98		1240.22	0.009194	2.35	2128.57	2497.69
0.32										
Lower Reach	17.3602	8030.00	1233.27	1236.06		1236.23	0.006063	1.99	2503.00	2621.73
0.26										
Lower Reach	17.2691	8030.00	1230.19	1232.61	1232.45	1232.86	0.011518	2.05	2017.47	2436.14
0.34										
Lower Reach	17.1738	8030.00	1226.04	1229.54		1229.67	0.004718	1.76	2773.29	2764.39
0.23										
Lower Reach	17.0788	8030.00	1223.69	1225.81	1225.81	1226.23	0.015222	2.35	1572.86	1633.51
0.39										
Lower Reach	16.9865	8030.00	1220.28	1224.58	1222.95	1224.63	0.000586	0.92	4788.64	2379.59
0.09										
I-10 Reach	16.8902	10000.00	1217.58	1224.51	1221.33	1224.52	0.000109	0.56	11356.37	4139.50
0.04										
I-10 Reach	16.7885	10000.00	1215.86	1224.50	1219.30	1224.50	0.000017	0.27	20409.21	4416.90
0.02										
I-10 Reach	16.7242	10000.00	1214.57	1224.49	1217.77	1224.50	0.000008	0.21	25204.88	4147.23
0.01										
I-10 Reach	16.7087	10000.00	1214.30	1224.46	1220.38	1224.49	0.000194	1.73	8653.86	4102.75
0.15										
I-10 Reach	16.7017	Culvert								
I-10 Reach	16.6948	10000.00	1214.07	1223.02		1223.22	0.001815	4.10	3370.02	2557.62
0.43										
I-10 Reach	16.6789	10000.00	1213.73	1223.15	1216.91	1223.16	0.000007	0.44	27121.21	4795.96
0.03										
I-10 Reach	16.6642	10000.00	1213.20	1223.10	1221.03	1223.15	0.000304	2.13	7074.30	3742.26
0.19										
I-10 Reach	16.6556	Culvert								
I-10 Reach	16.6470	10000.00	1212.97	1219.67	1219.67	1220.13	0.004692	6.34	2308.29	2265.70
0.68										
I-10 Reach	16.6361	10000.00	1212.70	1215.24	1216.05	1219.02	0.190040	16.50	673.58	1062.00
3.16										

Profile Output Table - Standard Table 1

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)	
Upper Reach A	20.0000	10000.00	1410.36	1415.54	1415.54	1418.15	0.008287	12.95	772.16	149.71	1.00
Upper Reach A	19.9735	10000.00	1390.09	1392.00	1395.04	1412.81	0.336370	36.61	273.13	180.60	5.25
Upper Reach A	19.9458	10000.00	1389.05	1394.74	1395.26	1396.78	0.030783	8.30	899.71	375.36	0.69
Upper Reach A	19.9052	10000.00	1379.10	1389.84	1390.11	1391.24	0.026574	9.33	1080.43	538.34	0.66
Upper Reach A	19.8387	10000.00	1374.30	1382.58	1382.69	1383.46	0.024285	7.29	1351.39	889.05	0.61
Upper Reach A	19.8173	10000.00	1372.55	1378.97	1379.09	1379.98	0.023330	5.34	1304.63	811.57	0.56
Upper Reach B	19.7349	9480.00	1366.33	1372.36	1371.96	1373.29	0.012764	6.03	1251.31	465.44	0.46
Upper Reach B	19.6465	9480.00	1359.85	1365.74	1365.72	1366.90	0.019058	6.82	1118.91	501.09	0.55
Upper Reach B	19.5602	9480.00	1353.58	1357.84	1357.84	1359.06	0.013272	4.65	1118.45	447.01	0.44
Upper Reach B	19.4887	9480.00	1347.87	1351.58	1351.82	1353.03	0.020555	5.36	1001.98	494.95	0.53
Upper Reach B	19.3761	9480.00	1340.81	1342.97	1342.97	1343.53	0.011709	2.63	1603.60	1078.51	0.36
Upper Reach B	19.2665	9480.00	1331.06	1333.32	1333.76	1334.77	0.024226	2.32	1039.66	694.04	0.46
Upper Reach B	19.1607	9480.00	1324.61	1326.12	1326.12	1326.43	0.006491	1.19	2143.56	1578.95	0.24
Upper Reach B	19.0557	9480.00	1315.79	1317.79	1318.44	1319.56	0.047943	3.92	928.50	957.67	0.67
Split1	19.6872	520.00	1372.00	1373.39	1374.28	1378.40	0.644164	17.96	28.95	38.30	3.64
Split1	19.6513	520.00	1369.17	1371.45	1371.45	1371.68	0.038044	3.82	136.01	171.07	0.76
Split1	19.5997	520.00	1365.14	1368.47	1367.44	1368.56	0.005296	2.39	217.91	126.17	0.32
Split1	19.5616	520.00	1363.27	1366.39	1365.77	1366.71	0.018469	4.54	114.51	64.42	0.60
Split1	19.5223	520.00	1360.68	1363.81		1363.92	0.009900	2.63	198.04	159.19	0.41
Split1	19.4869	520.00	1357.30	1360.81	1360.46	1361.12	0.024914	4.46	116.51	83.99	0.67
Split1	19.3980	520.00	1352.11	1354.51	1353.73	1354.64	0.008634	2.91	178.95	111.11	0.40
Split 1A	19.3216	100.00	1346.76	1348.08	1347.49	1348.14	0.007231	1.91	52.23	53.25	0.34
Split 1A	19.2398	100.00	1341.01	1342.16	1342.00	1342.26	0.034600	2.49	40.12	89.28	0.66
Split 1A	19.1676	100.00	1336.01	1336.38	1336.25	1336.47	0.008544	0.69	43.36	99.77	0.28
Split 1A	19.0811	100.00	1327.96	1329.46	1329.27	1329.64	0.034447	3.48	28.72	38.46	0.71
Split 1A	18.9967	100.00	1321.21	1322.72	1322.50	1322.78	0.008810	1.70	52.63	109.75	0.36

Split 1A	18.9165	100.00	1314.34	1315.81	1315.81	1315.98	0.040398	3.48	30.42	78.87	0.75
Split 1B	19.3158	420.00	1346.28	1347.89	1347.87	1348.21	0.037009	4.59	93.81	132.61	0.77
Split 1B	19.2400	420.00	1339.34	1341.85	1341.66	1341.96	0.008906	2.78	164.31	263.37	0.40
Split 1B	19.1631	420.00	1334.12	1335.86	1335.86	1336.08	0.029168	3.48	112.02	254.24	0.67
Split 1B	19.0836	420.00	1324.91	1328.34	1328.04	1328.41	0.006116	1.84	206.42	327.81	0.32
Split 1B	19.0153	420.00	1320.41	1322.13	1322.13	1322.49	0.023493	3.10	90.89	148.75	0.59
Split 1B	18.9337	420.00	1314.24	1316.29	1316.06	1316.38	0.008576	2.15	178.01	351.93	0.37
Split 1B	18.8560	420.00	1309.33	1310.88	1310.88	1311.25	0.022031	2.82	88.45	123.13	0.56
Split 1B	18.7744	420.00	1304.12	1305.25	1305.05	1305.34	0.008211	1.41	172.70	333.42	0.33
Split 1B	18.7184	420.00	1300.43	1301.34	1301.34	1301.52	0.023713	2.03	123.77	332.35	0.54
Split 1B	18.6384	420.00	1295.32	1296.56	1296.33	1296.65	0.007034	1.38	173.94	304.89	0.31
Split 1B	18.5485	420.00	1290.17	1292.20	1292.20	1292.40	0.029812	3.41	118.13	319.35	0.67
Upper Mid Reach	18.9676	9580.00	1309.70	1312.27	1312.27	1312.82	0.015029	1.97	1685.72	1689.81	0.37
Upper Mid Reach	18.8526	9580.00	1302.10	1305.33	1305.11	1305.67	0.010125	2.25	2123.99	1992.57	0.33
Upper Mid Reach	18.7424	9580.00	1294.41	1298.07	1298.07	1298.60	0.019245	4.17	1646.79	1625.39	0.49
Upper Mid Reach	18.6296	9580.00	1287.21	1291.32	1291.04	1291.65	0.007932	3.03	2105.26	1751.74	0.32
Lower Mid Reach	18.5237	10000.00	1282.22	1285.66	1285.55	1286.23	0.011893	2.93	1737.27	1277.88	0.37
Lower Mid Reach	18.3861	10000.00	1277.51	1279.30	1279.03	1279.68	0.008280	1.87	2089.49	1565.60	0.29
Lower Mid Reach	18.2834	10000.00	1272.75	1273.98	1273.92	1274.47	0.013429	1.54	1823.63	1701.93	0.33
Lower Mid Reach	18.1956	10000.00	1267.06	1270.10	1269.72	1270.40	0.007411	2.07	2272.51	1745.13	0.29
Lower Mid Reach	18.0888	10000.00	1262.50	1265.66	1265.54	1266.06	0.012916	3.54	1987.88	1851.11	0.40
Lower Mid Reach	17.9877	10000.00	1256.92	1261.40	1260.98	1261.65	0.006260	2.82	2501.65	1912.87	0.29
Lower Mid Reach	17.8771	10000.00	1252.57	1256.29	1256.27	1256.78	0.014728	3.26	1837.00	1764.26	0.41
Lower Mid Reach	17.7710	10000.00	1249.90	1251.80	1251.52	1252.05	0.007342	1.17	2484.15	2393.31	0.25
Lower Mid Reach	17.6702	10000.00	1243.94	1248.05	1247.87	1248.36	0.010936	3.09	2339.28	2486.06	0.36
Split2	17.5883	1970.00	1239.27	1243.93	1243.12	1244.10	0.004591	2.32	632.87	391.16	0.27
Split2	17.4913	1970.00	1233.18	1238.96	1238.96	1239.44	0.035197	4.66	365.70	409.97	0.68
Split2	17.3965	1970.00	1225.15	1235.31	1234.07	1235.47	0.002550	2.74	697.63	571.76	0.21
Split2	17.1420	1970.00	1224.41	1225.98	1225.98	1226.36	0.093425	4.95	398.04	538.63	1.01
Lower Reach	17.5767	8030.00	1239.92	1243.55	1243.29	1243.77	0.007795	2.49	2178.30	2176.11	0.31
Lower Reach	17.4734	8030.00	1236.37	1239.98		1240.22	0.009194	2.35	2128.57	2497.69	0.32
Lower Reach	17.3602	8030.00	1233.27	1236.06		1236.23	0.006063	1.99	2503.00	2621.73	0.26
Lower Reach	17.2691	8030.00	1230.19	1232.61	1232.45	1232.86	0.011518	2.05	2017.47	2436.14	0.34
Lower Reach	17.1738	8030.00	1226.04	1229.54		1229.67	0.004718	1.76	2773.29	2764.39	0.23
Lower Reach	17.0788	8030.00	1223.69	1225.81	1225.81	1226.23	0.015222	2.35	1572.86	1833.51	0.39
Lower Reach	16.9865	8030.00	1220.28	1224.58	1222.95	1224.63	0.000586	0.92	4788.64	2379.59	0.09
I-10 Reach	16.8902	10000.00	1217.58	1224.51	1221.33	1224.52	0.000109	0.56	11356.37	4139.50	0.04
I-10 Reach	16.7885	10000.00	1215.86	1224.50	1219.30	1224.50	0.000017	0.27	20409.21	4416.90	0.02
I-10 Reach	16.7242	10000.00	1214.57	1224.49	1217.77	1224.50	0.000008	0.21	25204.88	4147.23	0.01
I-10 Reach	16.7087	10000.00	1214.30	1224.46	1220.38	1224.49	0.000194	1.73	8653.86	4102.75	0.15
I-10 Reach	16.7017	Culvert									
I-10 Reach	16.6948	10000.00	1214.07	1223.02		1223.22	0.001815	4.10	3370.02	2557.62	0.43
I-10 Reach	16.6789	10000.00	1213.73	1223.15	1216.91	1223.16	0.000007	0.44	27121.21	4795.96	0.03
I-10 Reach	16.6642	10000.00	1213.20	1223.10	1221.03	1223.15	0.000304	2.13	7074.30	3742.26	0.19
I-10 Reach	16.6556	Culvert									
I-10 Reach	16.6470	10000.00	1212.97	1219.67	1219.67	1220.13	0.004692	6.34	2308.29	2265.70	0.68
I-10 Reach	16.6361	10000.00	1212.70	1215.24	1216.05	1219.02	0.190040	16.50	673.58	1062.00	3.16

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Q=10000

River: Harquahala Reach: Upper Reach A RS: 20.0000 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical

depth for the water surface and continued on with the calculations.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Harquahala Reach: Upper Reach A RS: 19.9735 Profile: PF#1
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Upper Reach A RS: 19.9458 Profile: PF#1
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The cross section had to be extended vertically during the critical depth calculations.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Upper Reach A RS: 19.9052 Profile: PF#1
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The cross section had to be extended vertically during the critical depth calculations.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Upper Reach A RS: 19.8387 Profile: PF#1
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Upper Reach A RS: 19.8173 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Upper Reach B RS: 19.7349 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Upper Reach B RS: 19.6465 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Upper Reach B RS: 19.5602 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Harquahala Reach: Upper Reach B RS: 19.4887 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Note - Program found supercritical flow starting at this cross section.
River: Harquahala Reach: Upper Reach B RS: 19.3761 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.

River: Harquahala Reach: Upper Reach B RS: 19.2665 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Upper Reach B RS: 19.1607 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Upper Reach B RS: 19.0557 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Split1 RS: 19.6872 Profile: PF#1
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split1 RS: 19.6513 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Split1 RS: 19.5997 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Harquahala Reach: Split1 RS: 19.5616 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.5223 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.4869 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.3980 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.3216 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.2398 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.1676 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.0811 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1A RS: 18.9967 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1A RS: 18.9165 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1B RS: 19.3158 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1B RS: 19.2400 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split 1B RS: 19.1631 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section
Warning - Tha conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1B RS: 19.0836 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1B RS: 19.0153 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Harquahala Reach: Split 1B RS: 18.9337 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Harquahala Reach: Split 1B RS: 18.8560 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Harquahala Reach: Split 1B RS: 18.7744 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicare the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

River: Harquahala Reach: Split 1B RS: 18.7184 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upsrream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water aurface was used.

River: Harquahala Reach: Split 1B RS: 18.6384 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

River: Harquahala Reach: Split 1B RS: 18.5485 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additionai cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional croas sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Harquahala Reech: Upper Mid Reach RS: 18.9676 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross eection. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the

calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Harquahala Reach: Upper Mid Reach RS: 18.8526 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Harquahala Reach: Upper Mid Reach RS: 18.7424 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth
River: Harquahala Reach: Upper Mid Reach RS: 18.6296 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.5237 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.3861 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.2834 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.1956 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.0888 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Lower Mid Reach RS: 17.9877 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 17.8771 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 17.7710 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 17.6702 Profile: PF#1
Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split2 RS: 17.5883 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split2 RS: 17.4913 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate

the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split2 RS: 17.3965 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split2 RS: 17.1420 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Harquahala Reach: Lower Reach RS: 17.5767 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Lower Reach RS: 17.4734 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.3602 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.2691 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.1738 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.0788 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Lower Reach RS: 16.9865 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.8902 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.7885 Profile: PF#1
Warning - Divided flow computed for this cross-section.
River: Harquahala Reach: I-10 Reach RS: 16.7242 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.6948 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.6789 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.6470 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculaced water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note - Multiple critical depths were found at this locarion. The critical depth with the lowest, valid, energy was used.

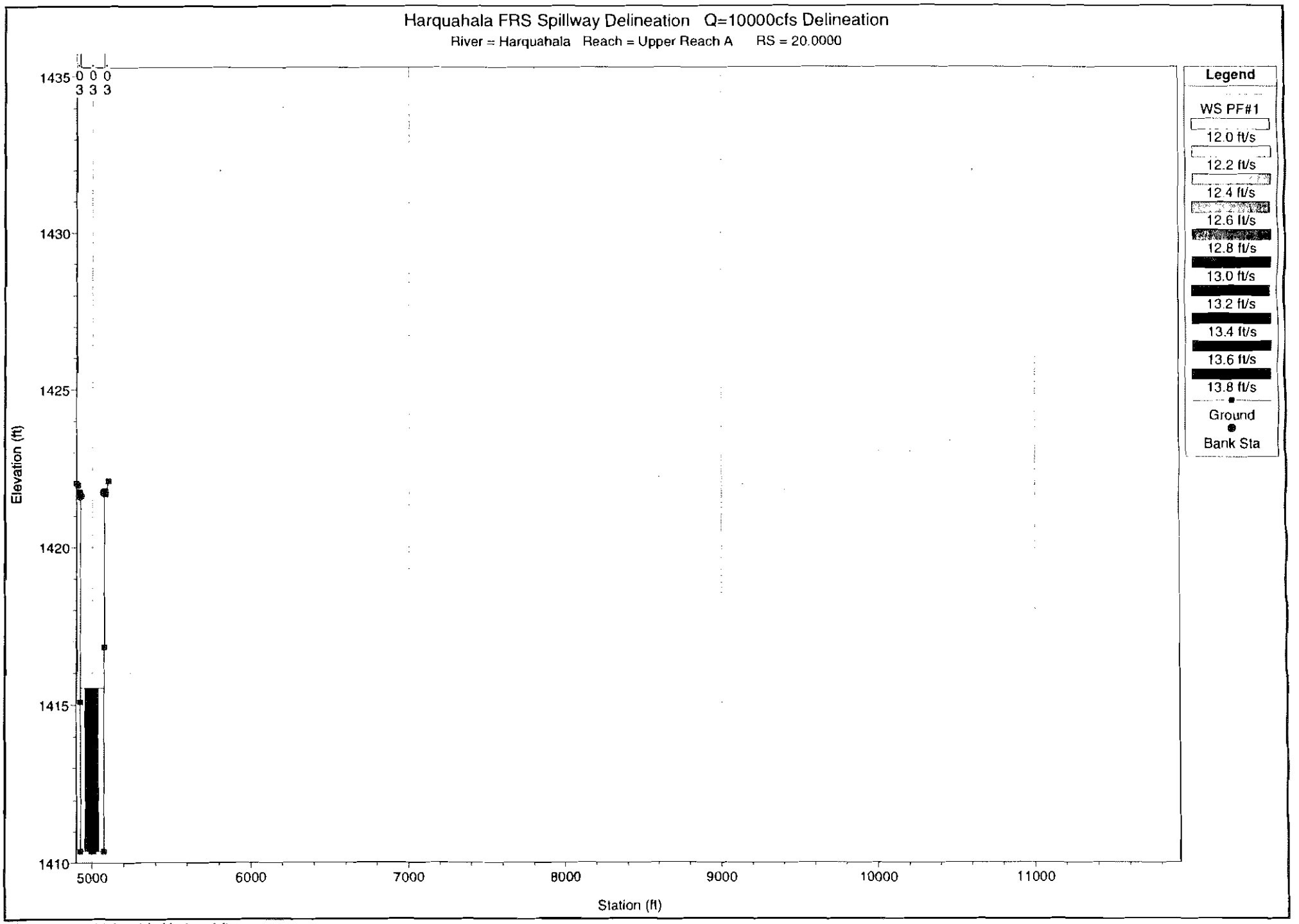
River: Harquahala Reach: I-10 Reach RS: 16.6361 Profile: PF#1

Warning - Divided flow computed for this cross-section.

Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

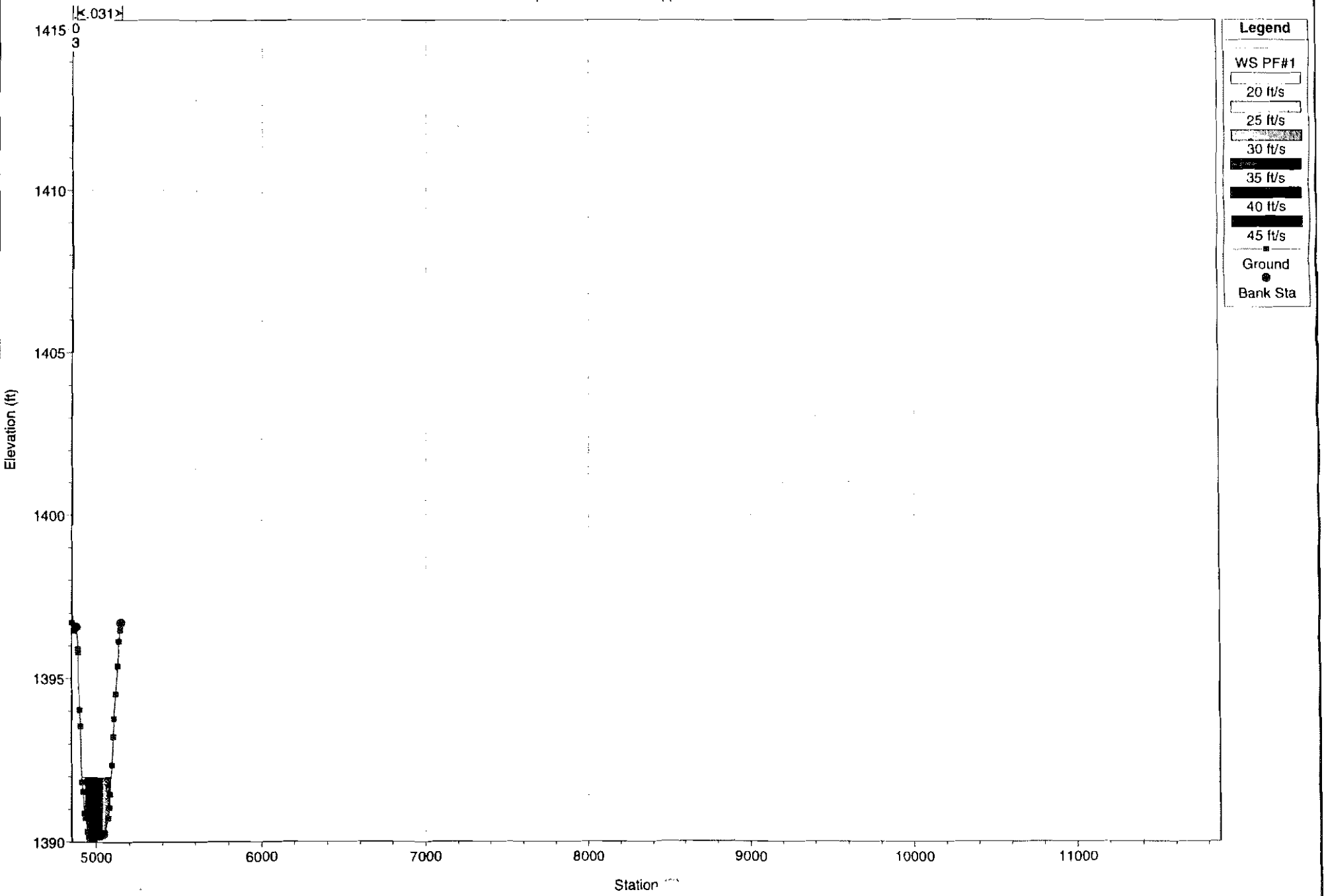
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

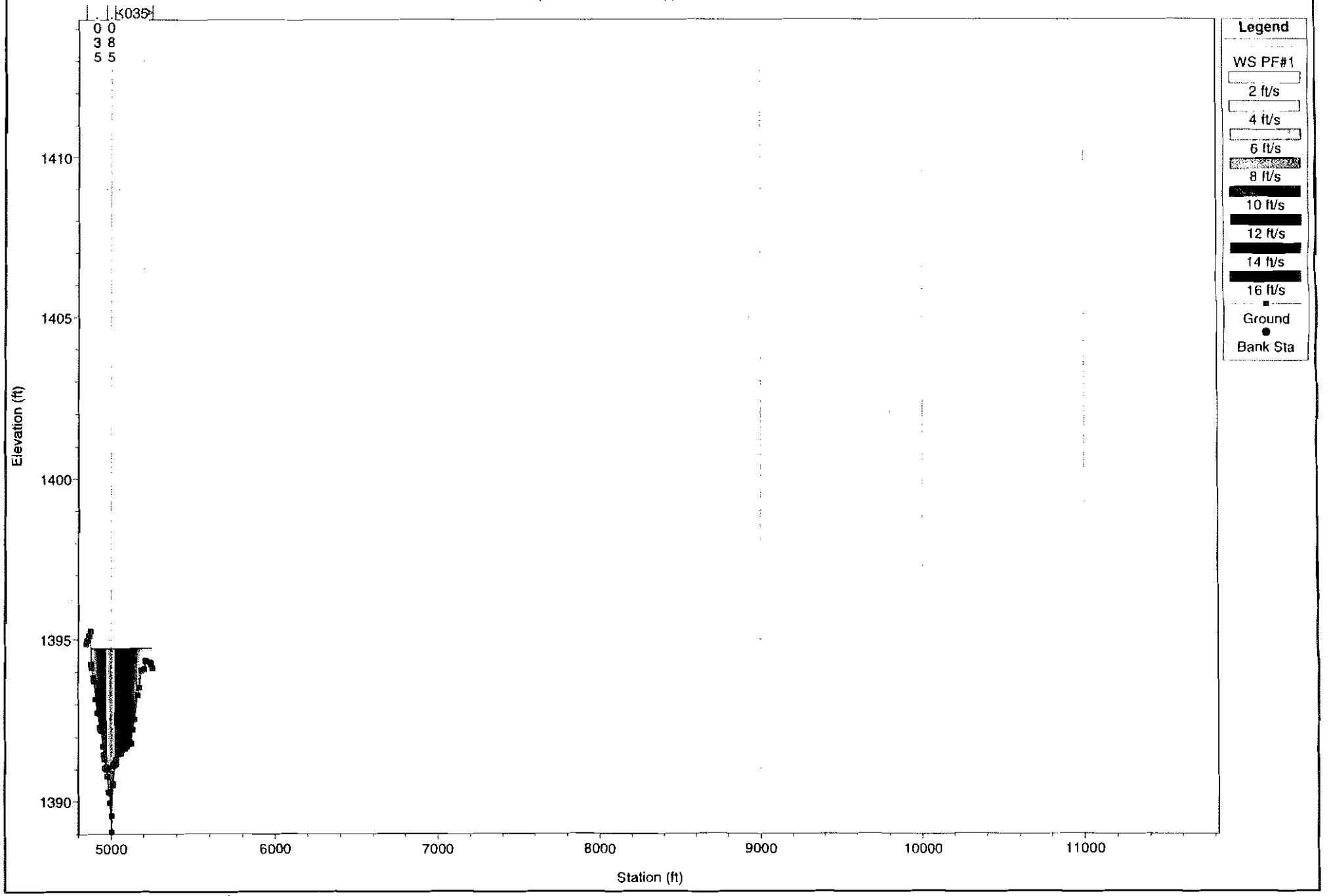
River = Harquahala Reach = Upper Reach A RS = 19.9735



1 in Horiz. = 800 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

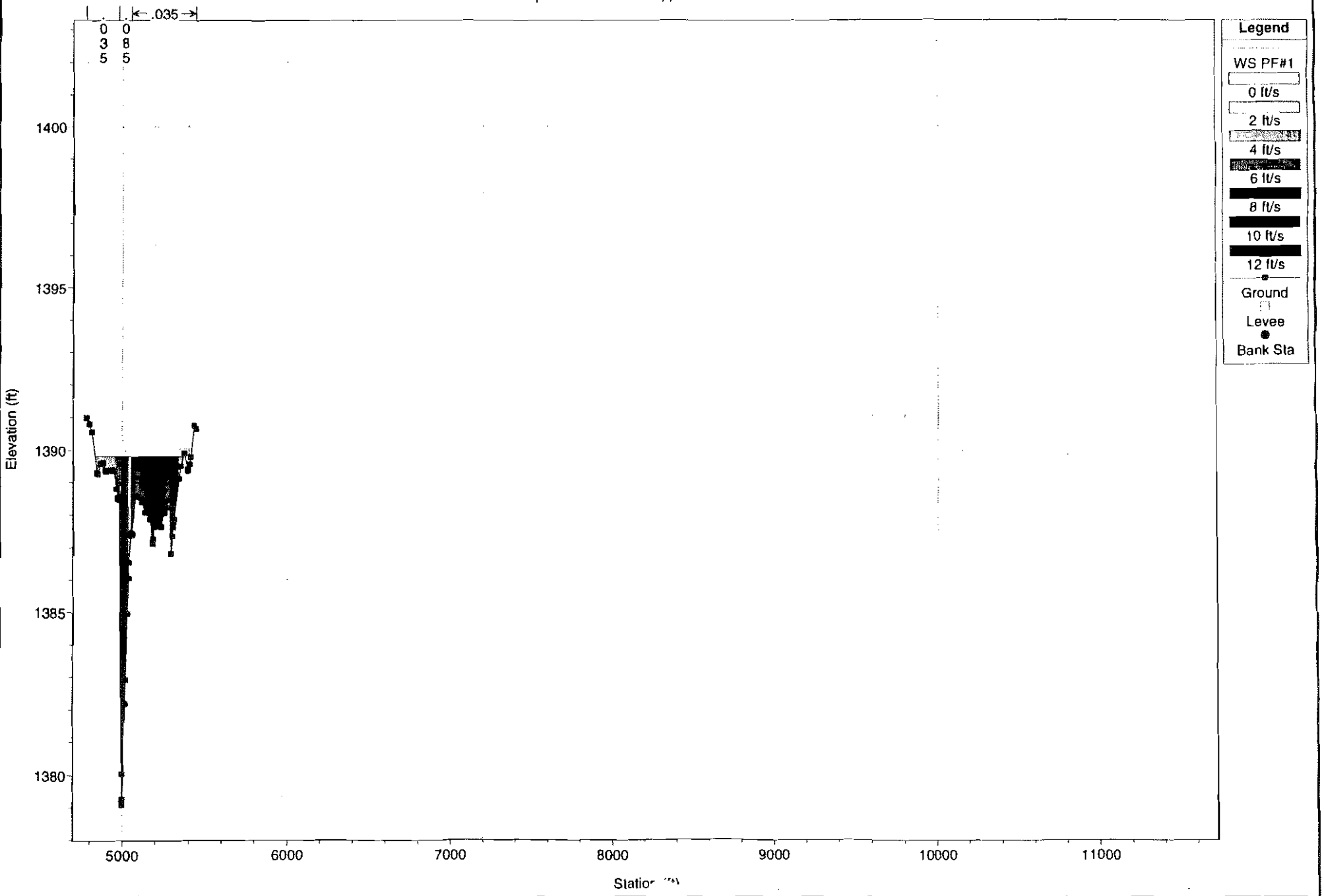
River = Harquahala Reach = Upper Reach A RS = 19.9458



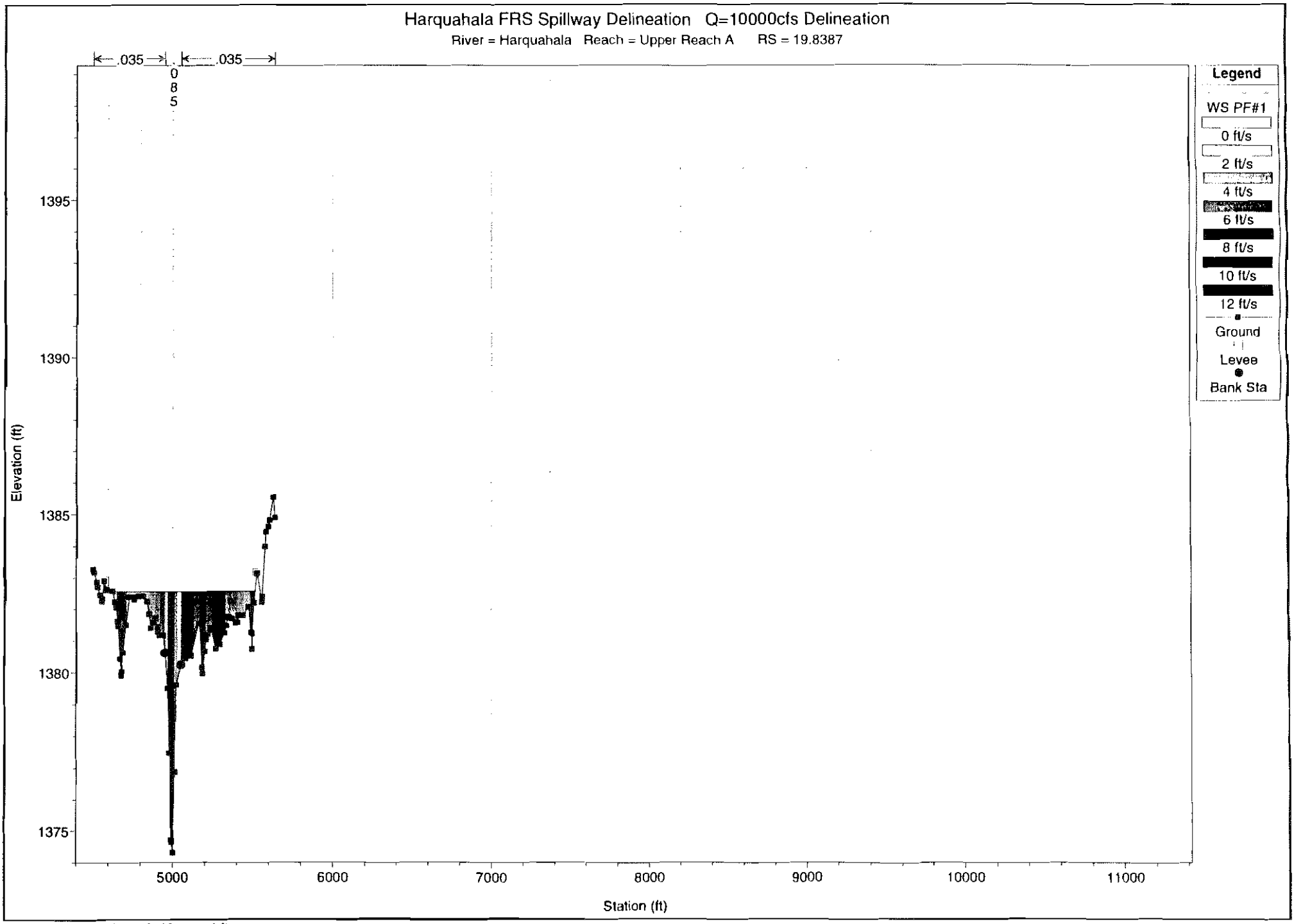
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

River = Harquahala Reach = Upper Reach A RS = 19.9052



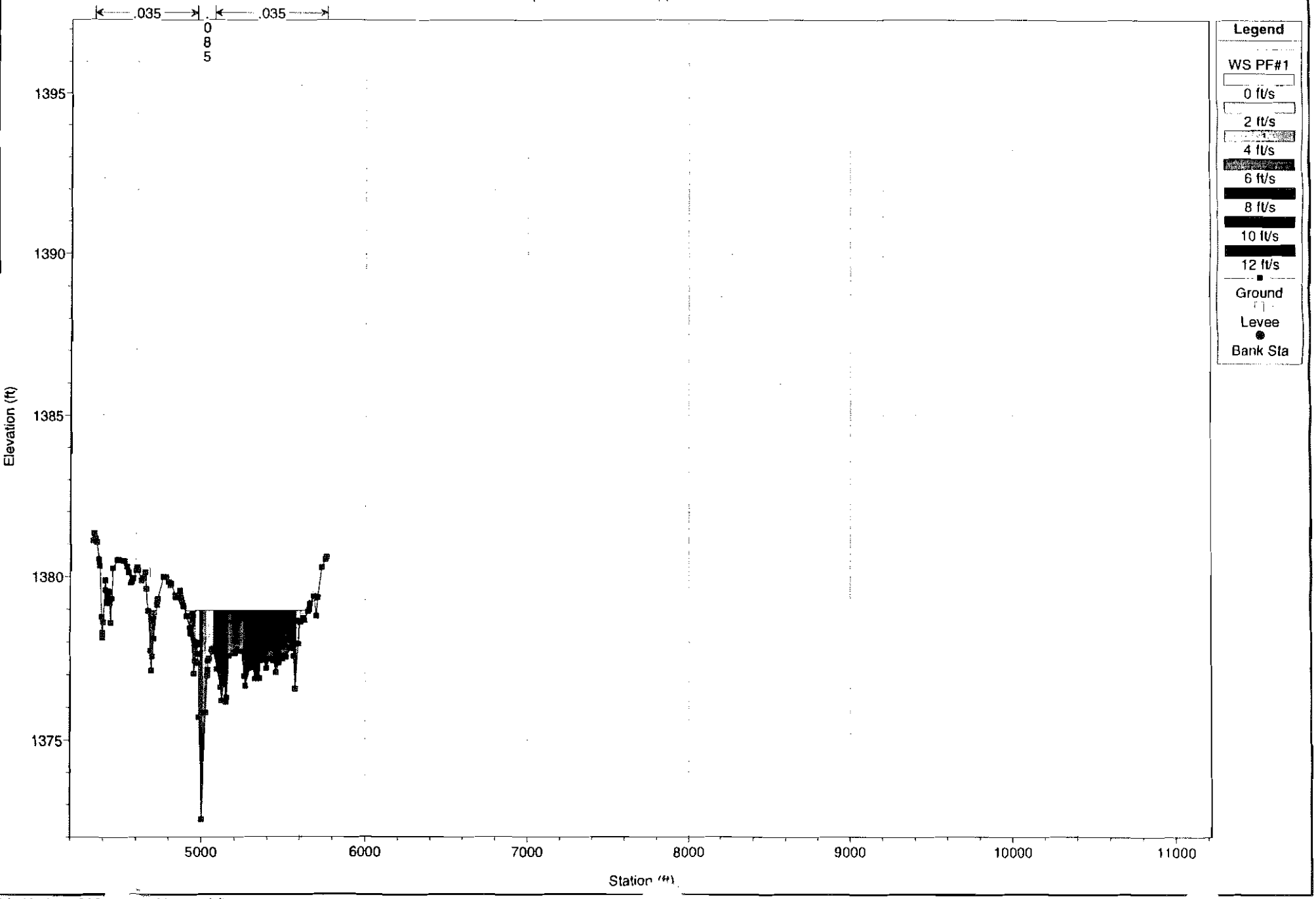
1 in Horiz. = 800 1 Vert. = 4 ft



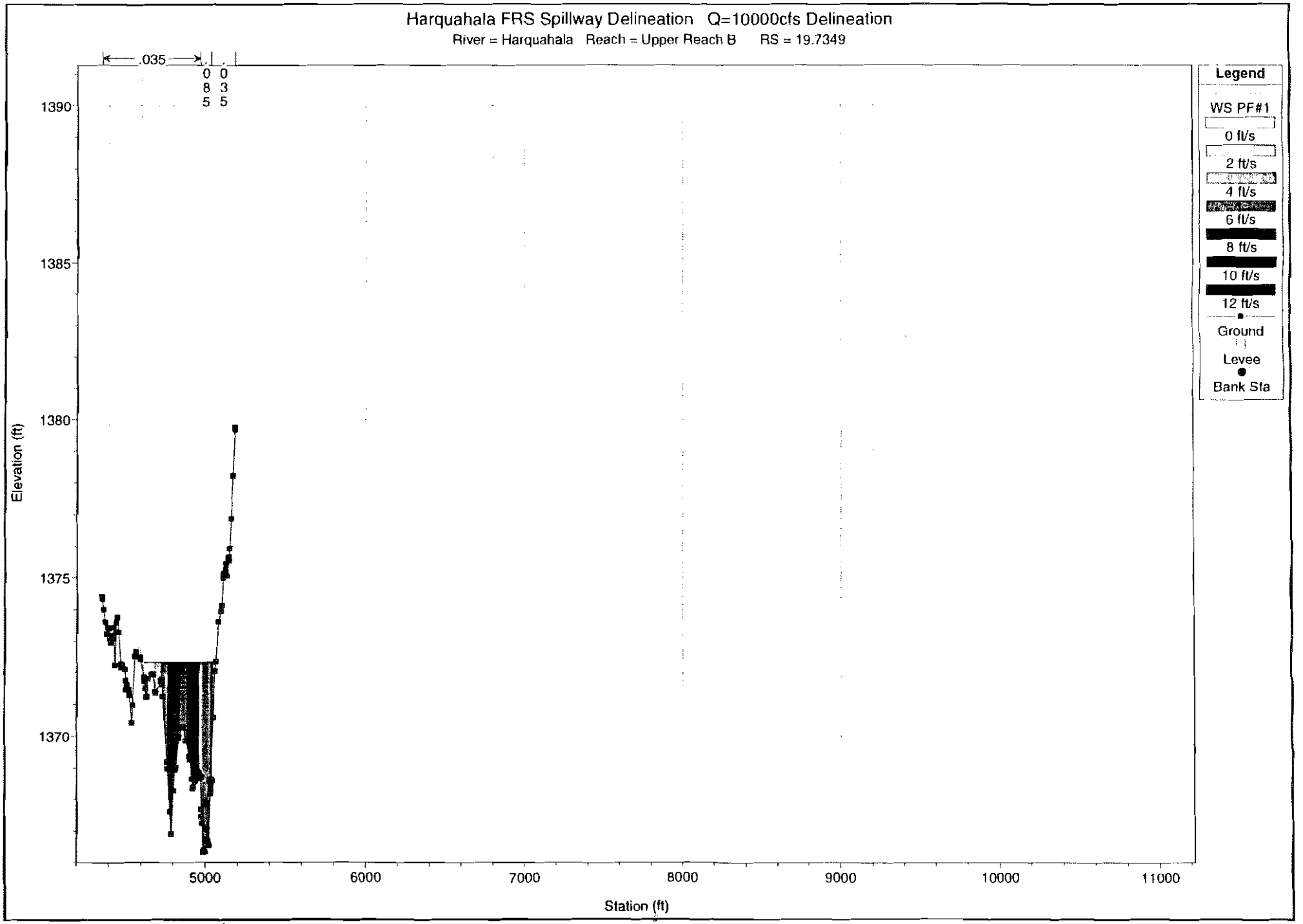
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

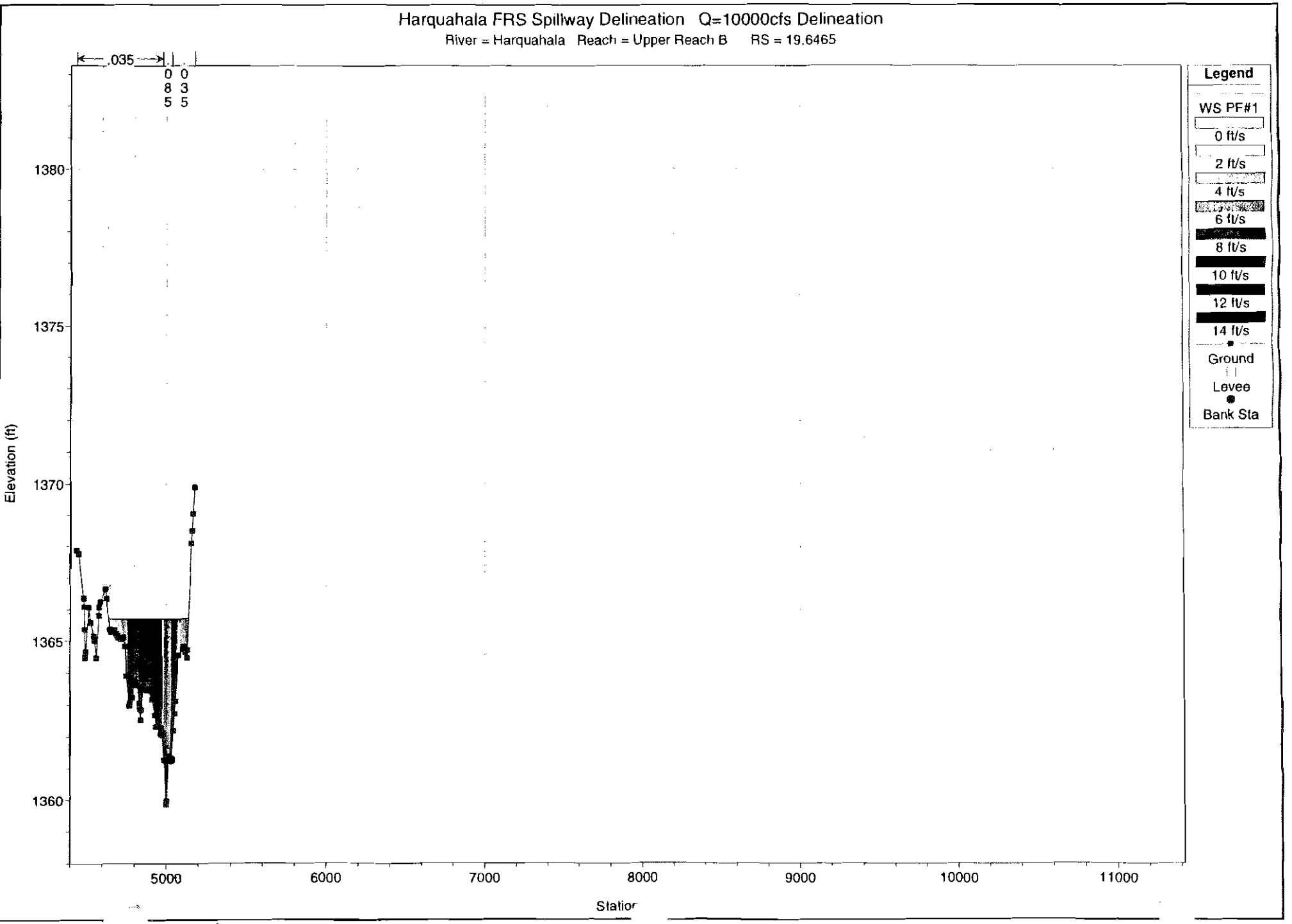
River = Harquahala Reach = Upper Reach A RS = 19.8173



1 in Horiz. = 800 1 Vert. = 4 ft



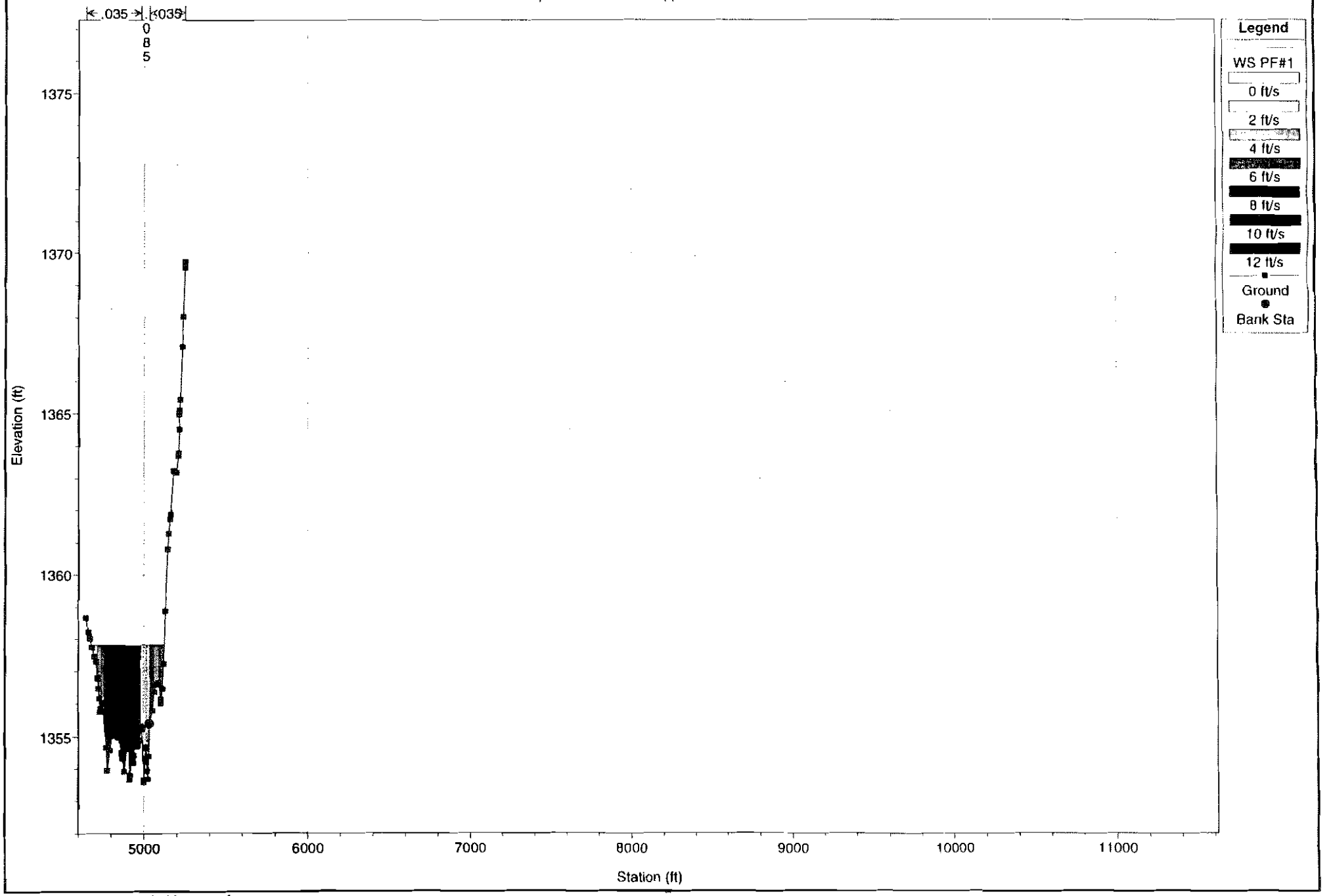
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



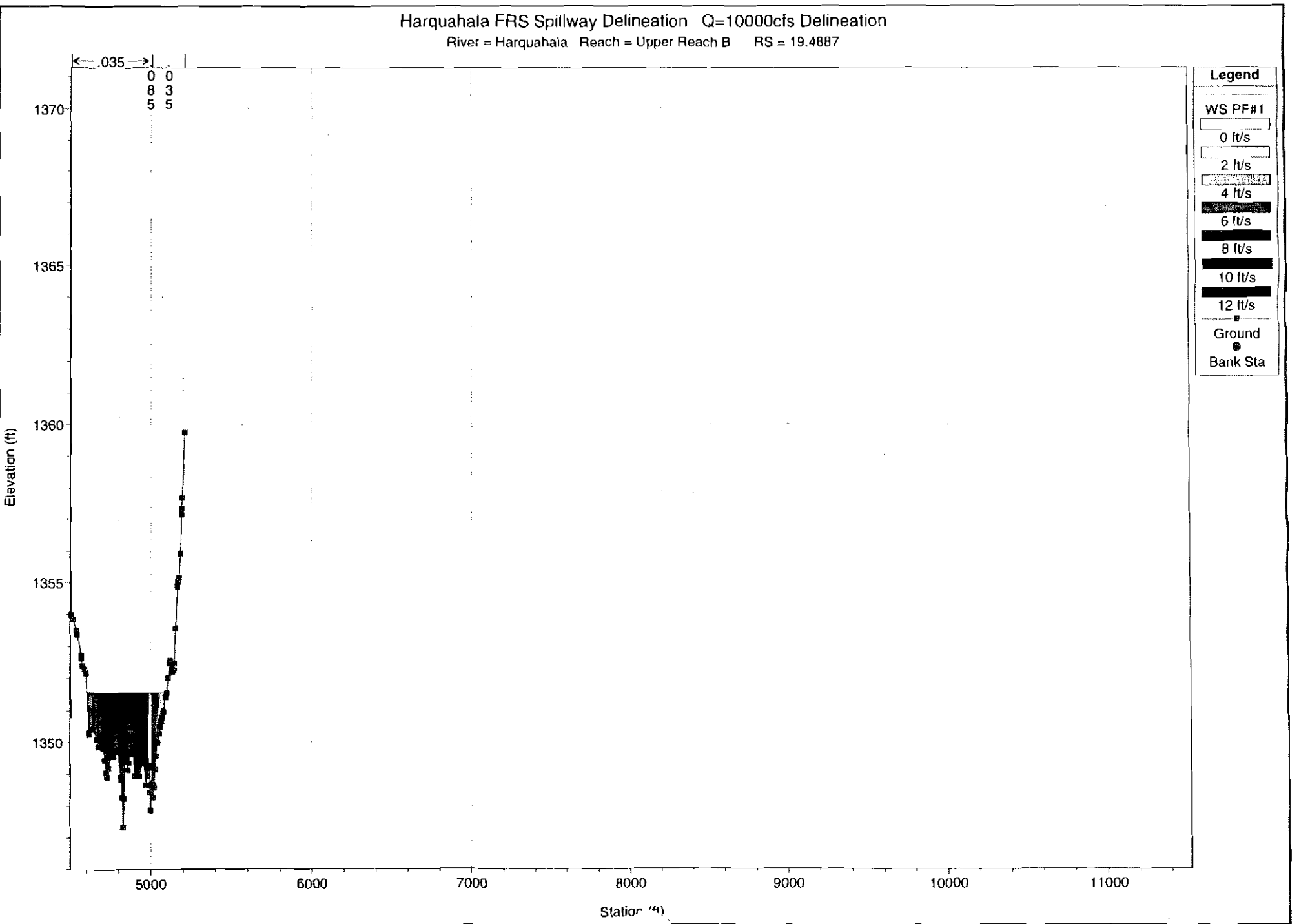
1 in Horiz. = 800 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

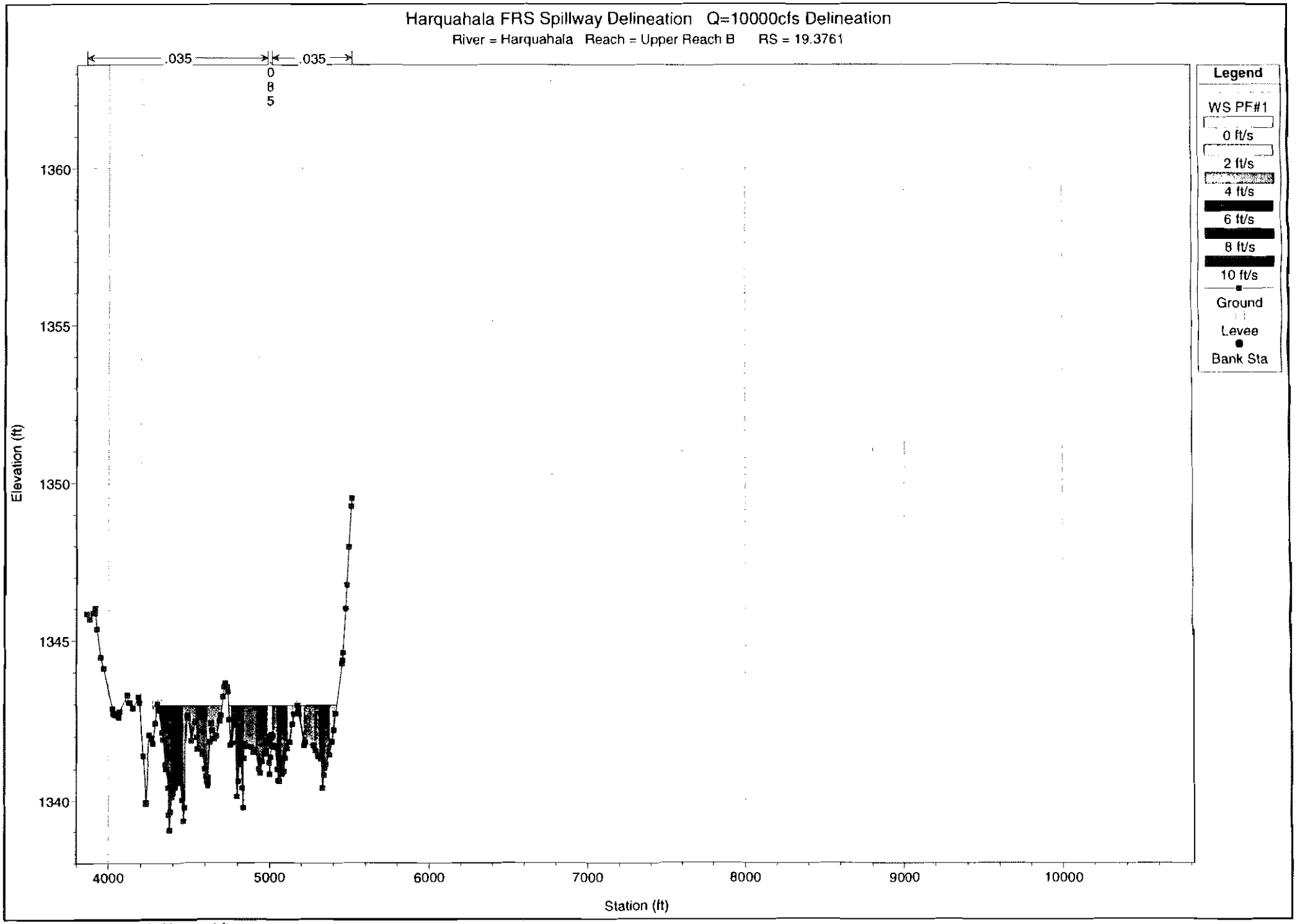
River = Harquahala Reach = Upper Reach B RS = 19.5602



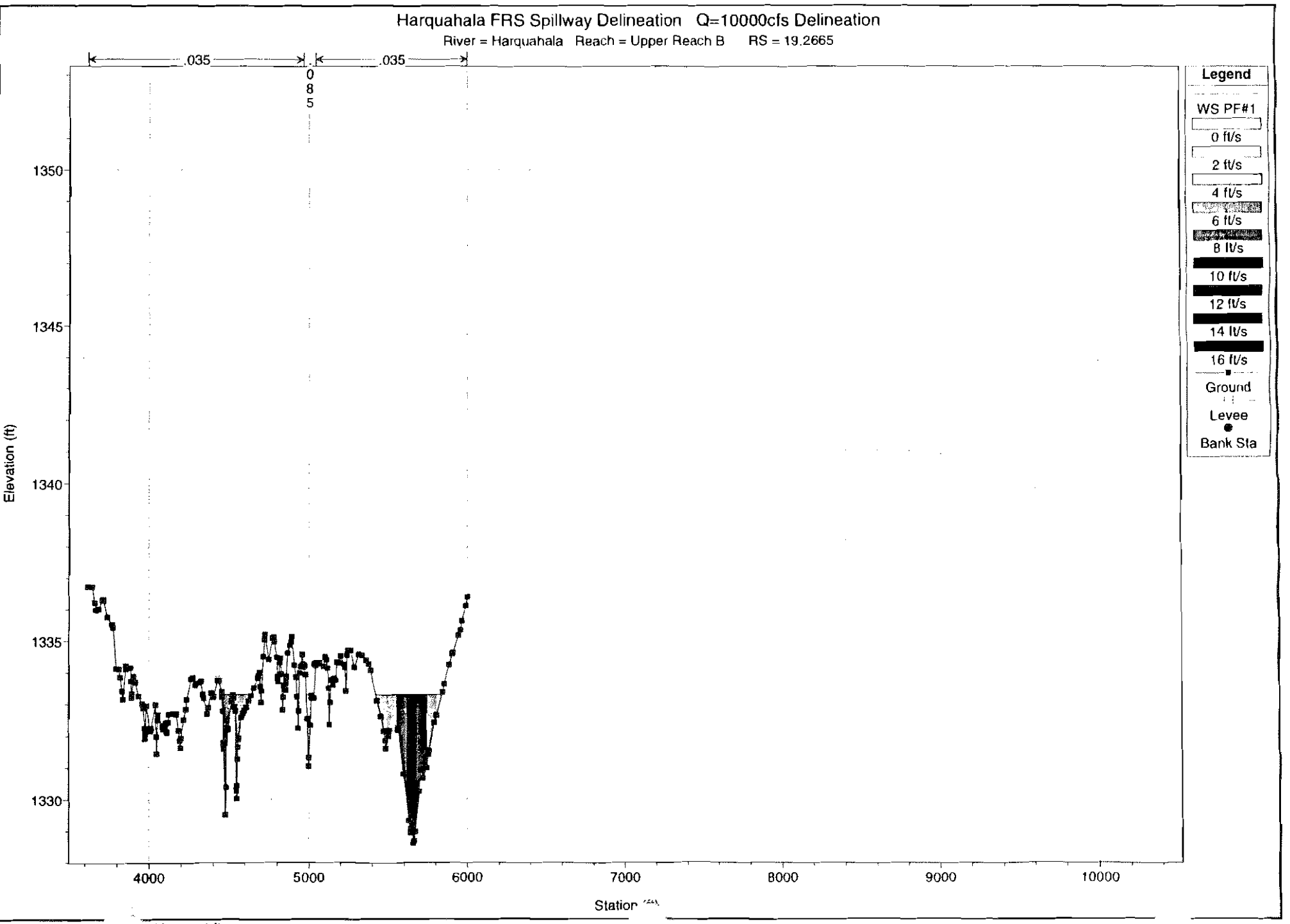
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



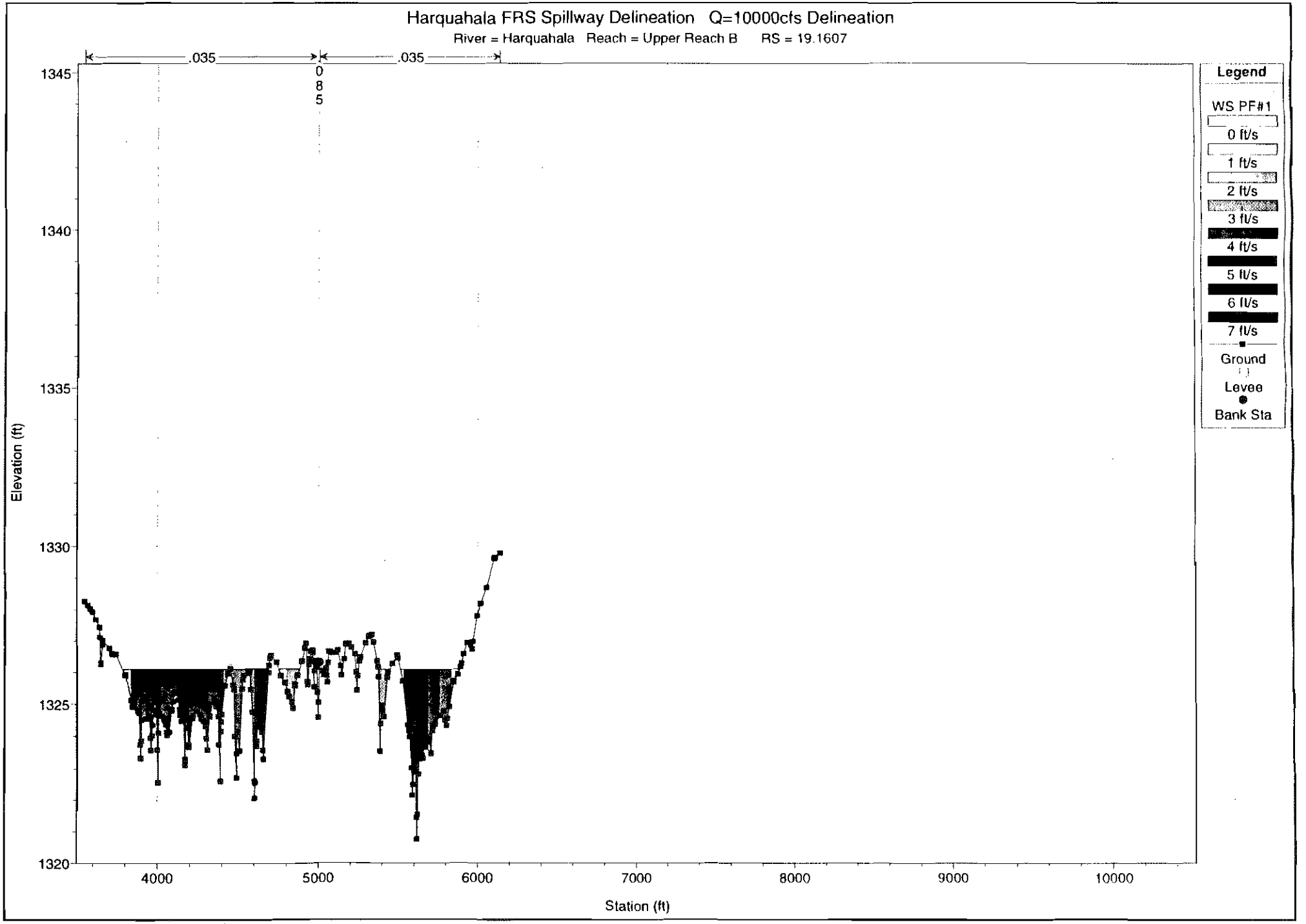
1 in Horiz. = 800 n Vert. = 4 ft



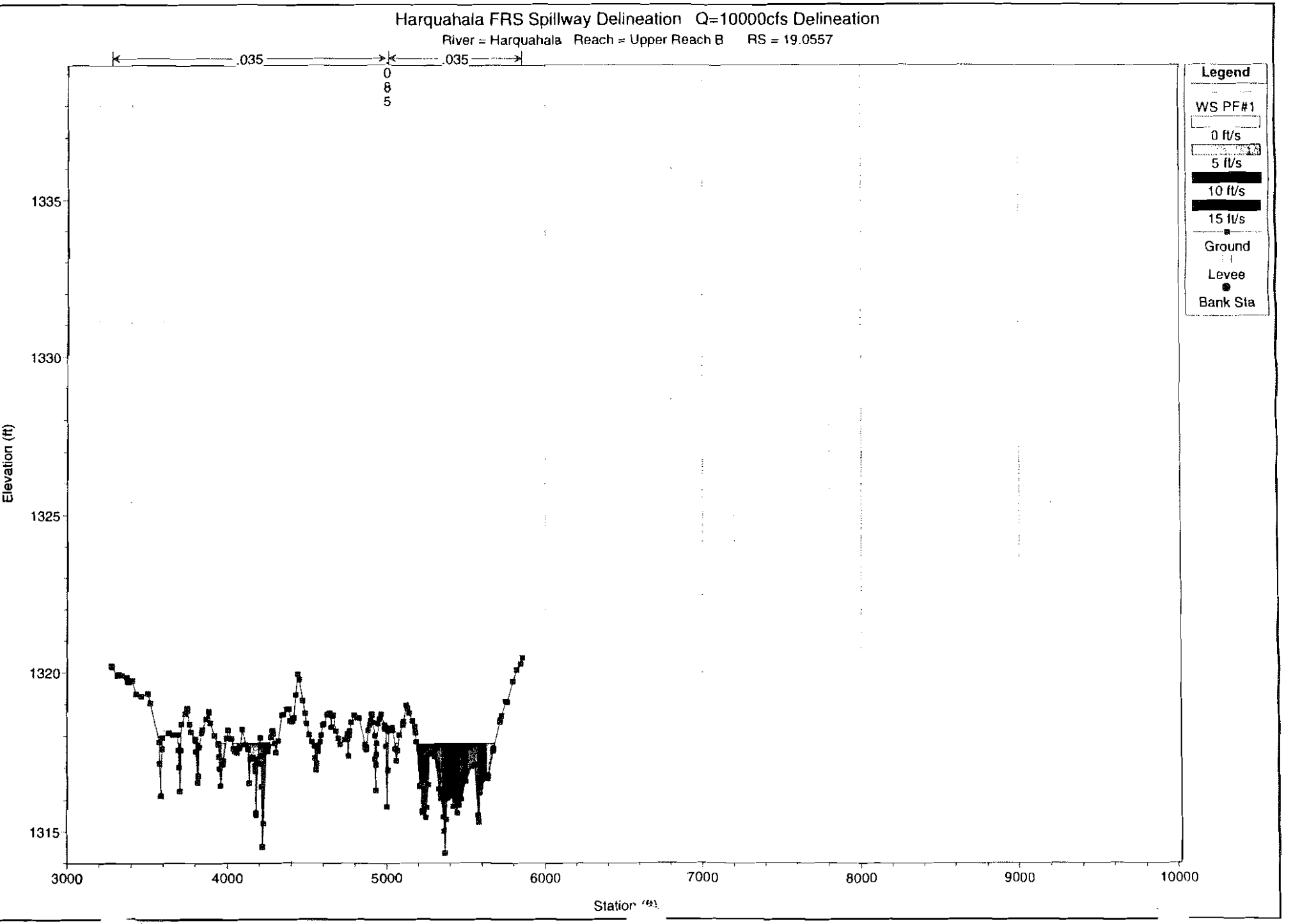
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



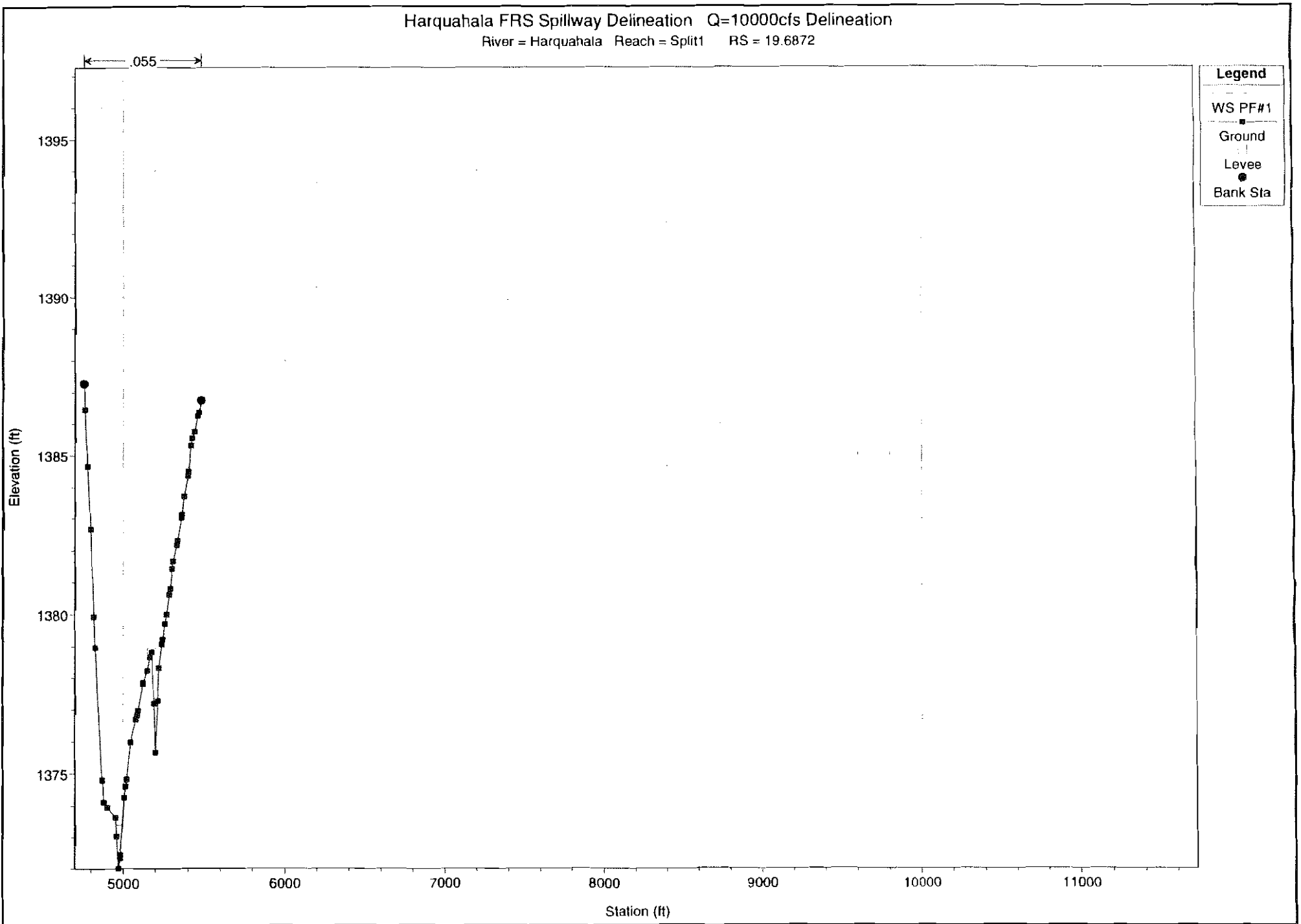
1 in Horiz. = 800 1 Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft



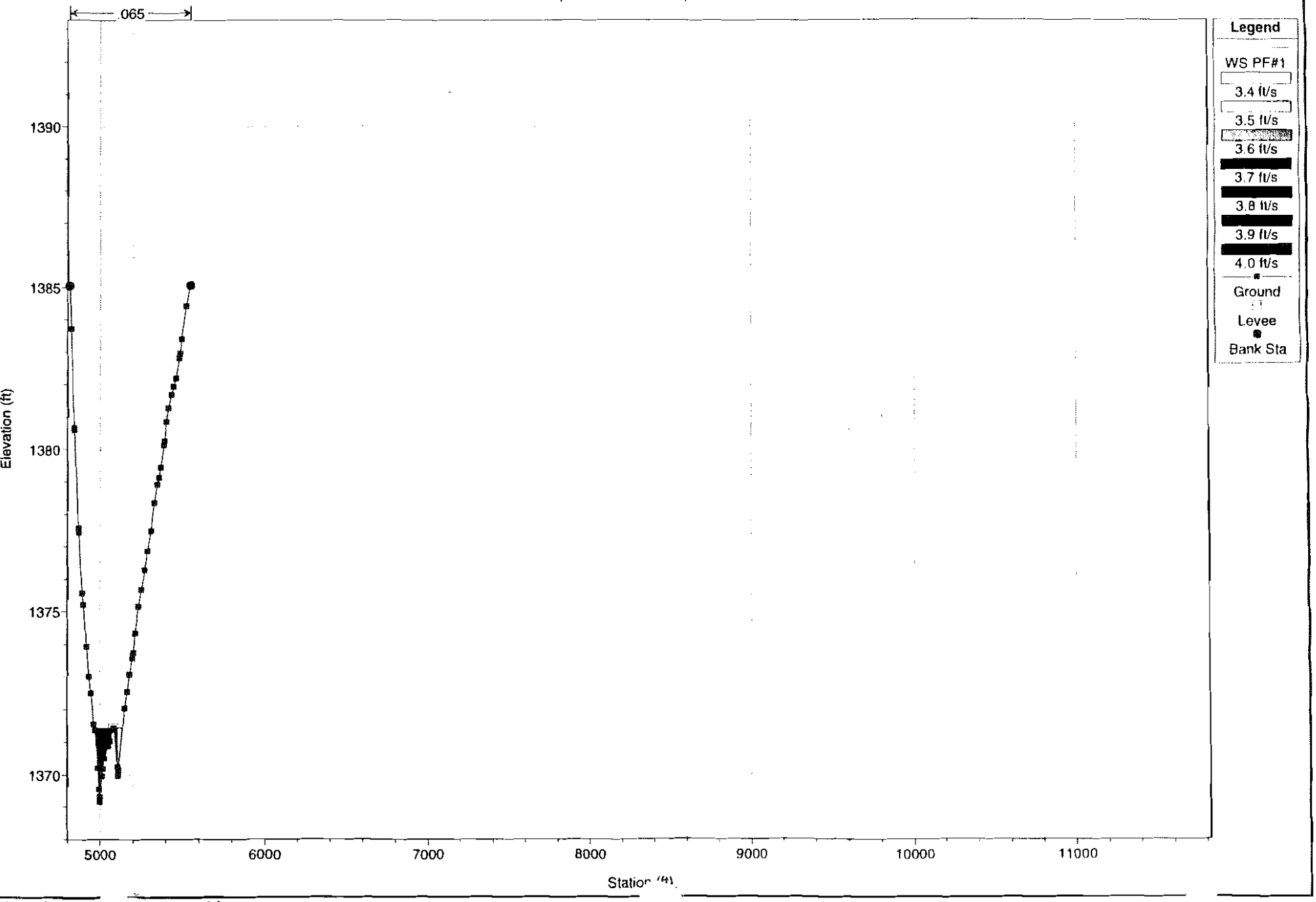
1 in Horiz. = 800 1 Vert. = 4 ft



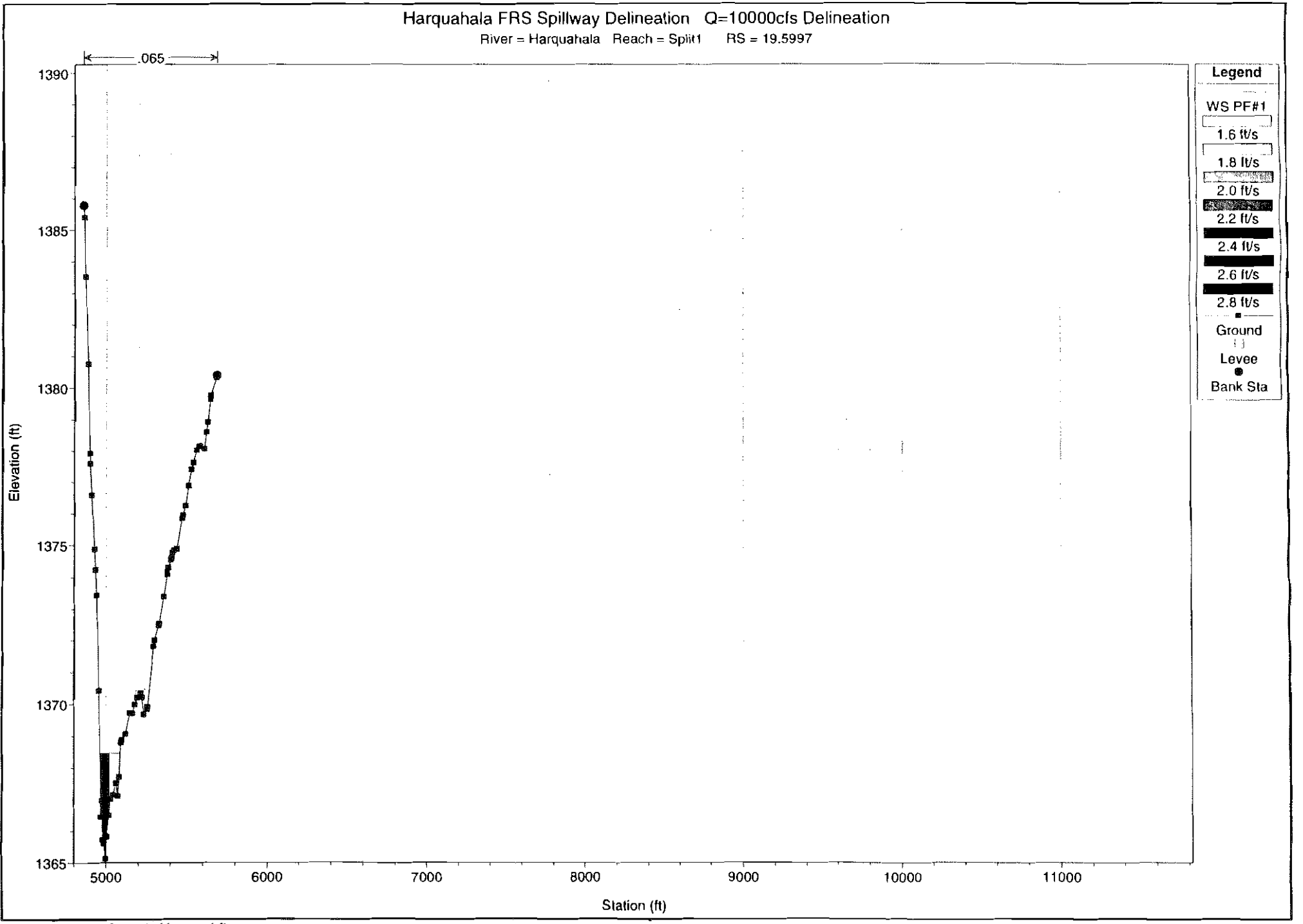
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

River = Harquahala Reach = Split1 RS = 19.6513



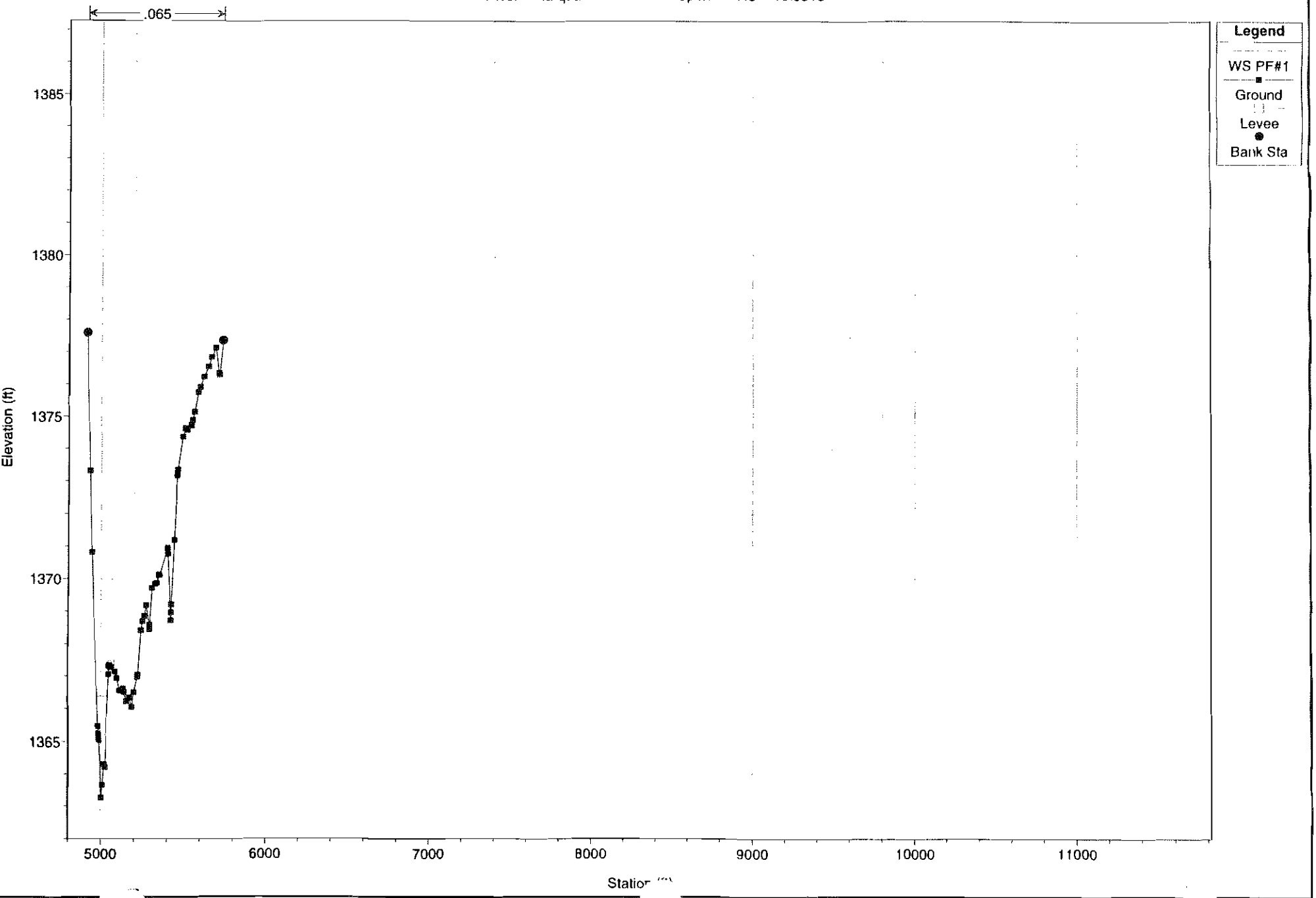
in Horiz. = 800) Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

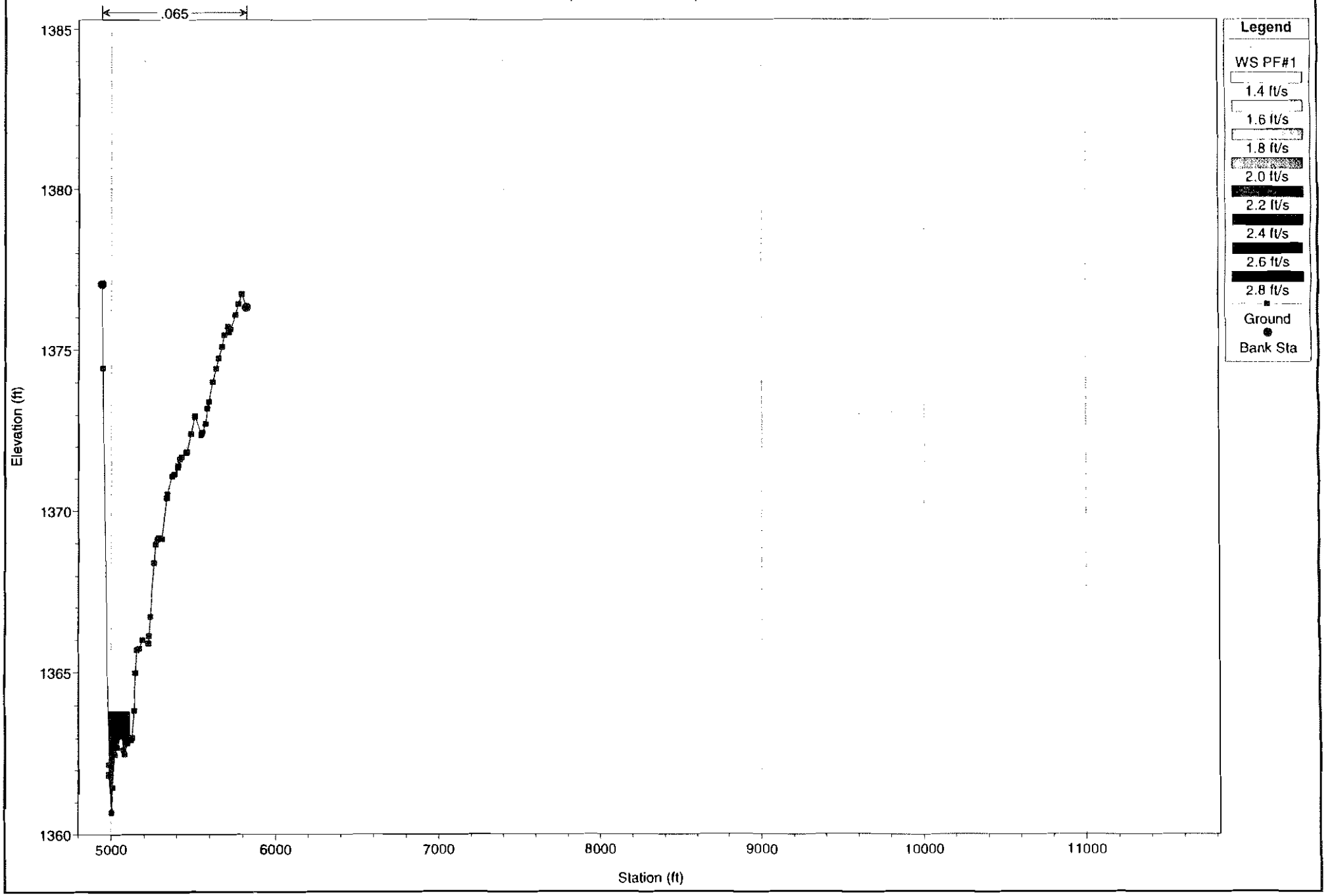
River = Harquahala Reach = Split1 RS = 19.5616



in Horiz. = 800) Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

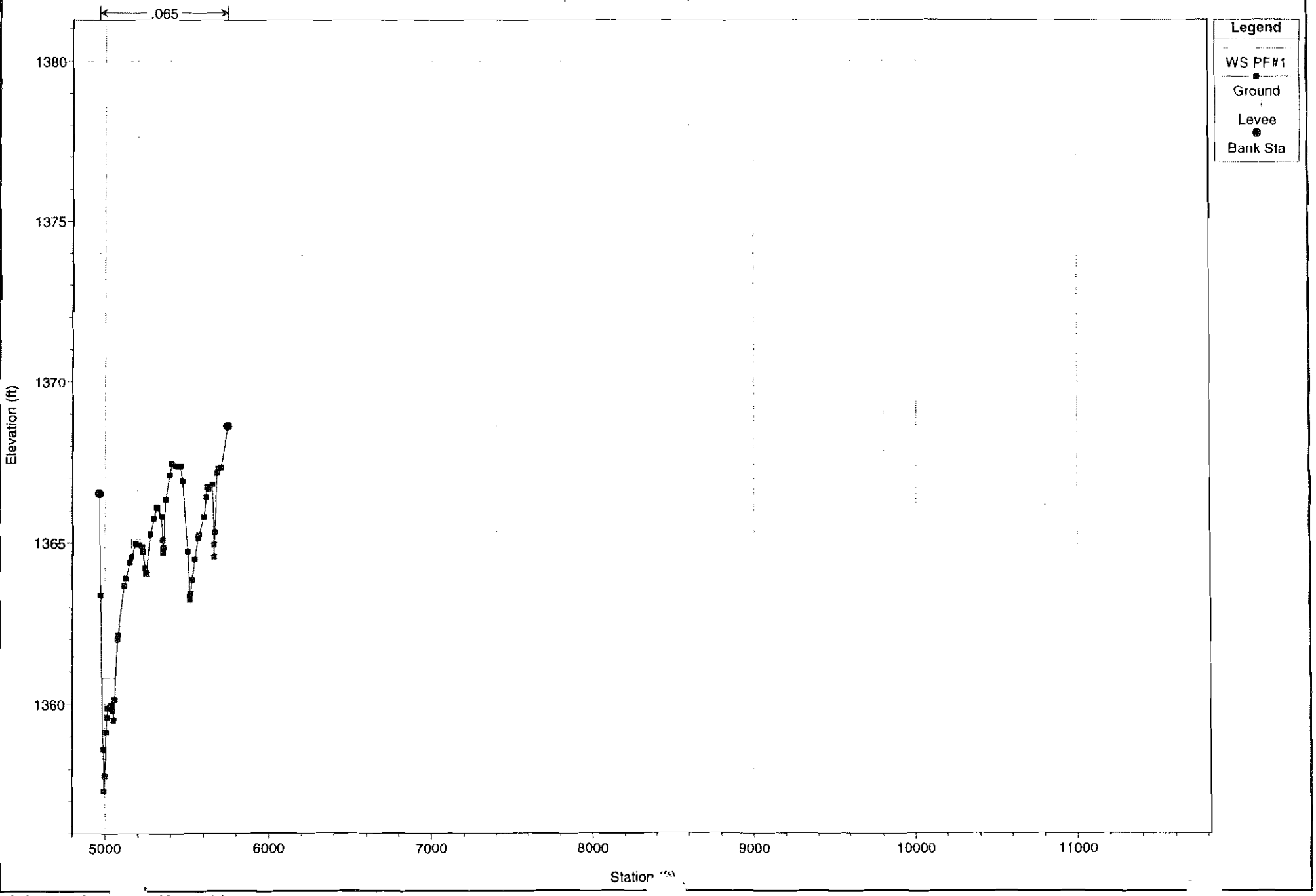
River = Harquahala Reach = Split1 RS = 19.5223



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

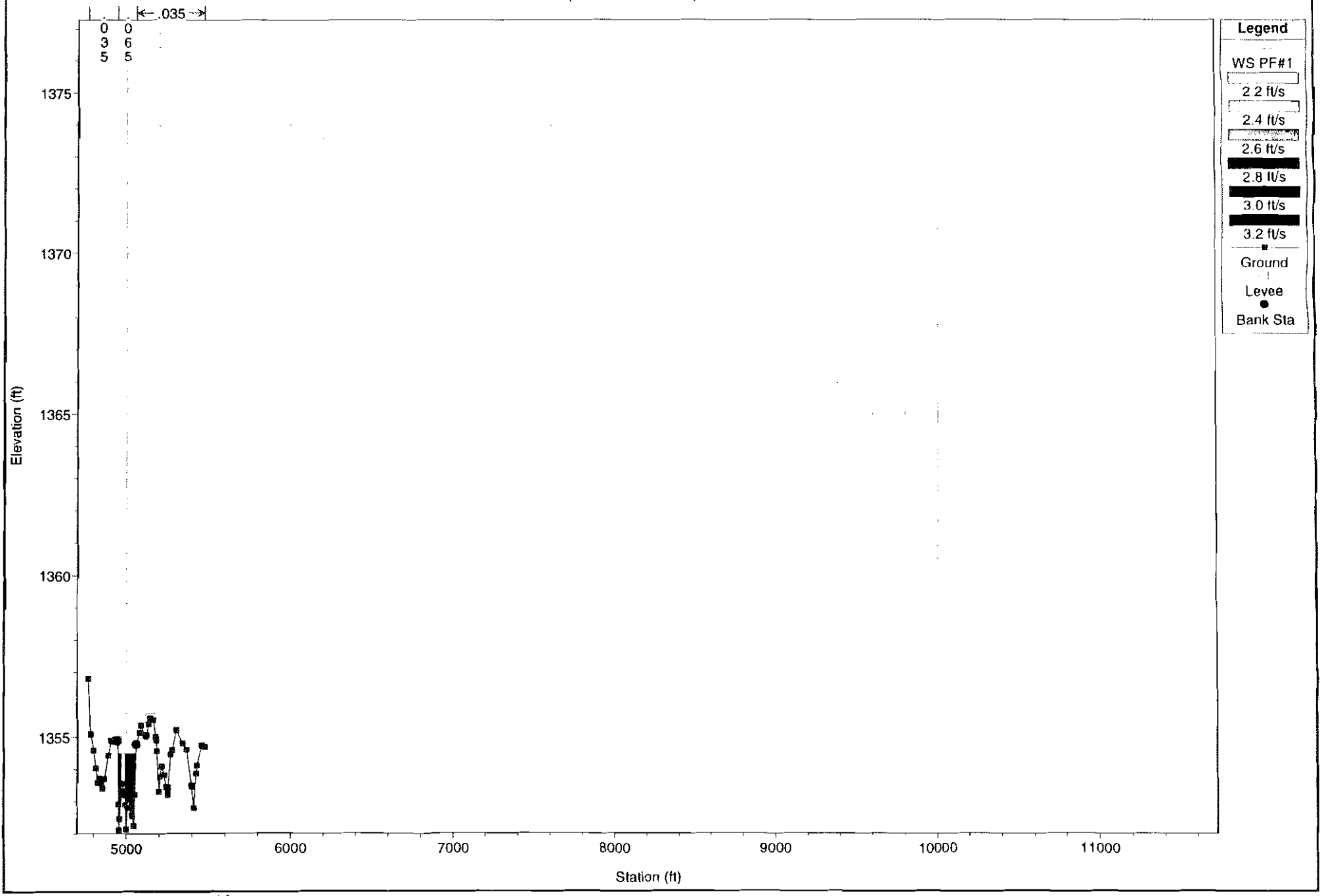
River = Harquahala Reach = Split1 RS = 19.4869



1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

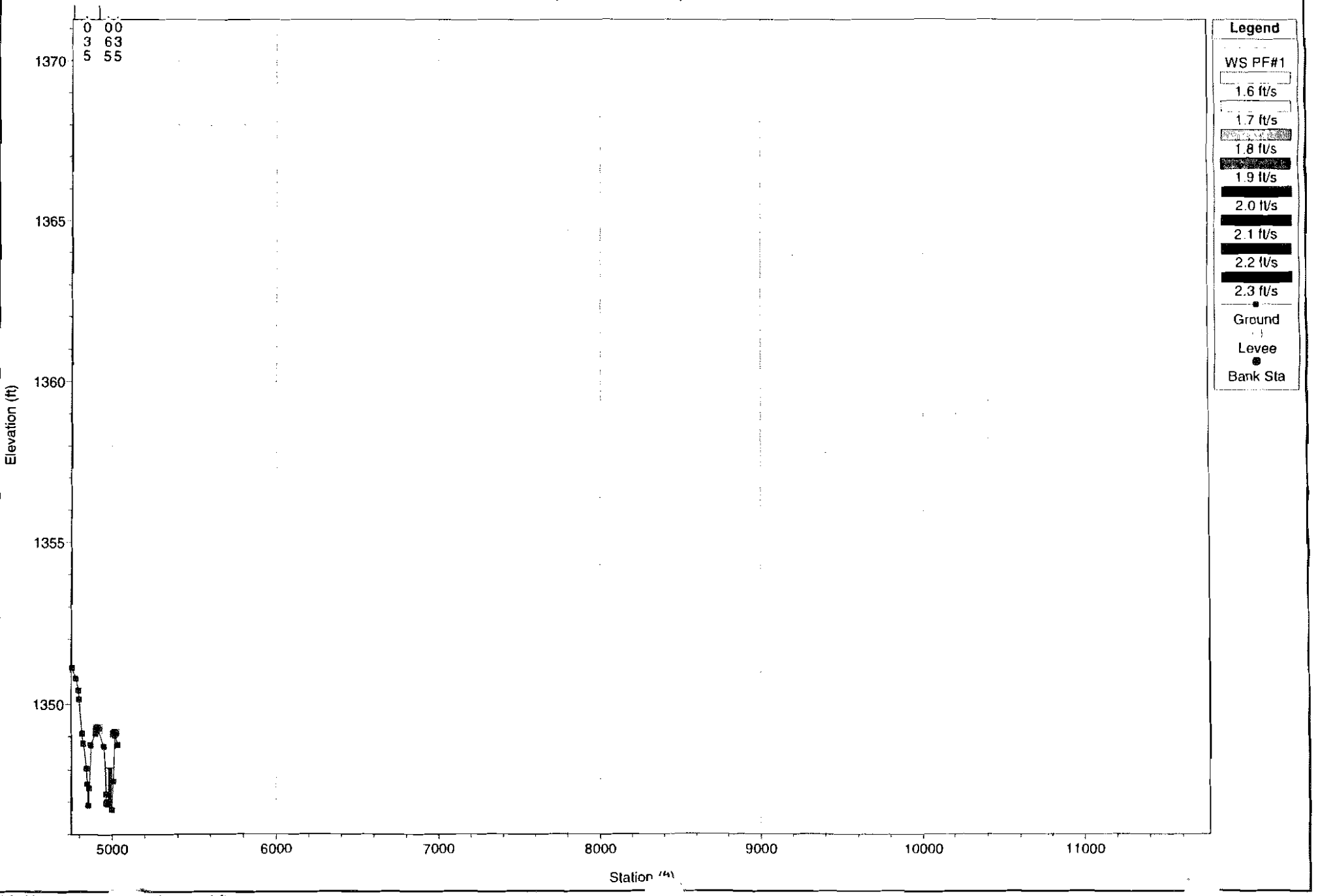
River = Harquahala Reach = Split1 RS = 19.3980



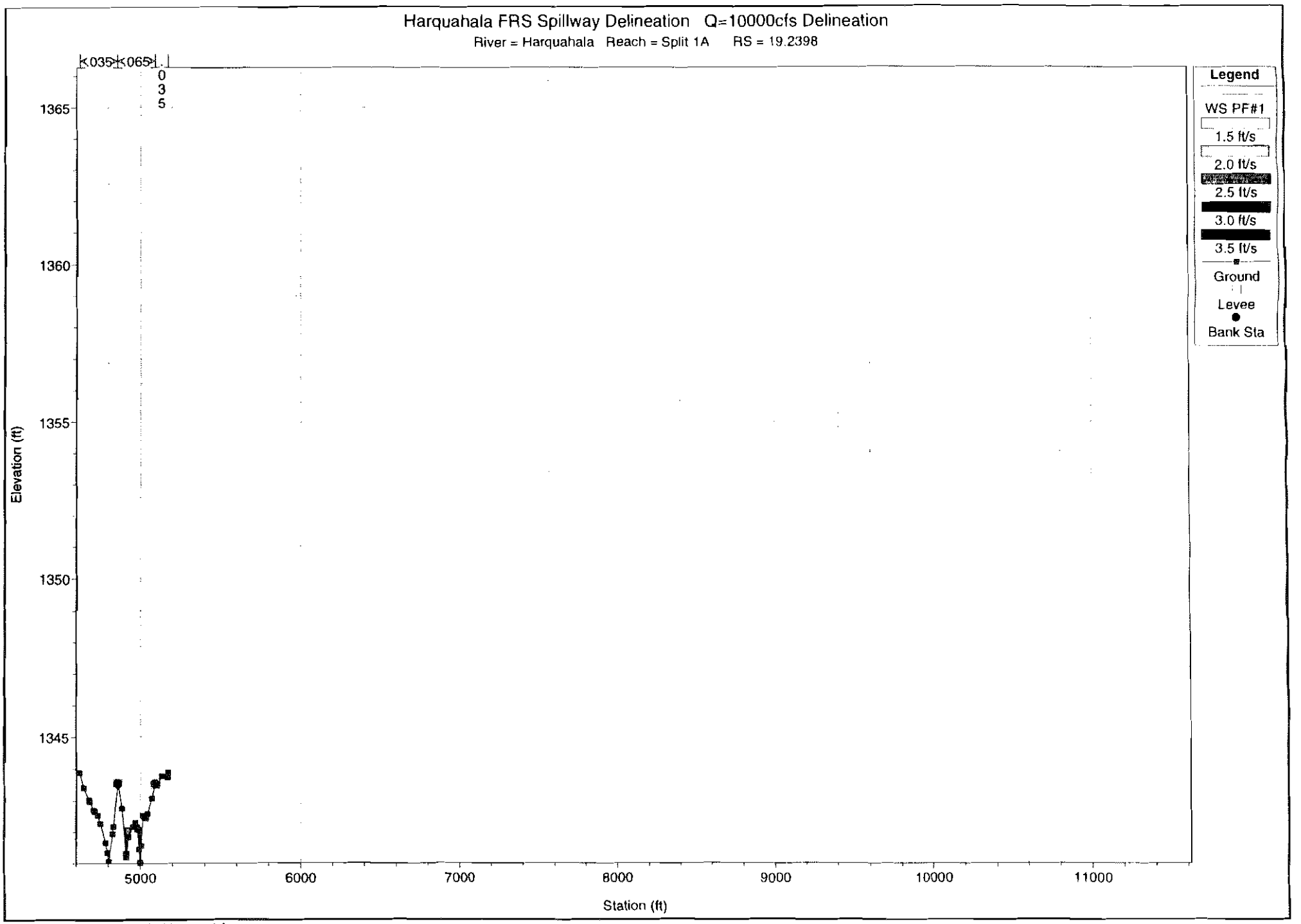
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

River = Harquahala Reach = Split 1A RS = 19.3216



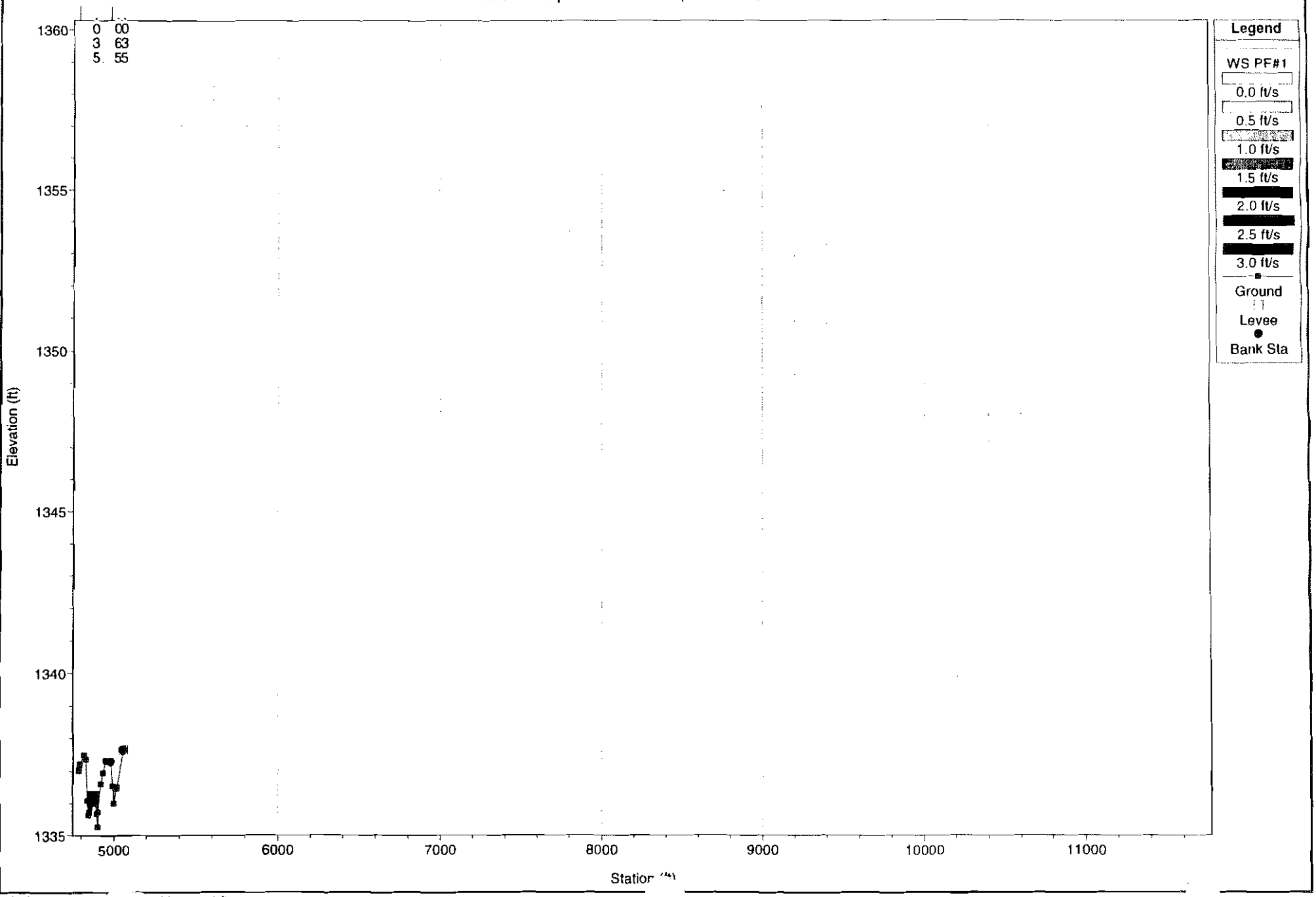
1 in Horiz. = 800 1 Vert. = 4 ft



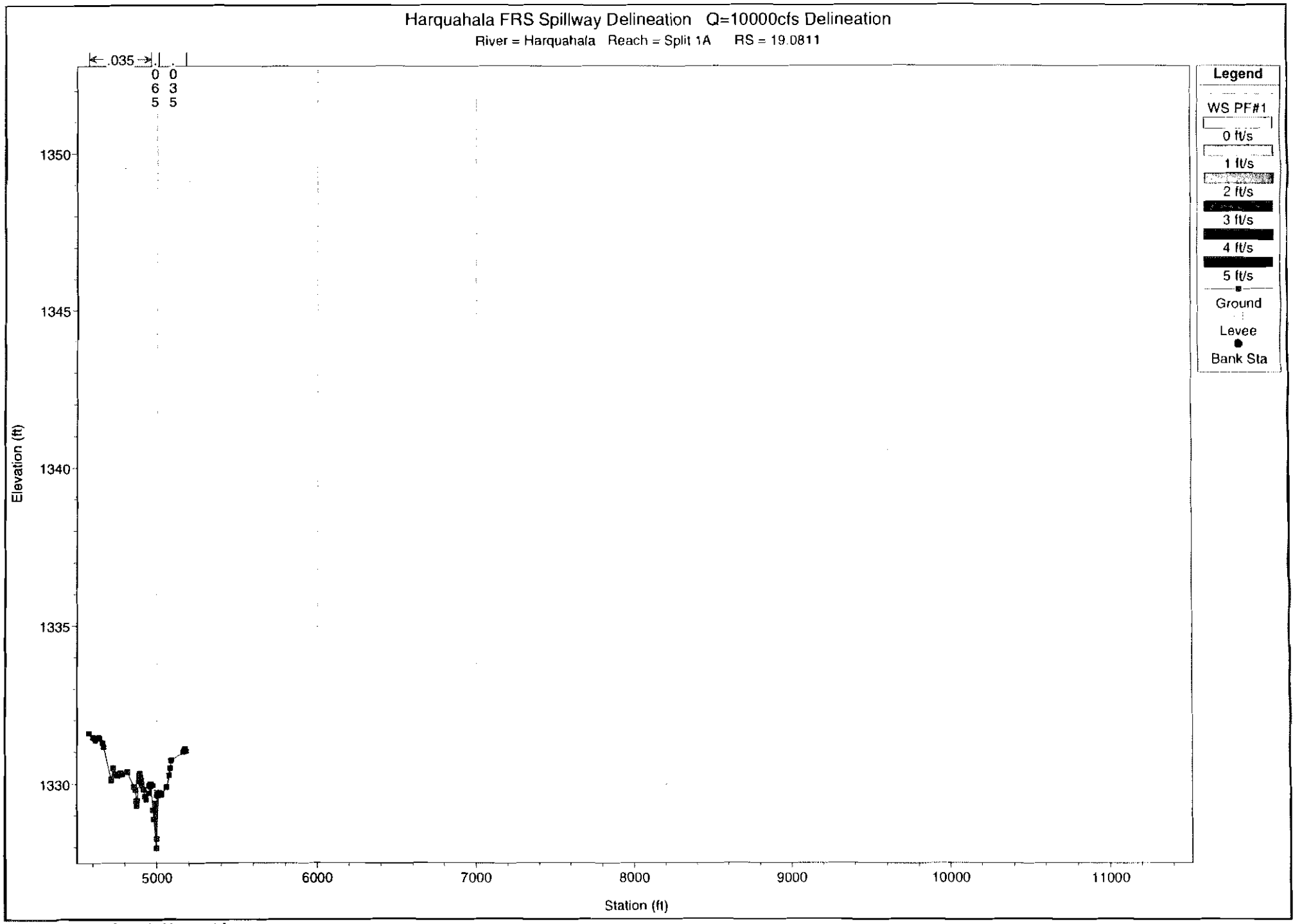
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

River = Harquahala Reach = Split 1A RS = 19.1676



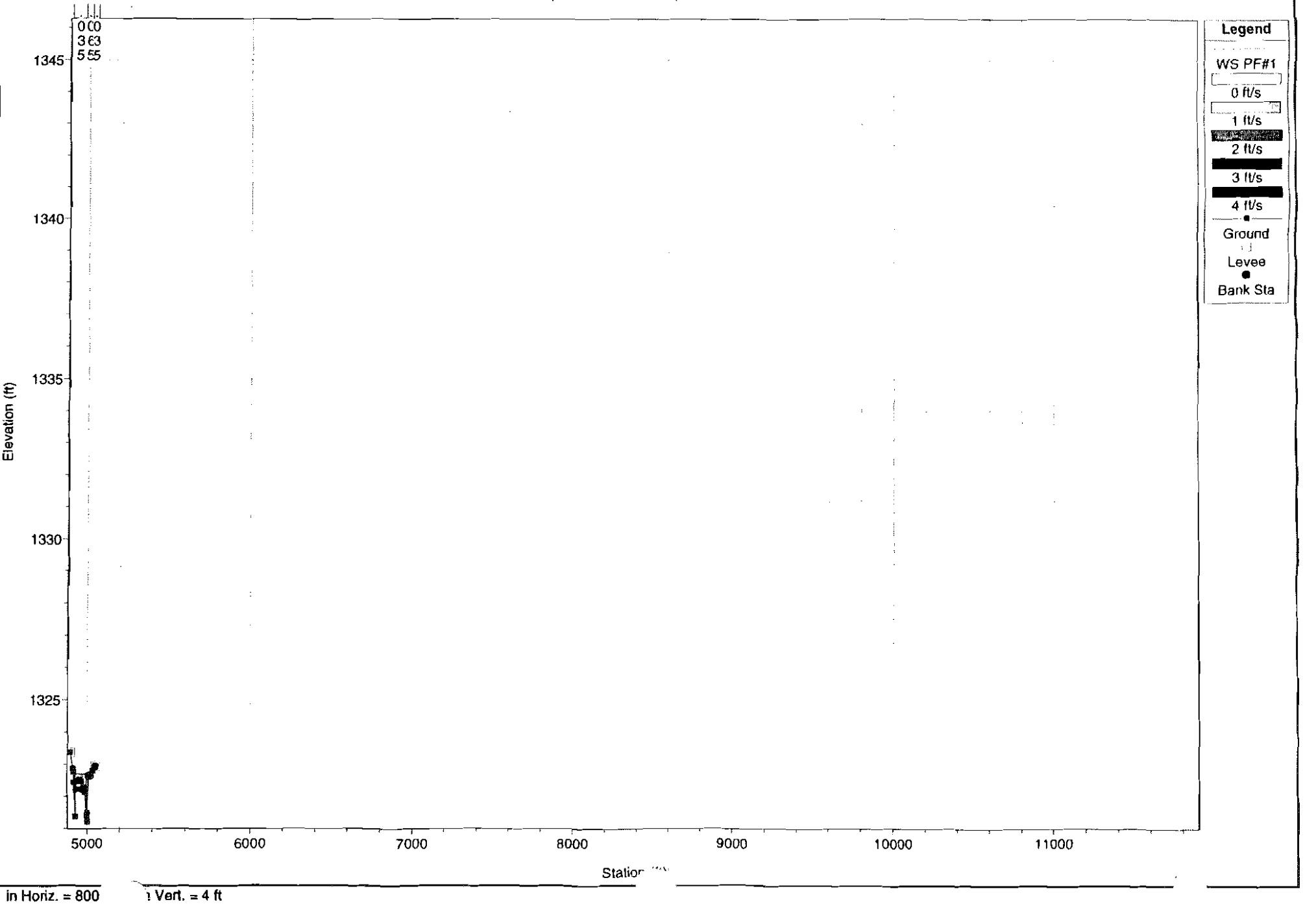
1 in Horiz. = 800 1 Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

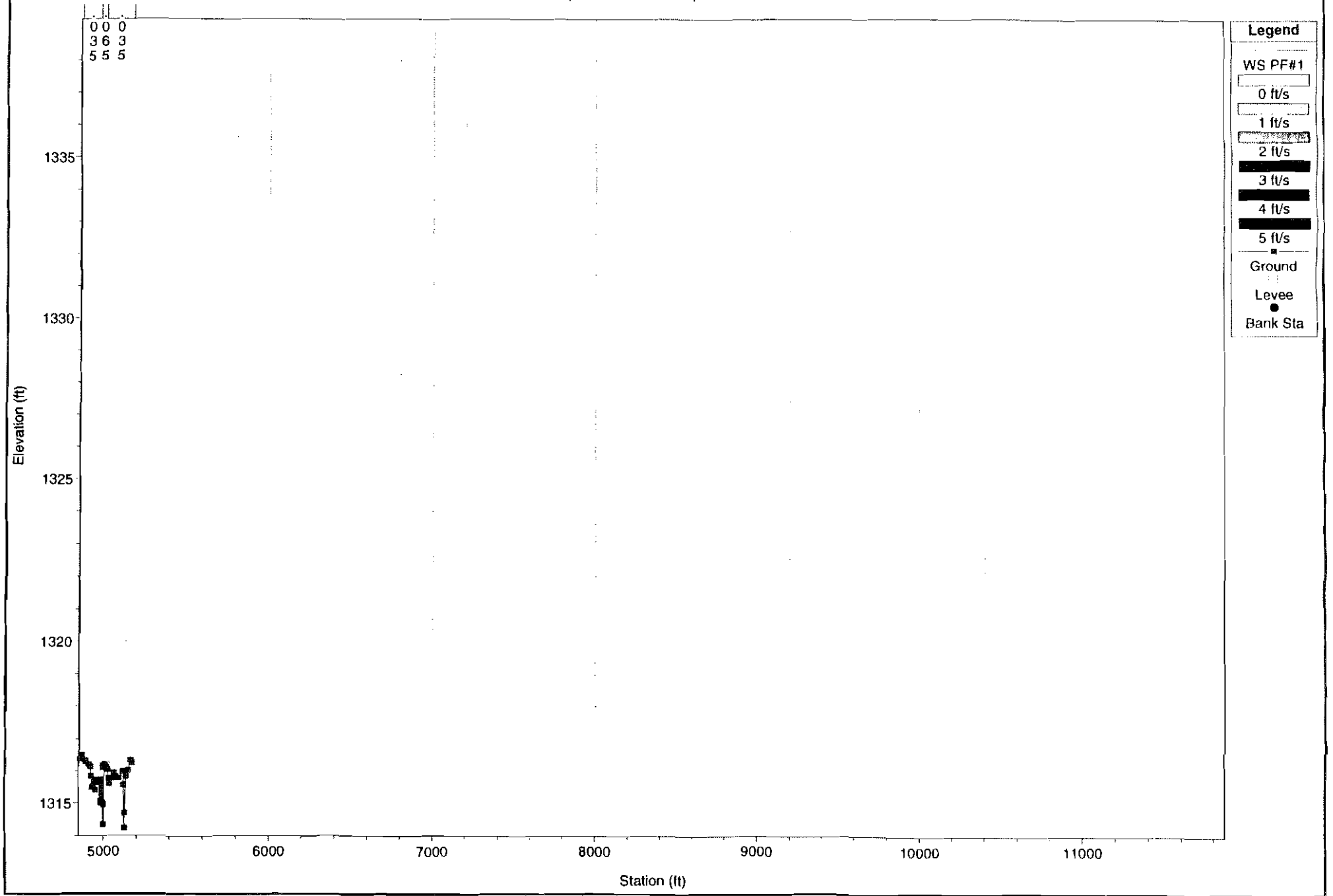
River = Harquahala Reach = Split 1A RS = 18.9967



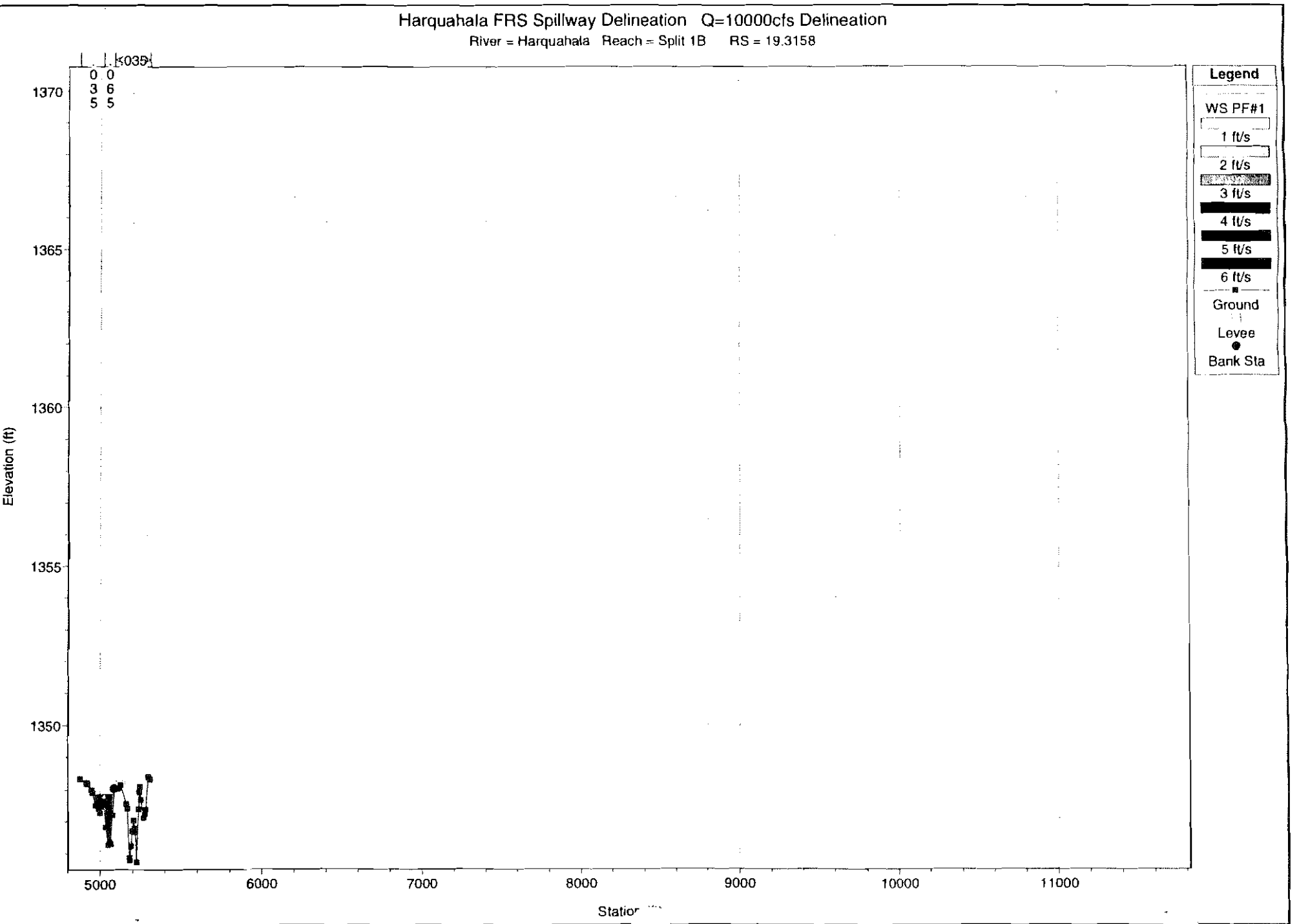
in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

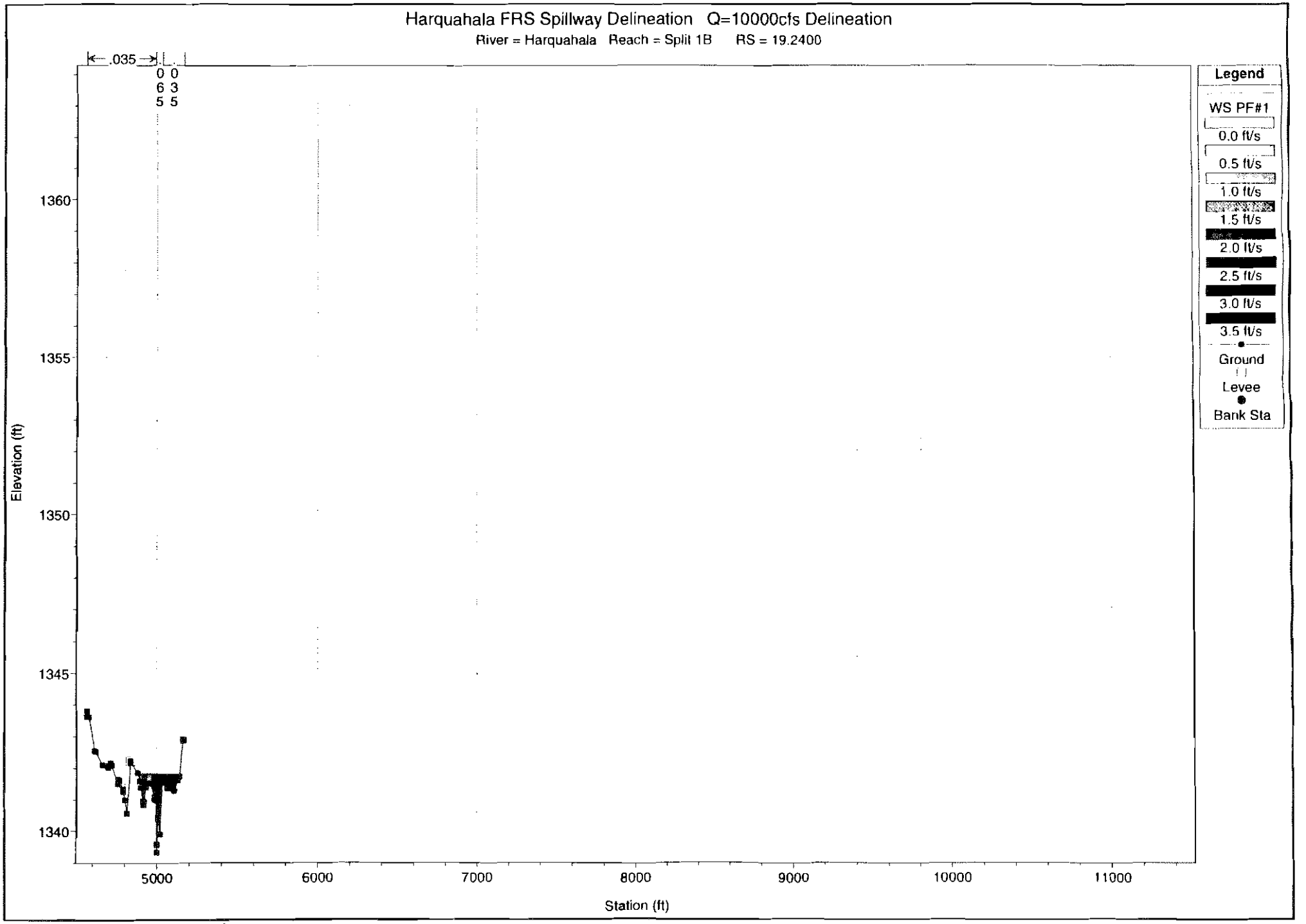
River = Harquahala Reach = Split 1A RS = 18.9165



1 in Horiz. = 800 ft 1 in Vert. = 4 ft



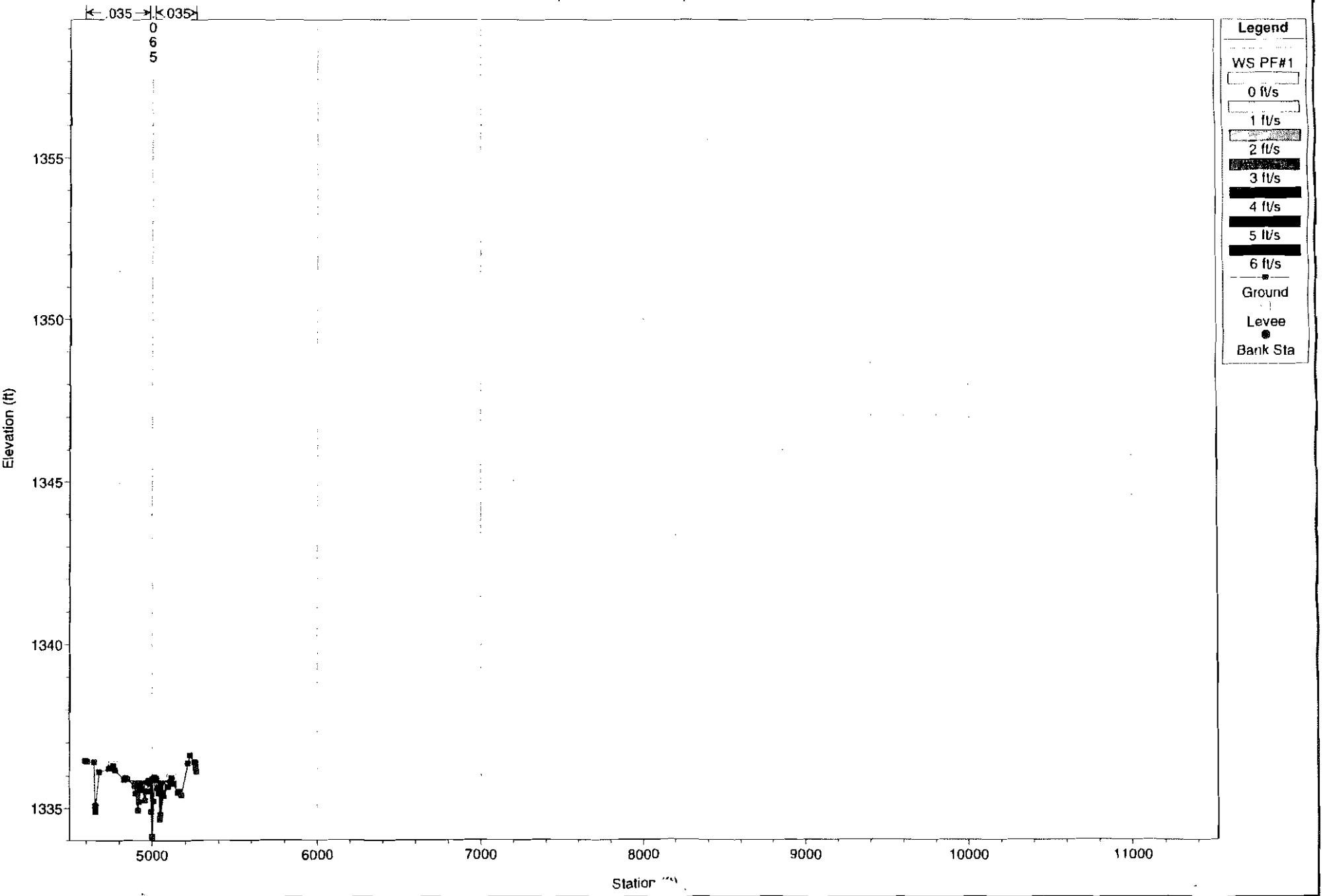
in Horiz. = 800 Vert. = 4 ft



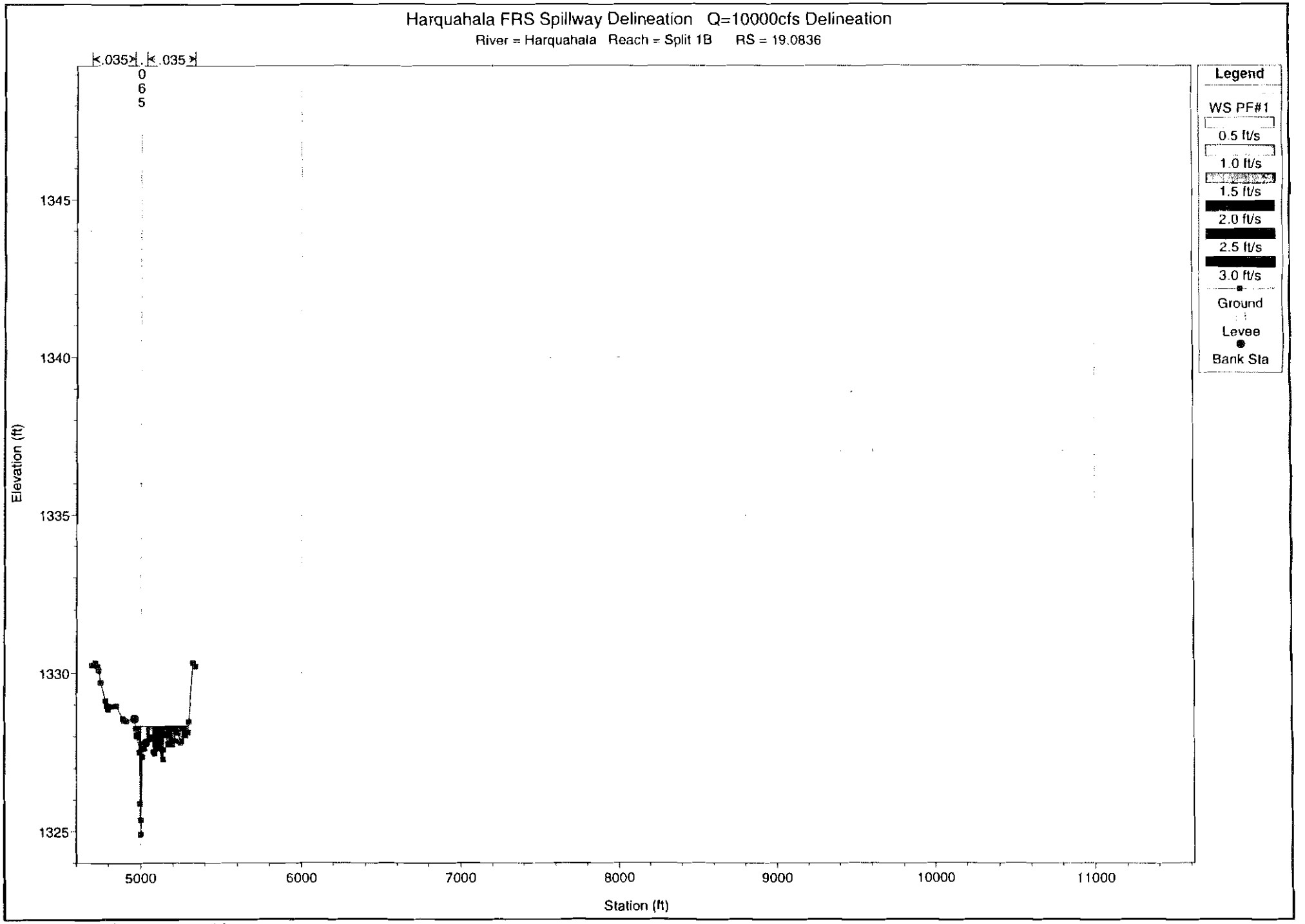
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

River = Harquahala Reach = Split 1B RS = 19.1631



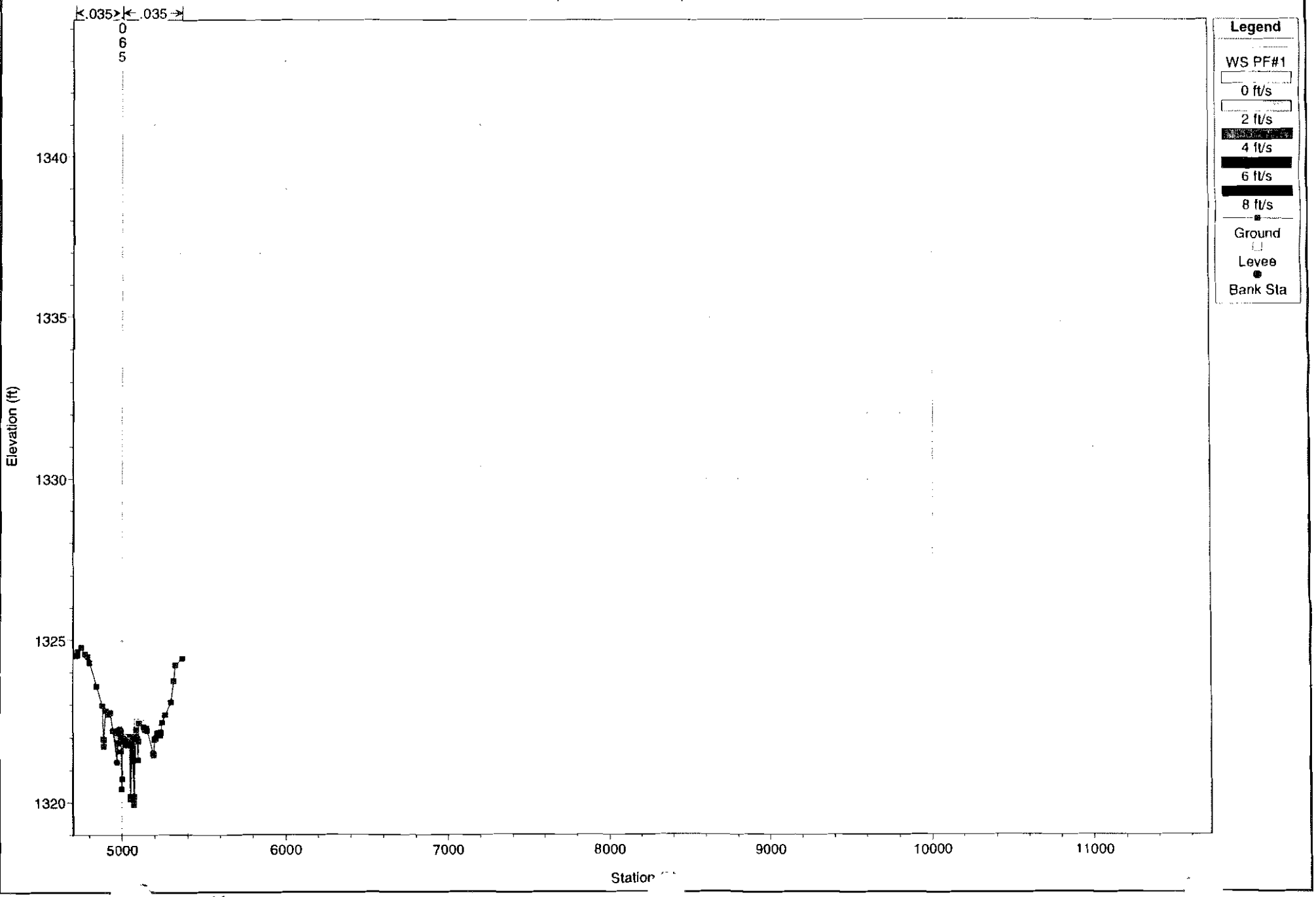
1 in Horiz. = 800 1 Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

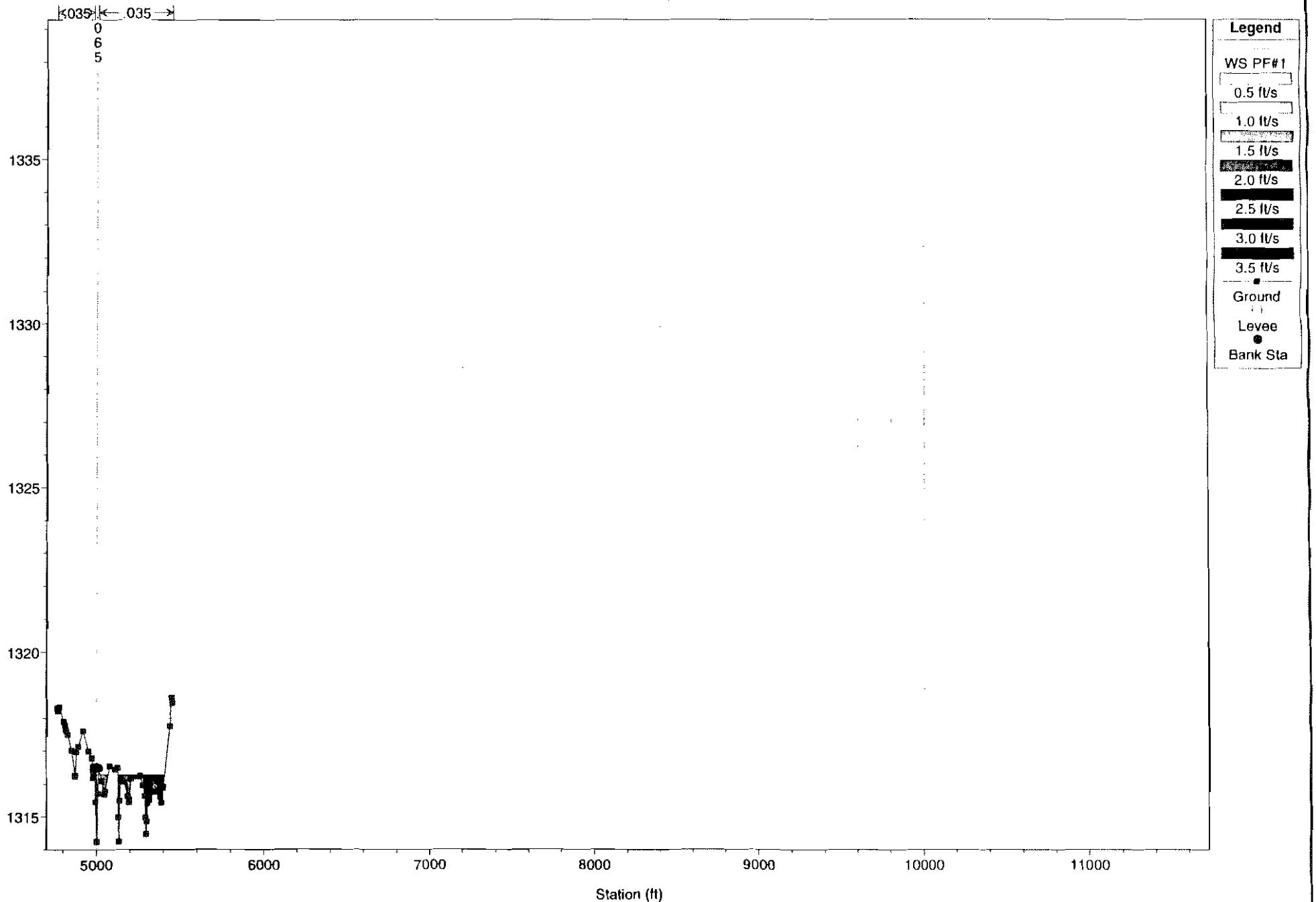
River = Harquahala Reach = Split 1B RS = 19.0153



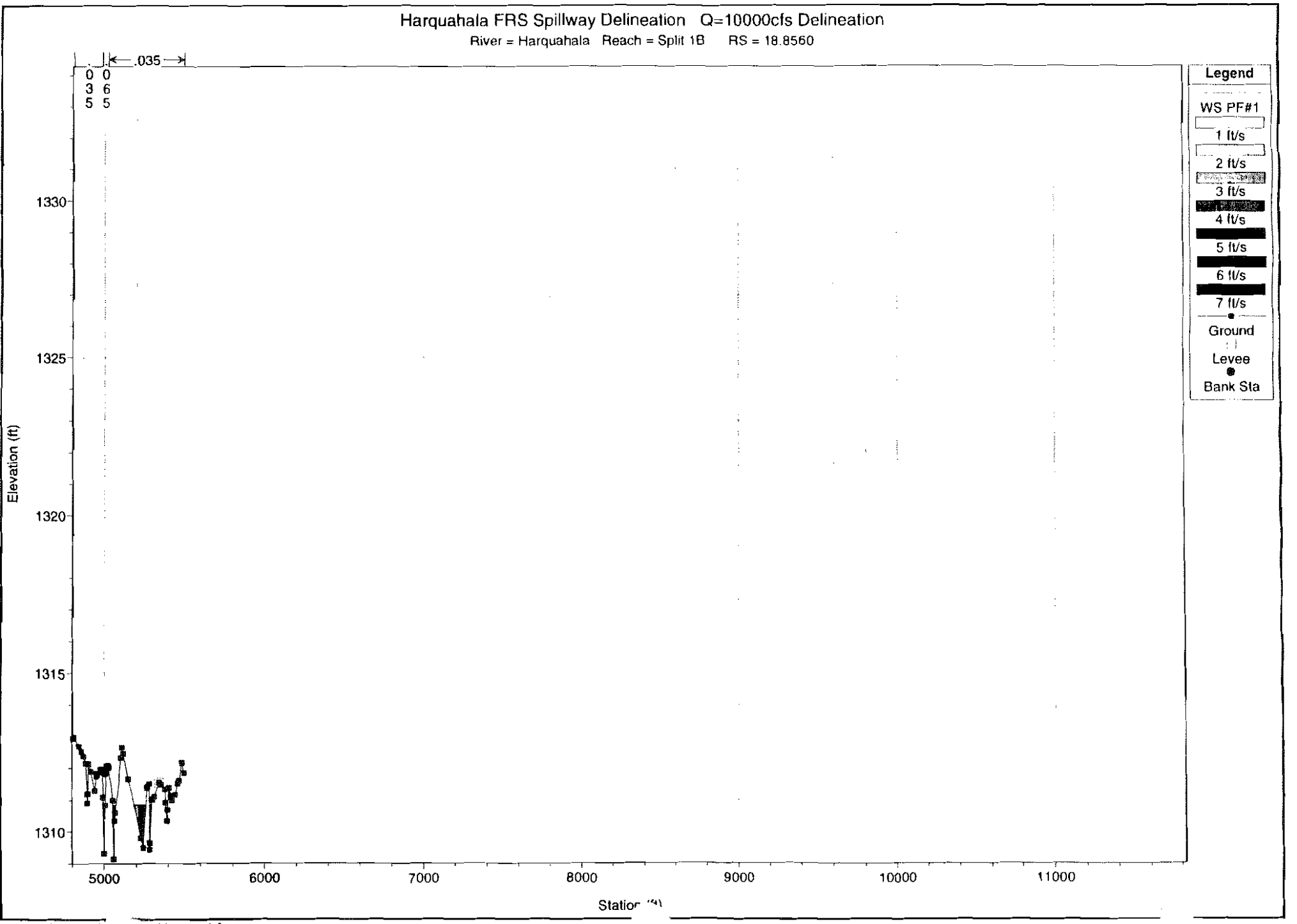
1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

River = Harquahala Reach = Split 1B RS = 18.9337



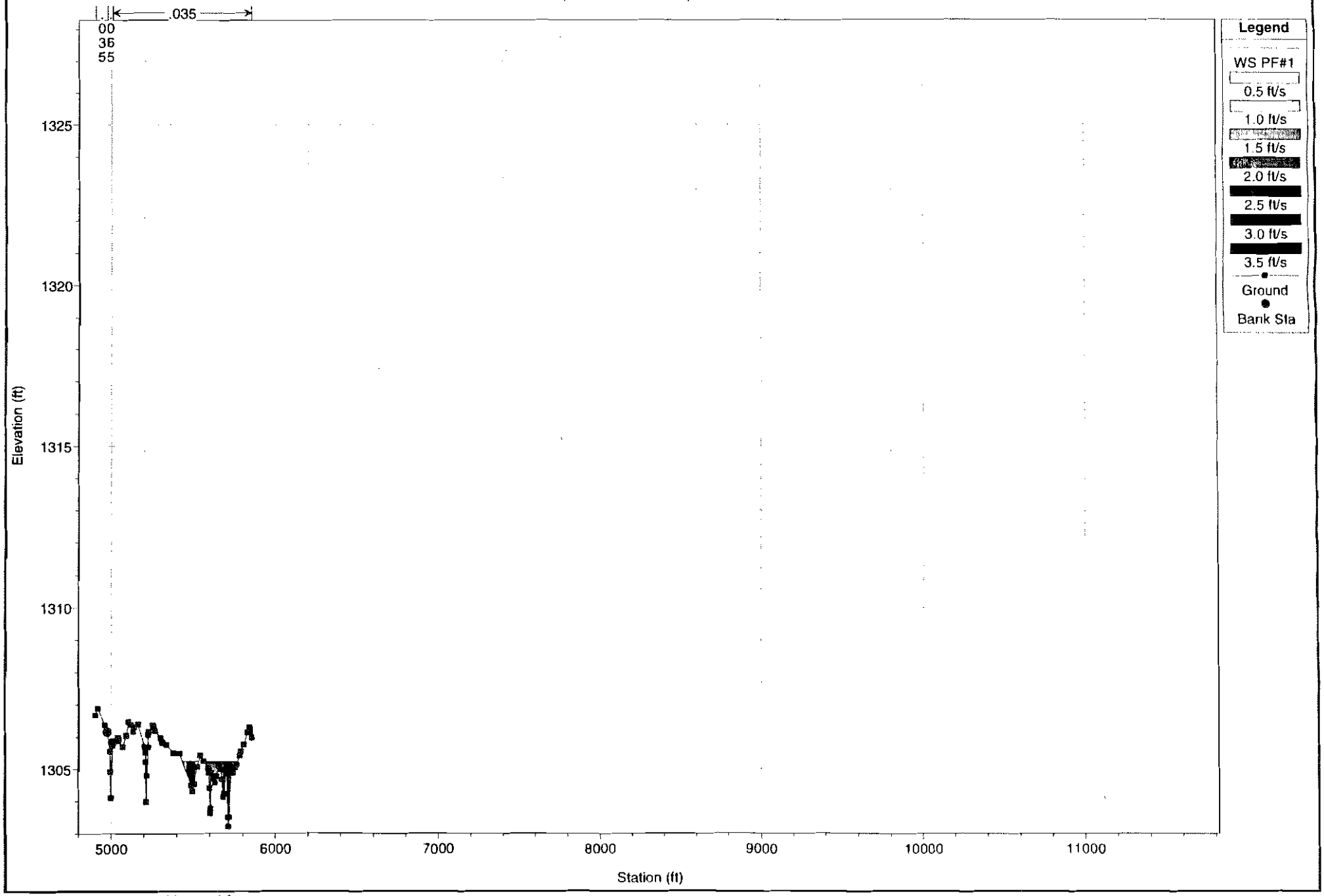
Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 800 n Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

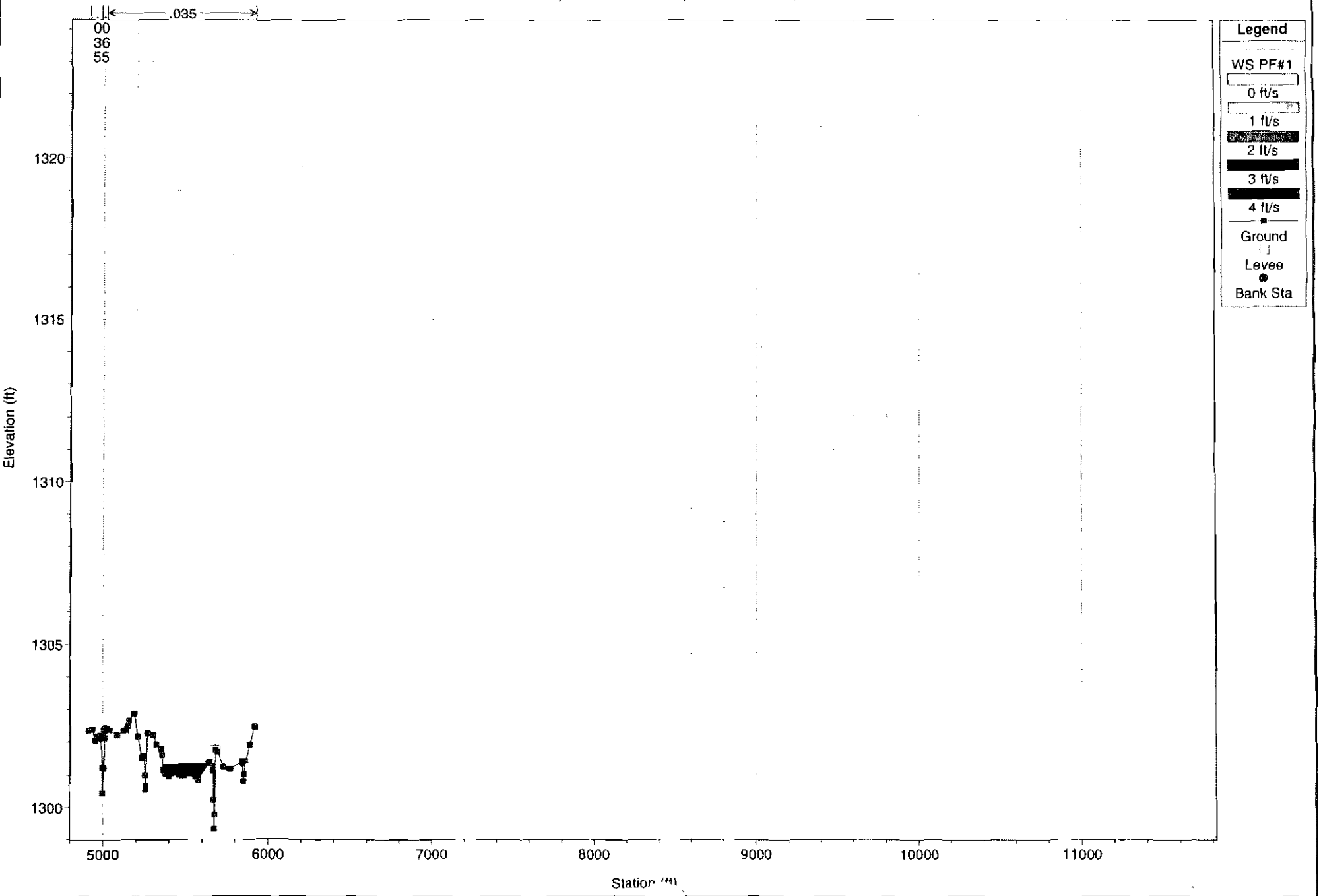
River = Harquahala Reach = Split 1B RS = 18.7744



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

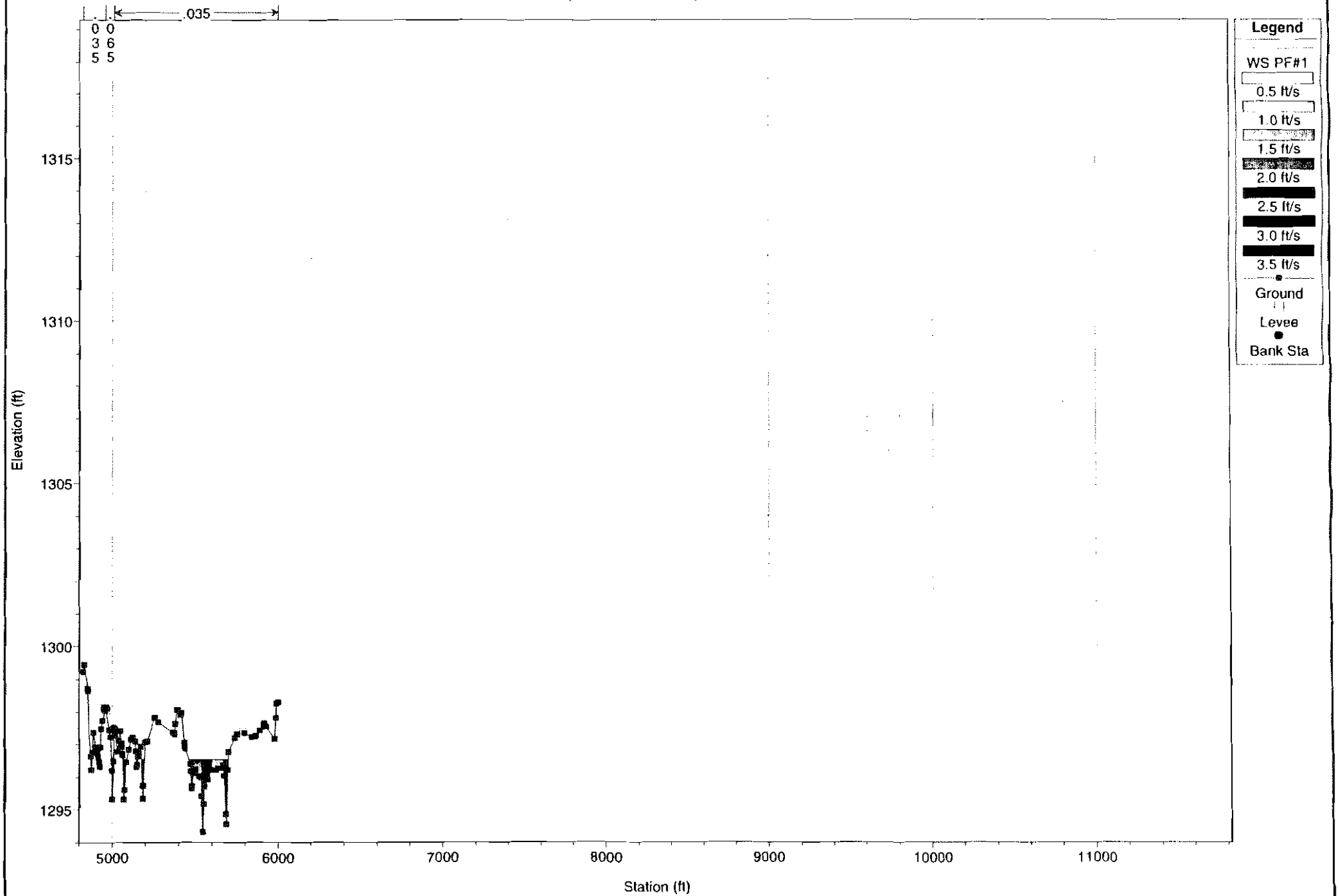
River = Harquahala Reach = Split 1B RS = 18.7184



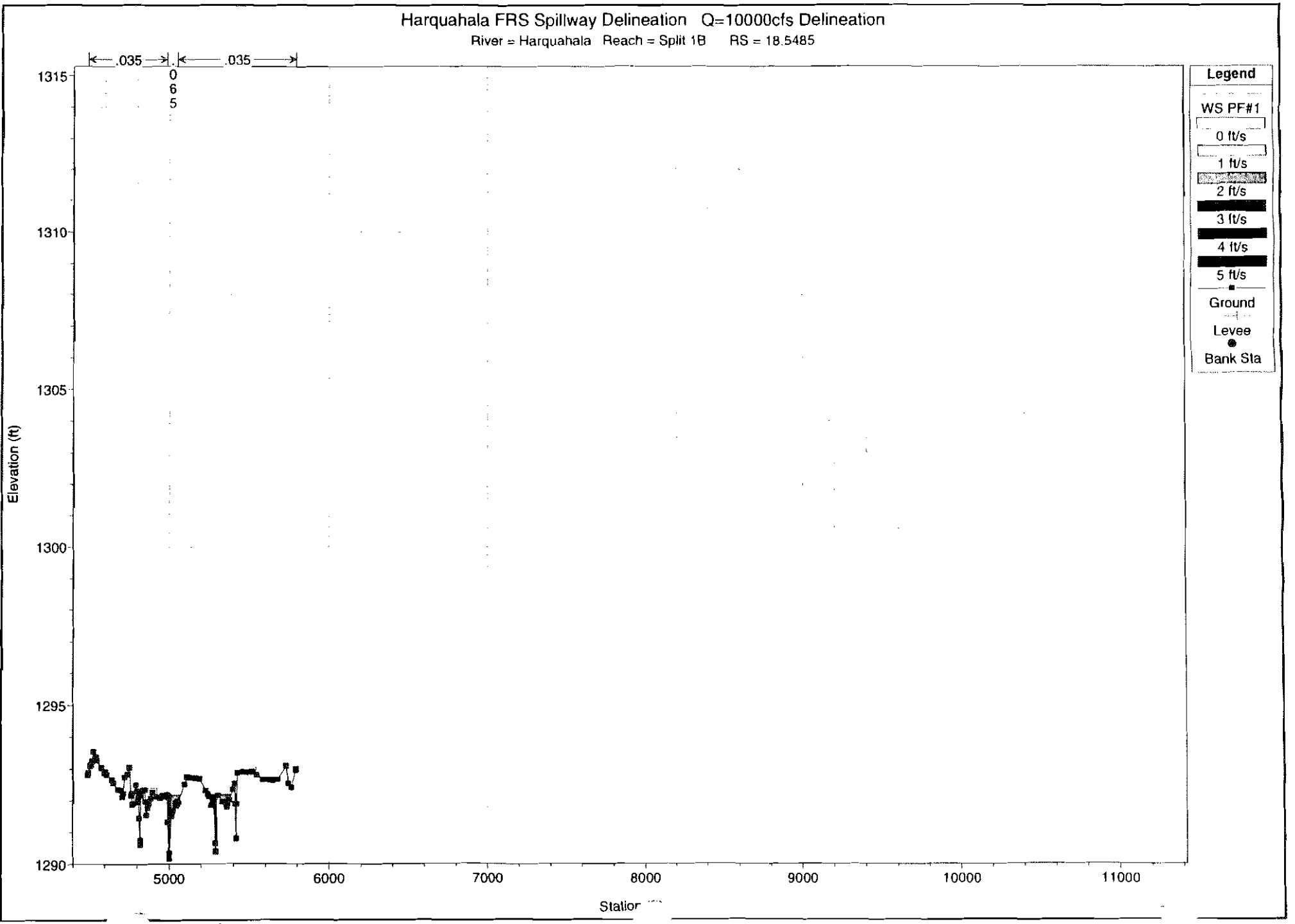
1 in Horiz. = 800] Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

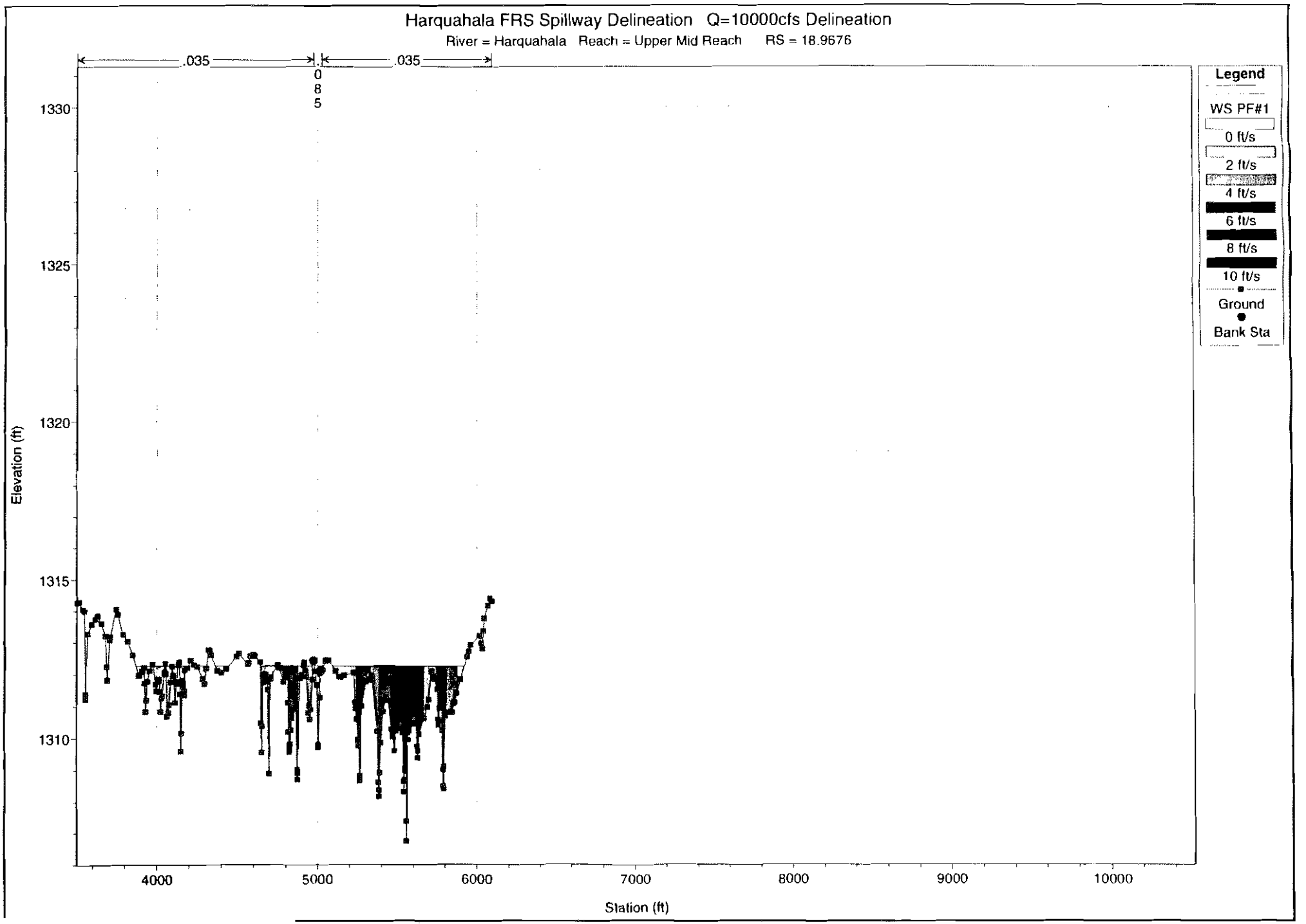
River = Harquahala Reach = Split 1B RS = 18.6384

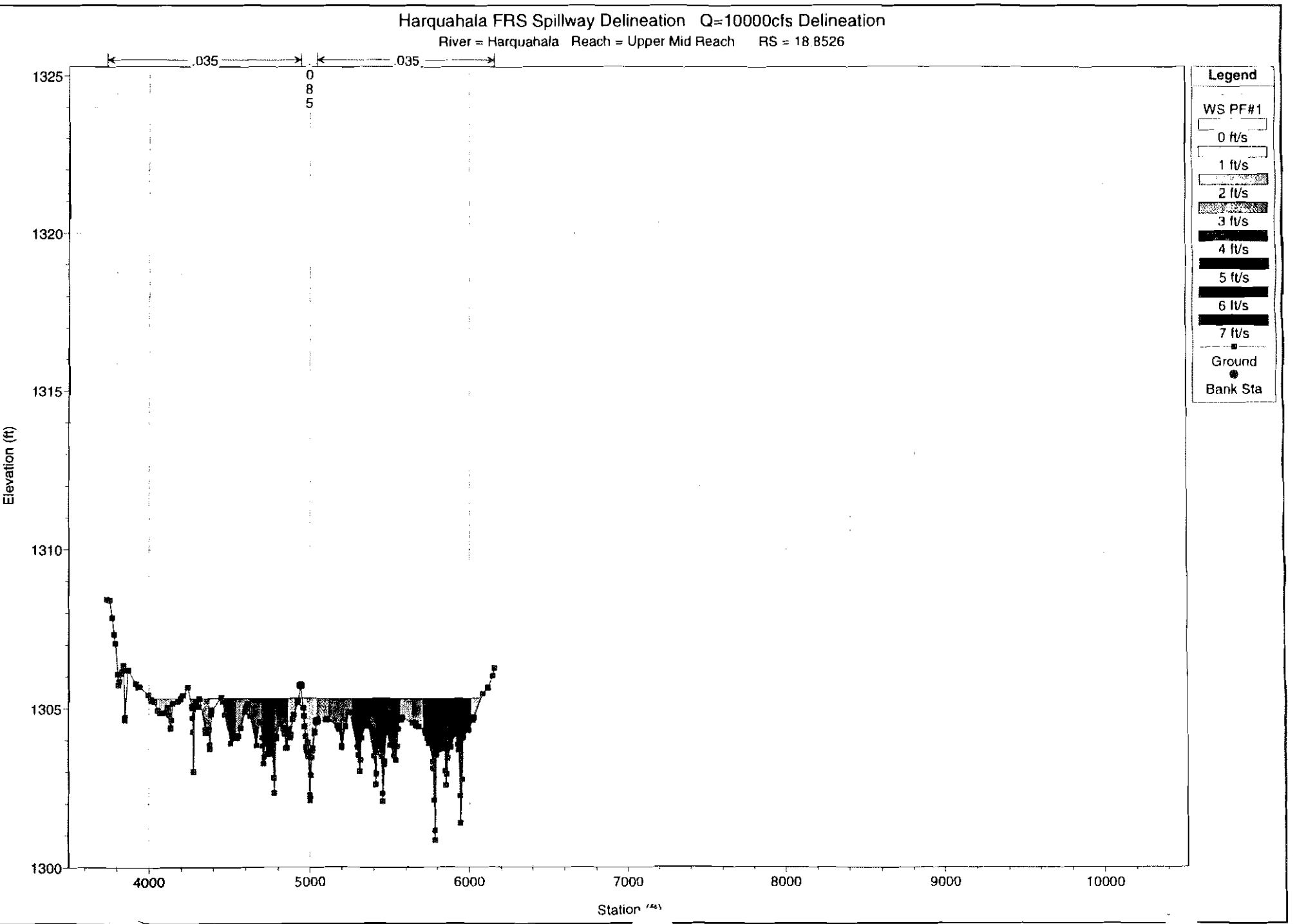


1 in Horiz. = 800 ft 1 in Vert. = 4 ft

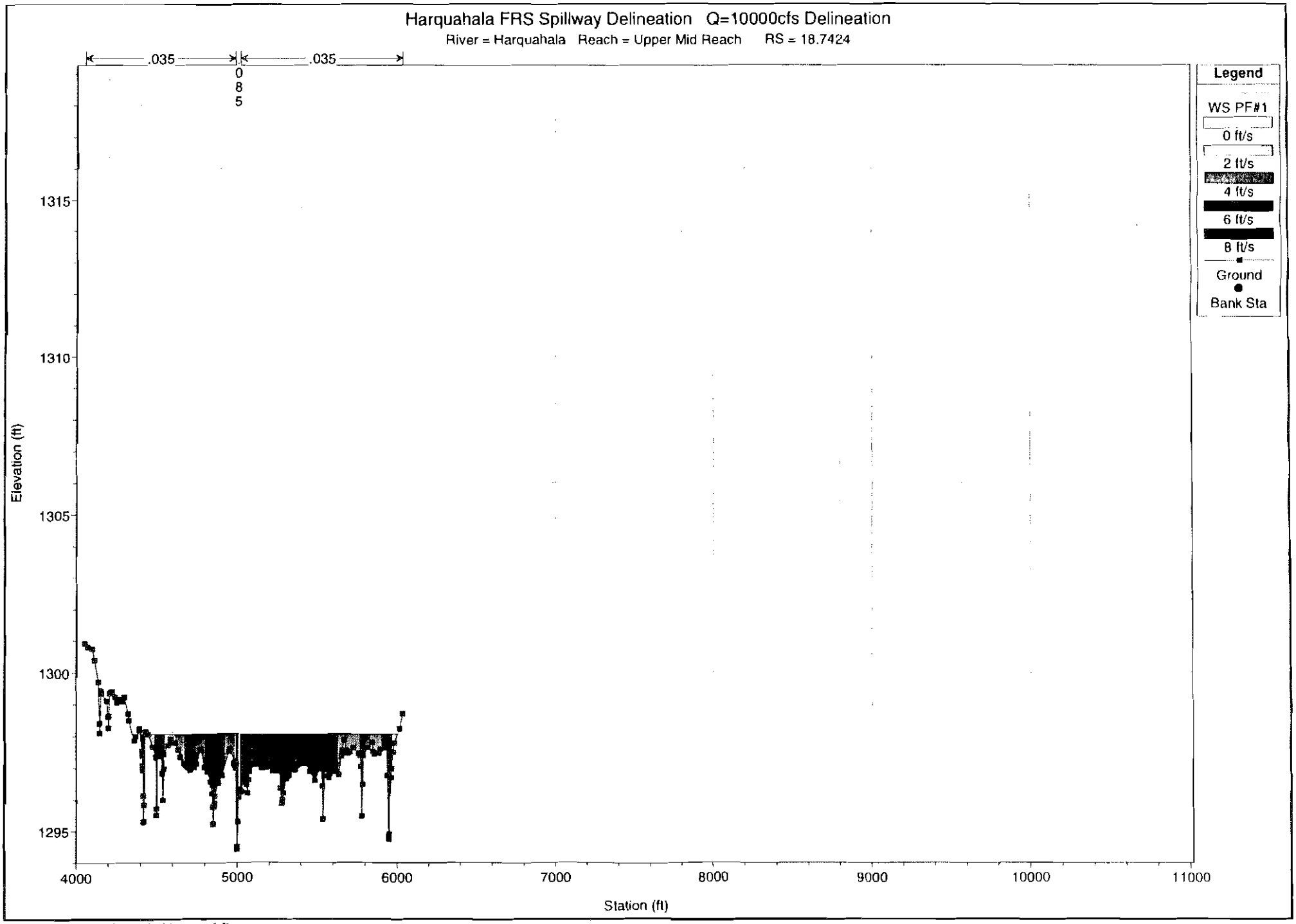


1 in Horiz. = 800) Vert. = 4 ft

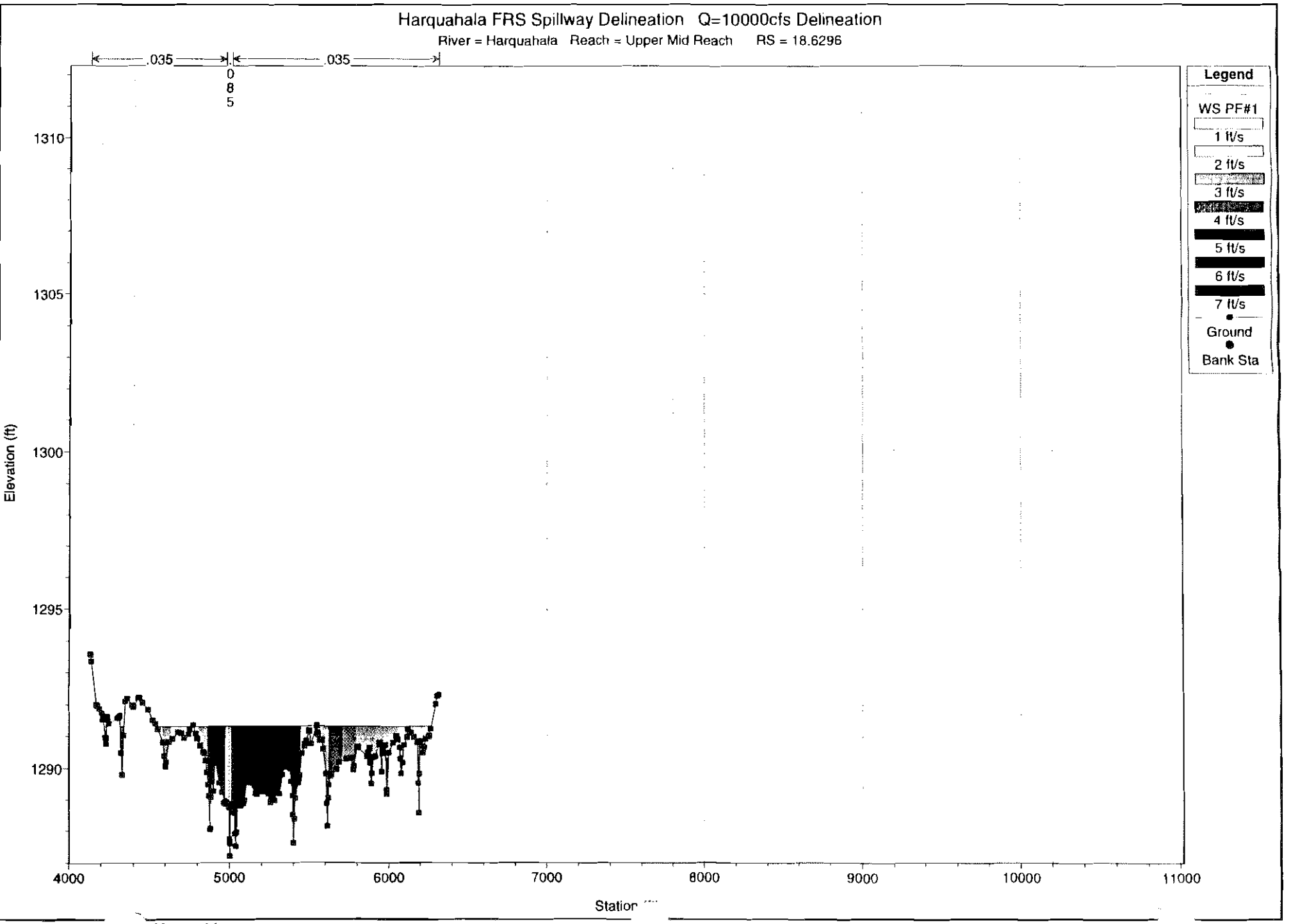

Harquahala FRS Spillway Delineation Q=10000cfs Delineation
River = Harquahala Reach = Upper Mid Reach RS = 18.9676
.035
.085
.035
Legend
WS PF#1
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta
Elevation (ft)
1330
1325
1320
1315
1310
4000
5000
6000
7000
8000
9000
10000
Station (ft)



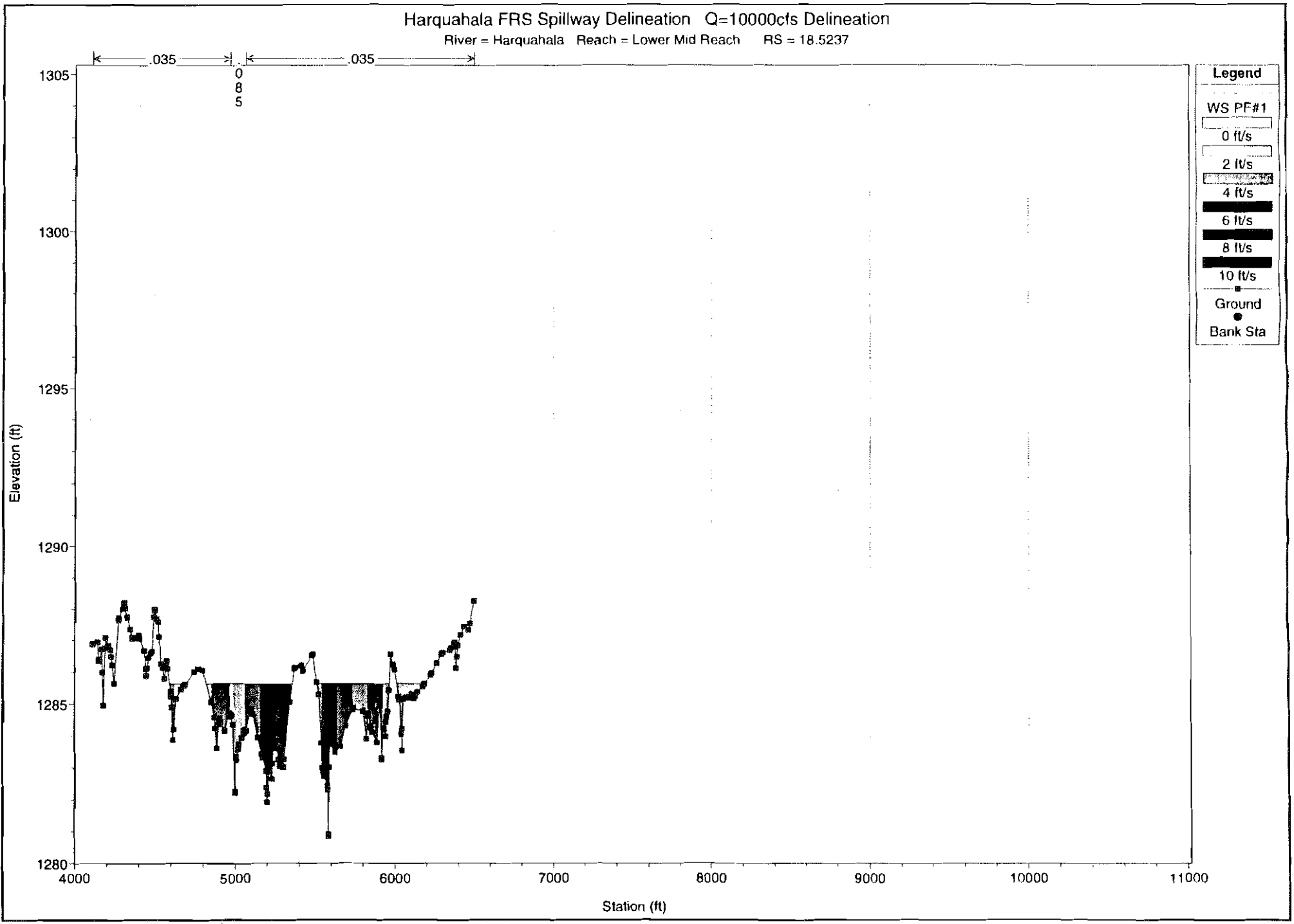
1 in Horiz. = 800 1 Vert. = 4 ft



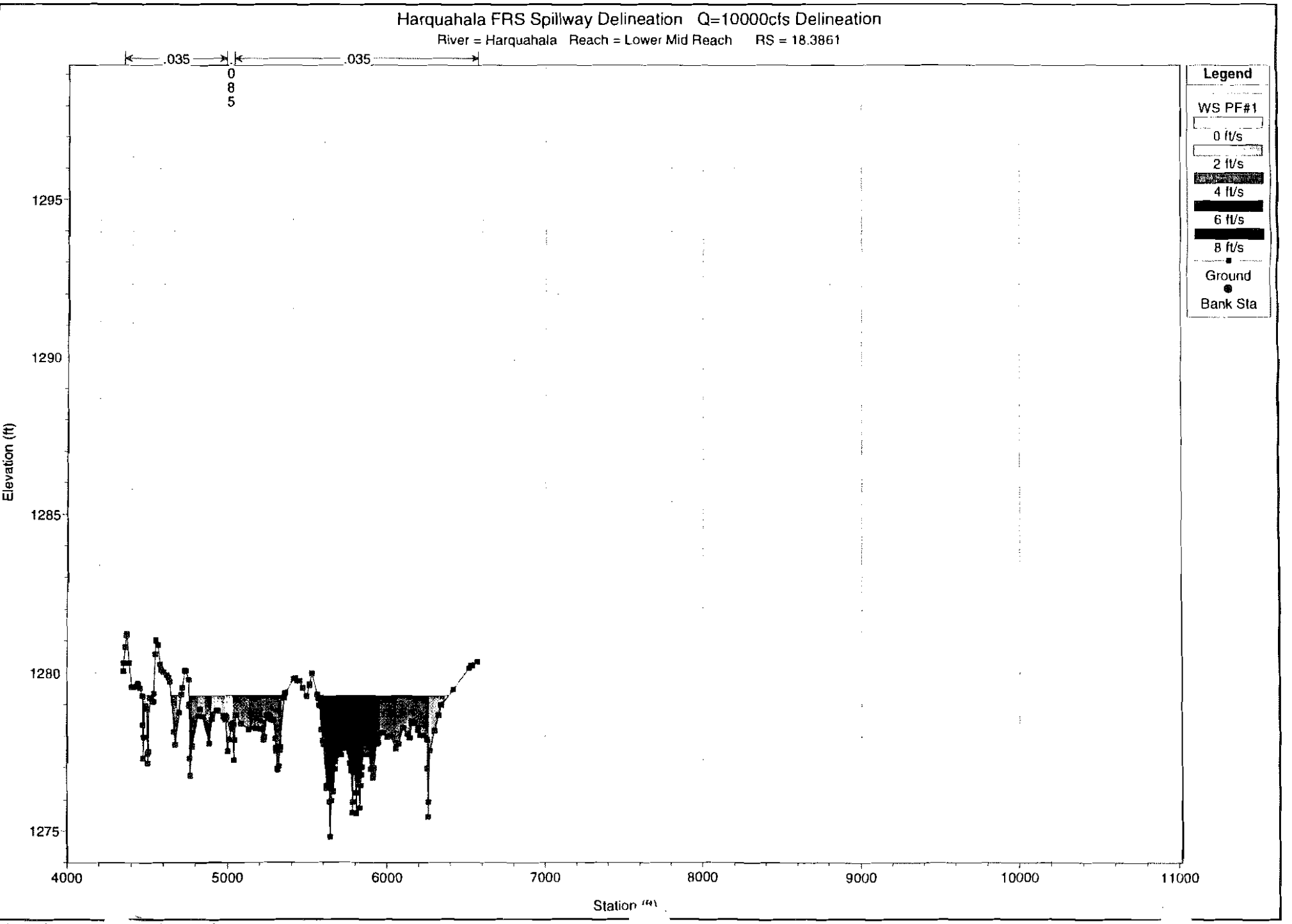
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



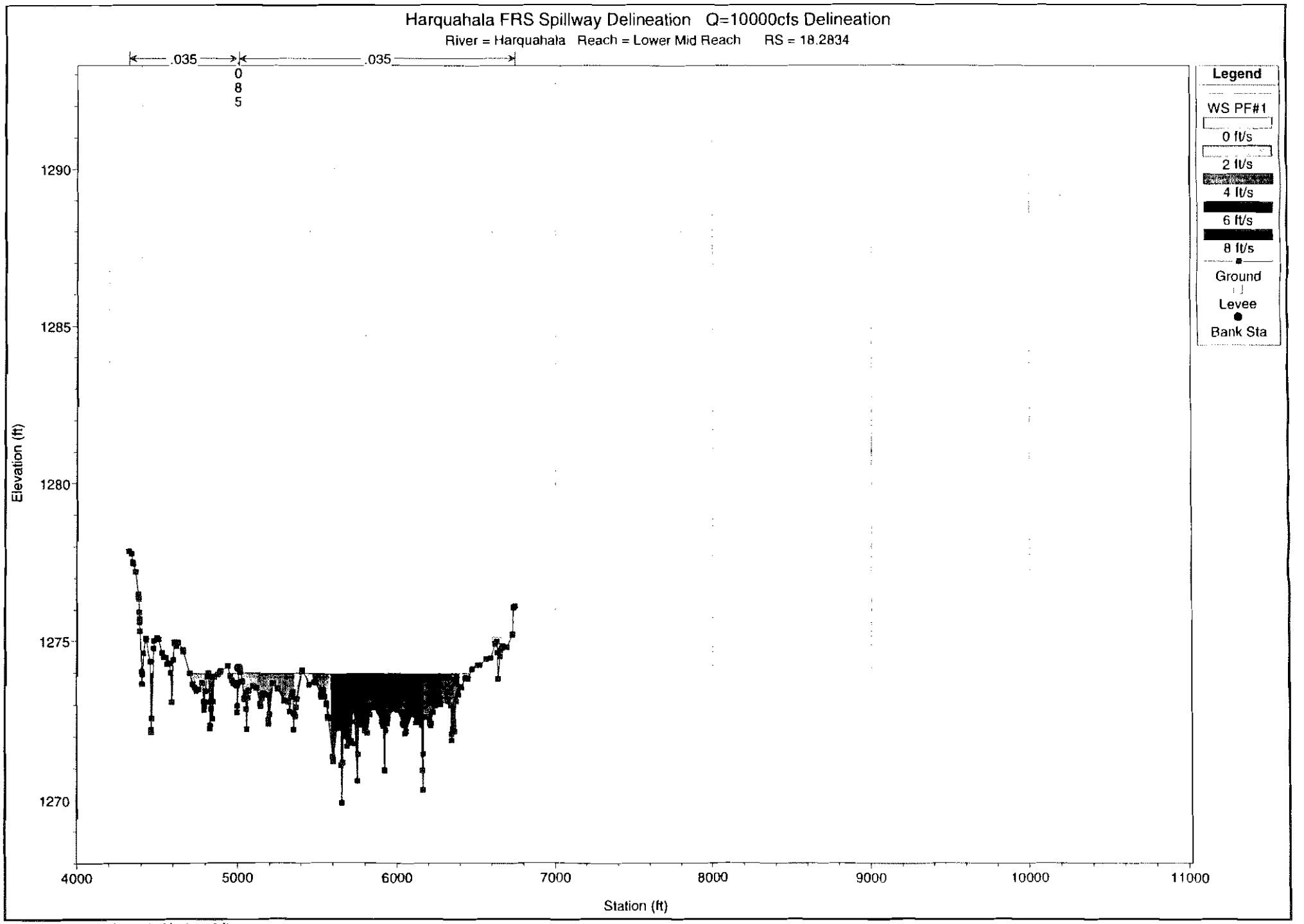
1 in Horiz. = 800 1 Vert. = 4 ft



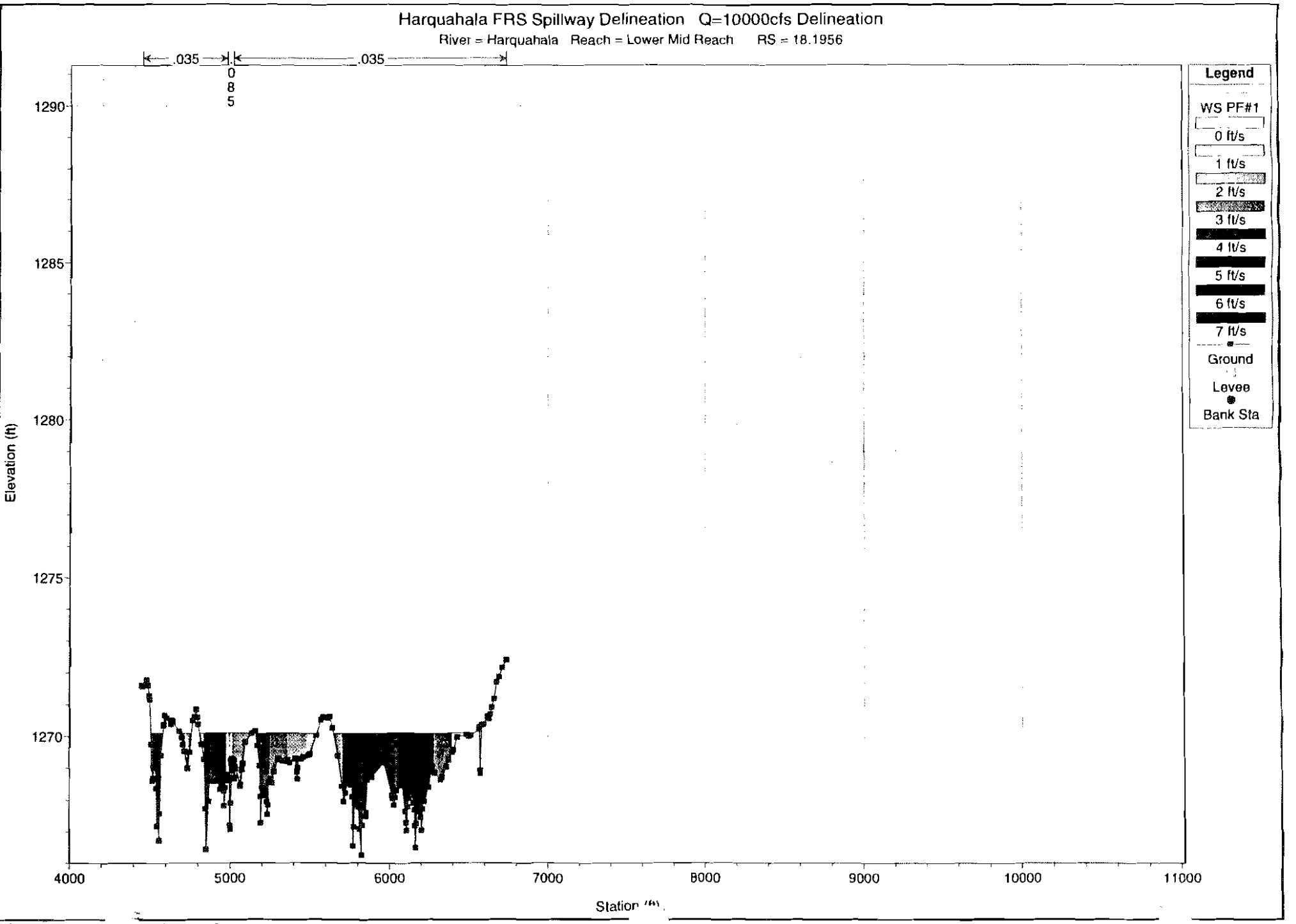
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



in Horiz. = 800 Vert. = 4 ft



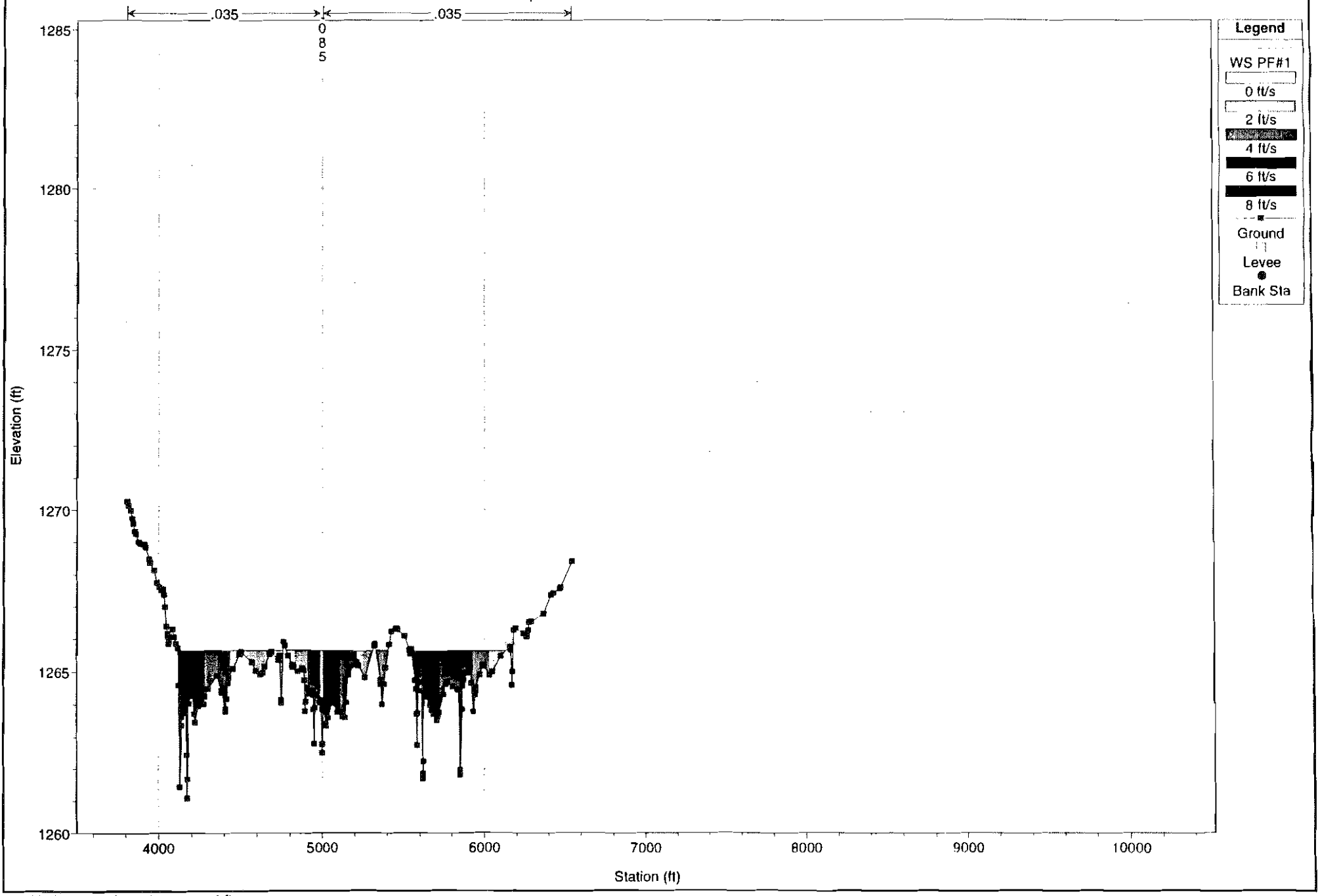
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

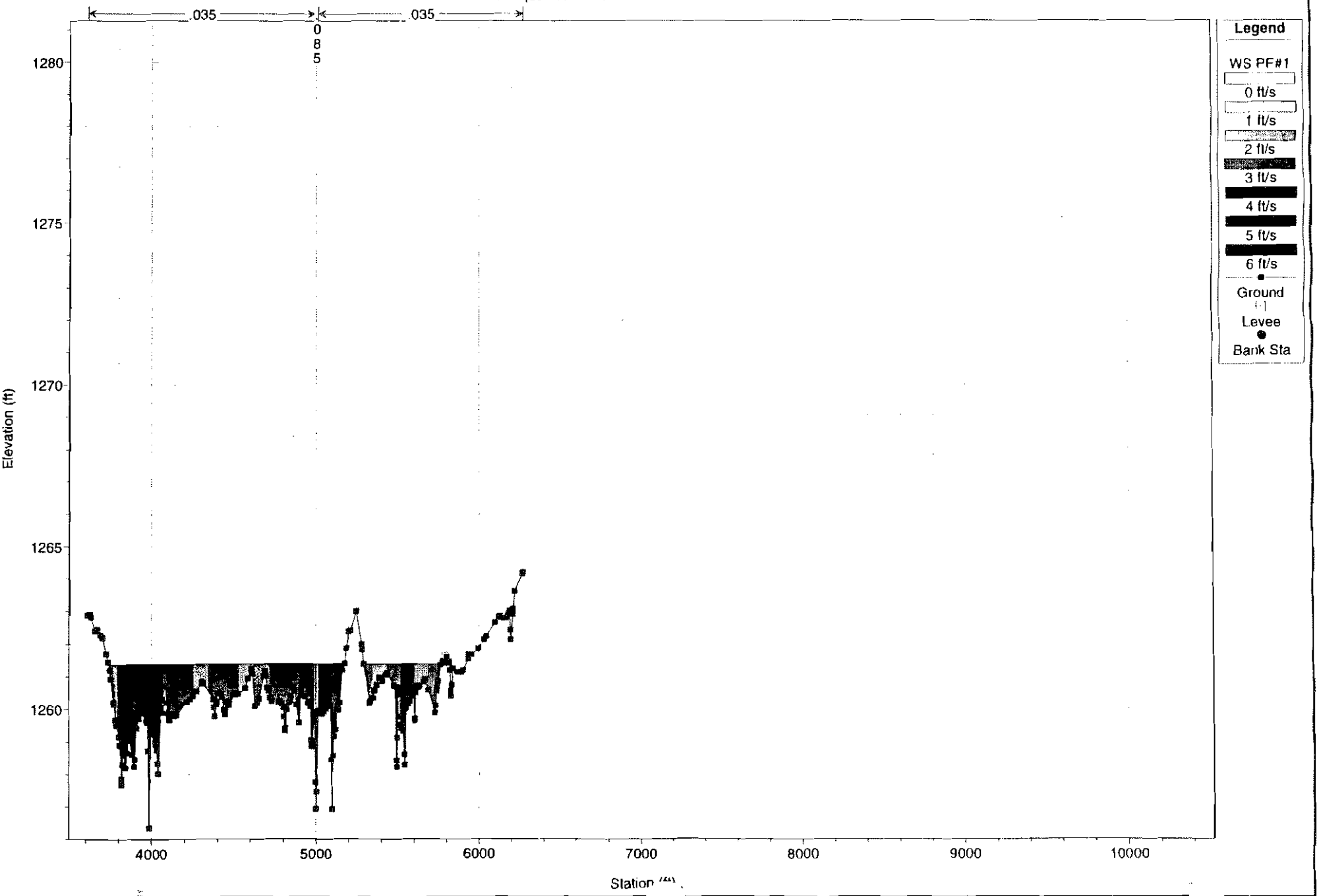
River = Harquahala Reach = Lower Mid Reach RS = 18 0888



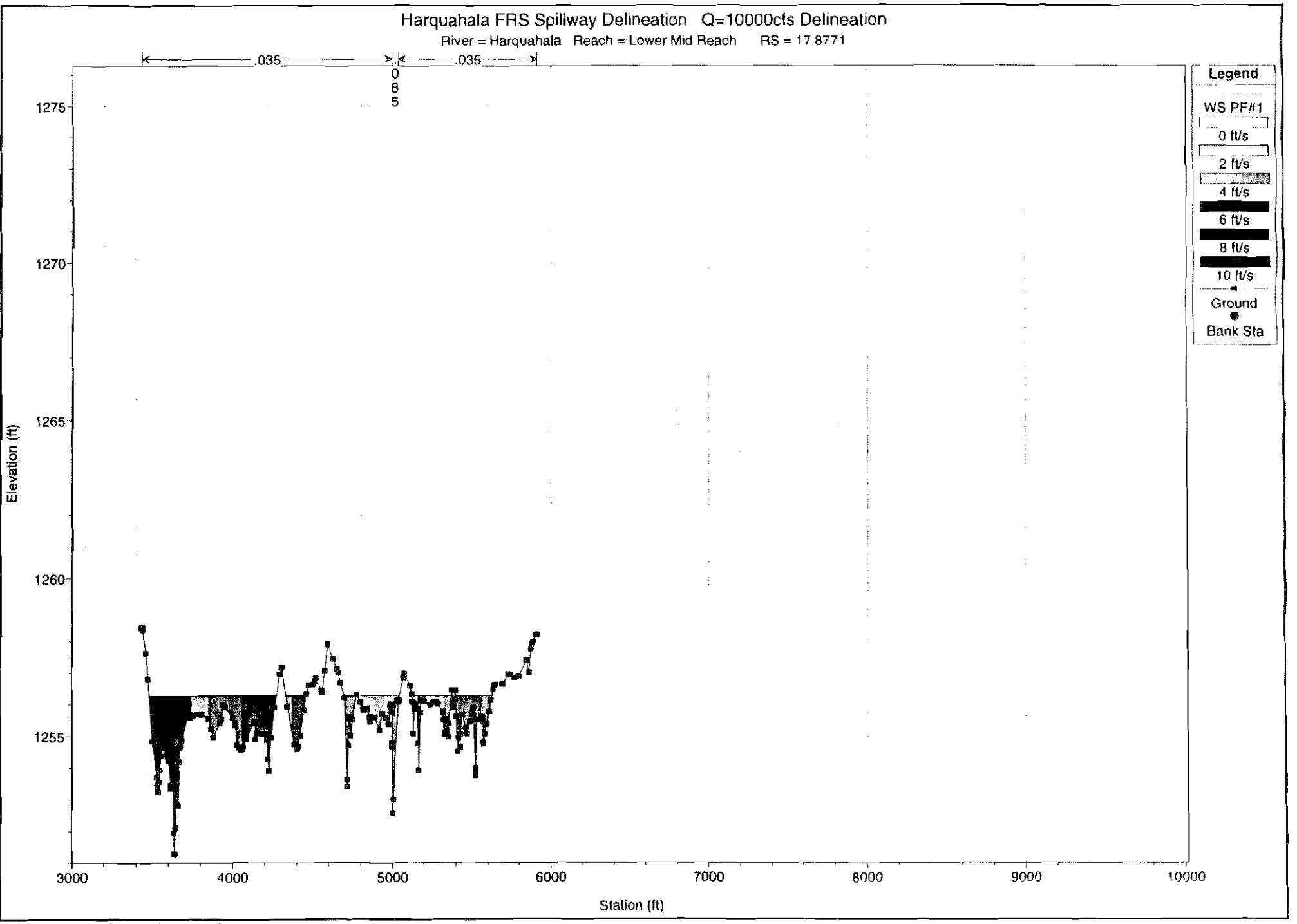
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

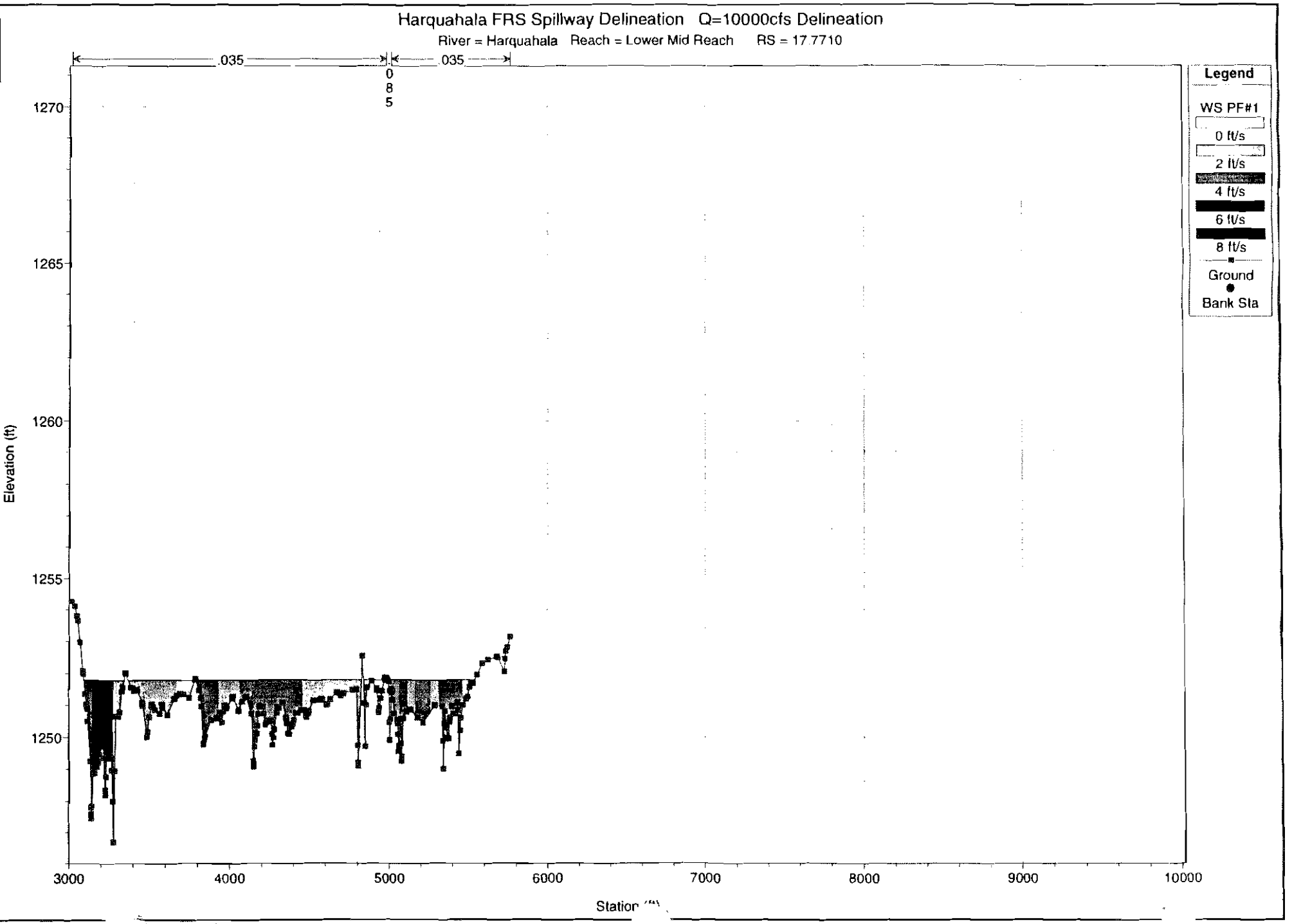
River = Harquahala Reach = Lower Mid Reach RS = 17.9877



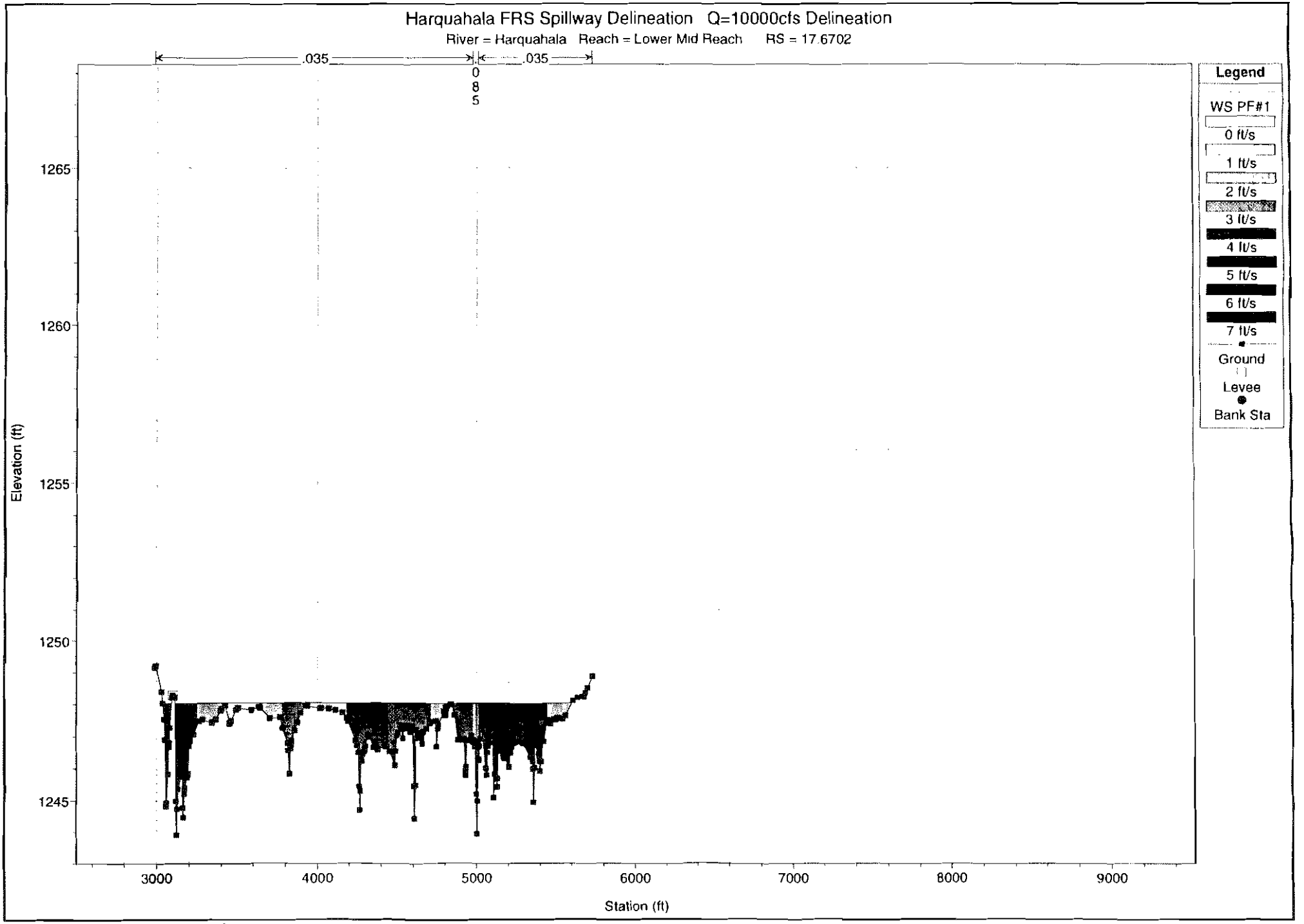
in Horiz. = 800 Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft



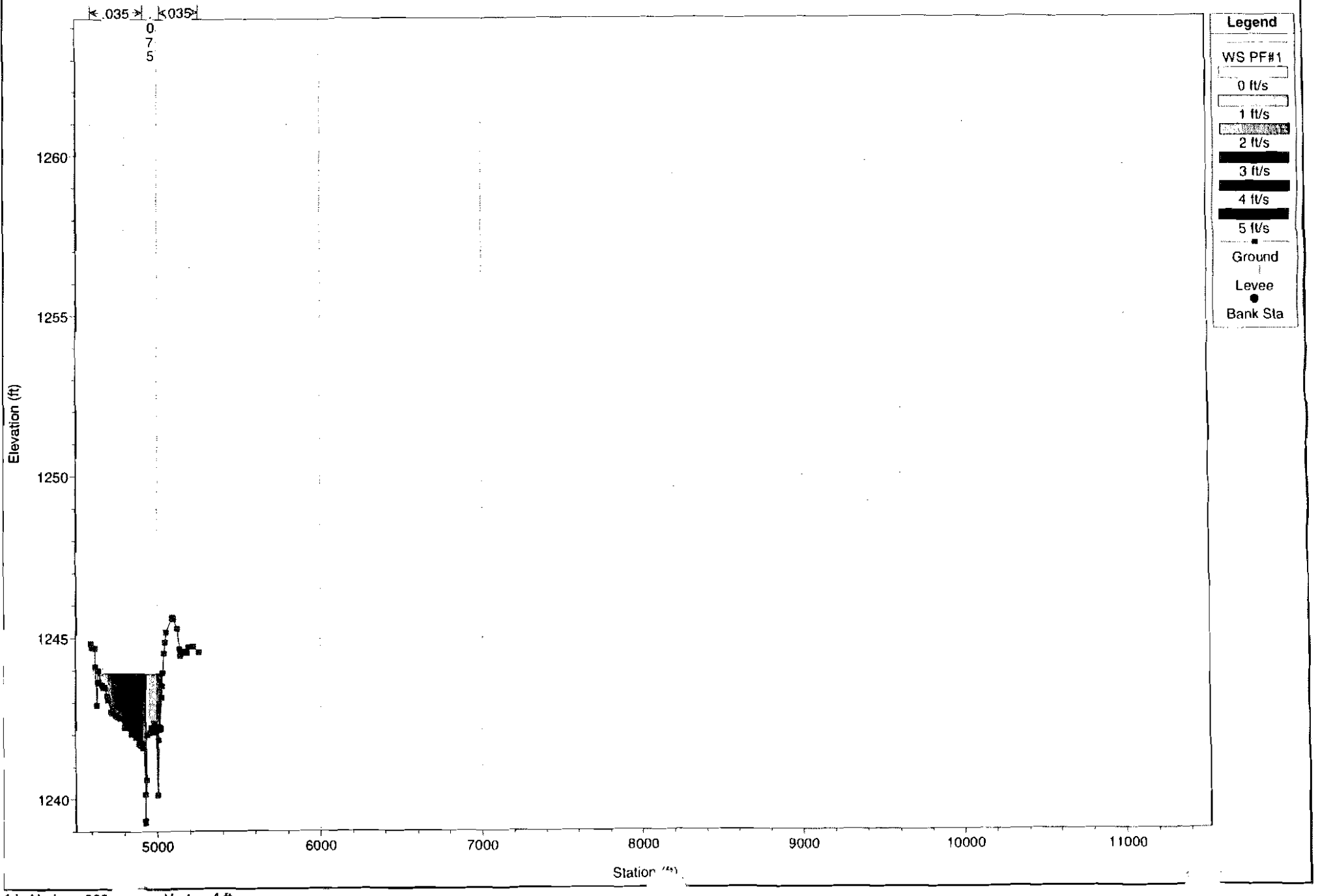
1 in Horiz. = 800 1 Vert. = 4 ft



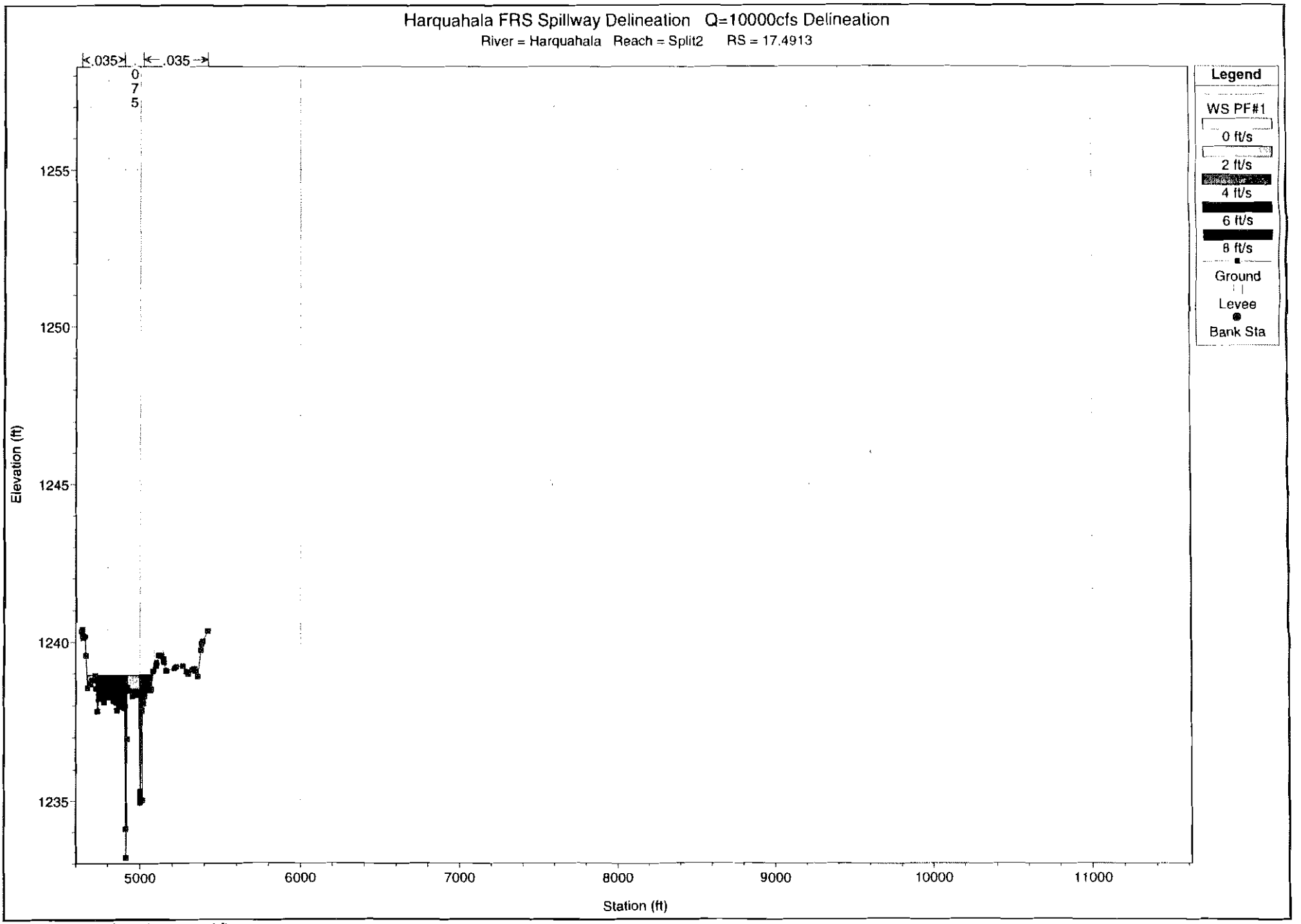
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

River = Harquahala Reach = Split2 RS = 17.5883



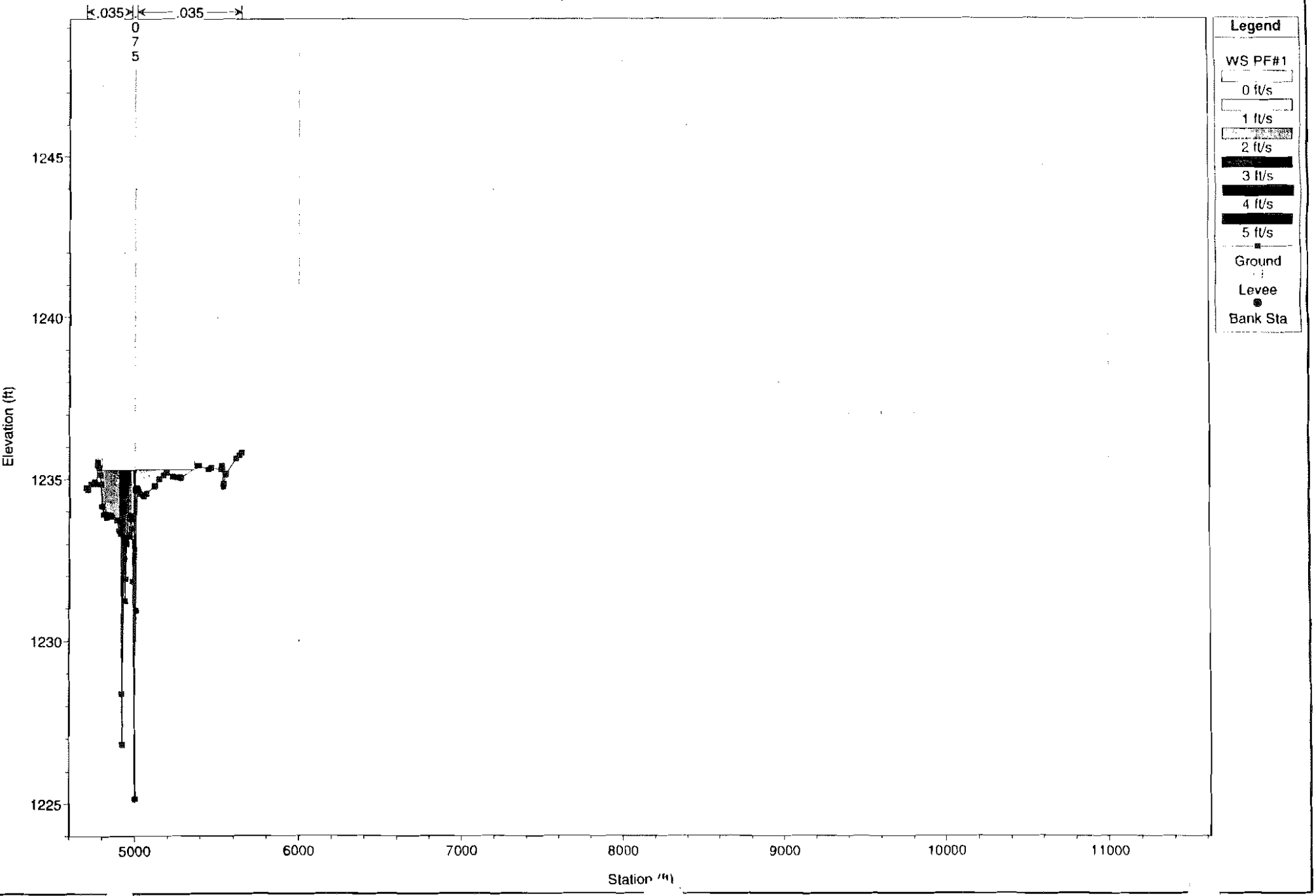
1 in Horiz. = 800 1 Vert. = 4 ft



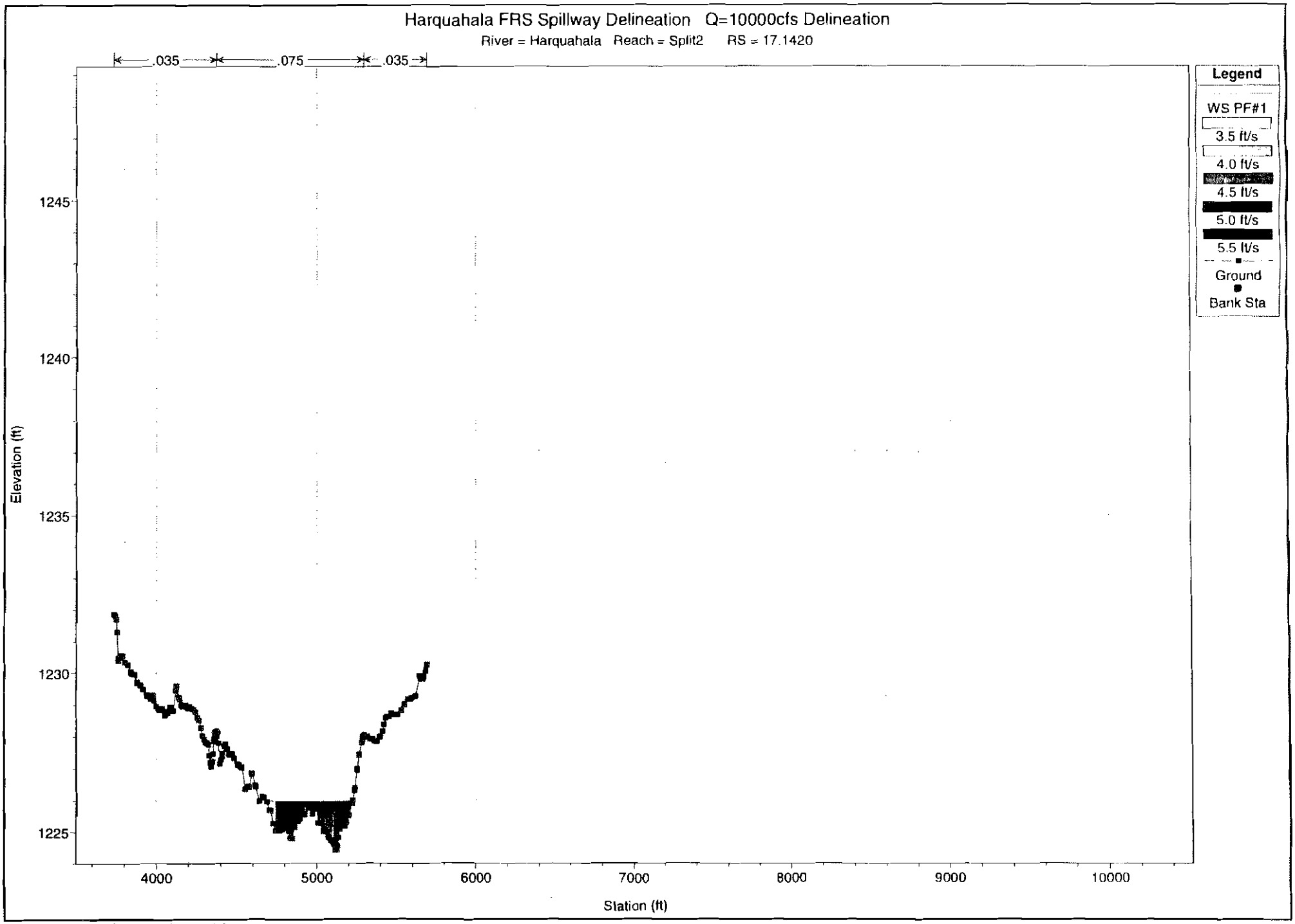
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=10000cfs Delineation

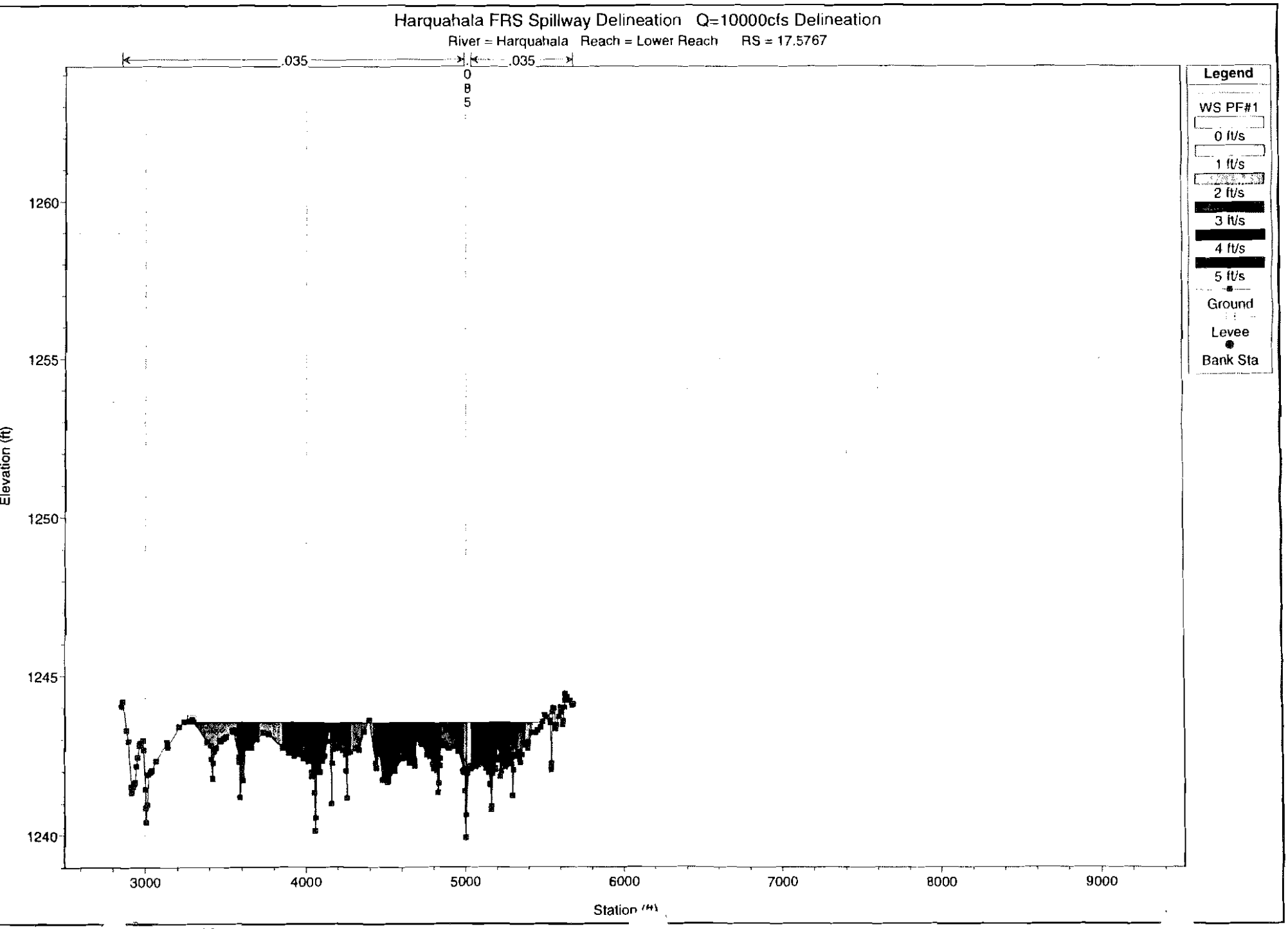
River = Harquahala Reach = Split2 RS = 17 3965



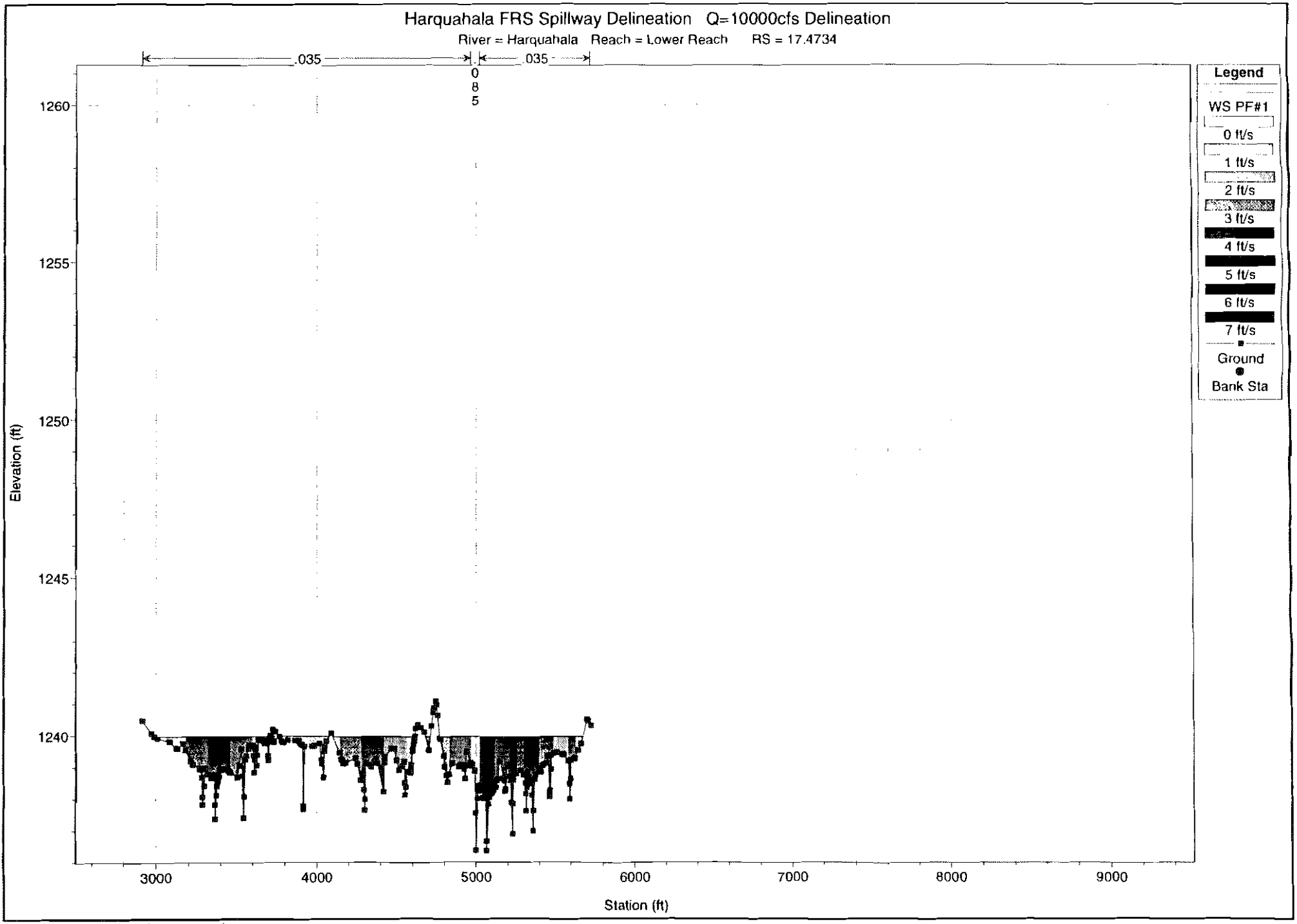
1 in Horiz. = 800 1 Vert. = 4 ft



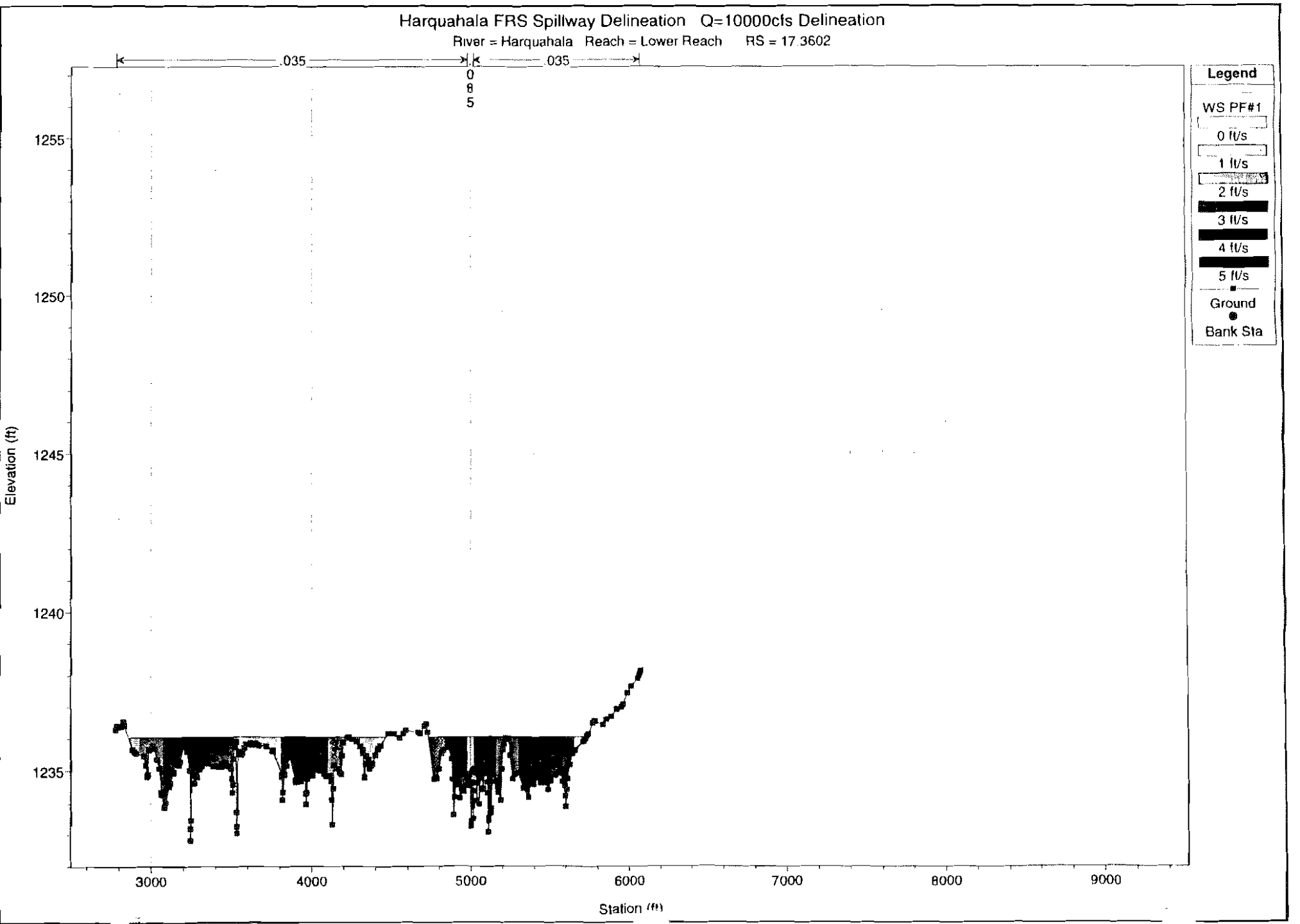
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



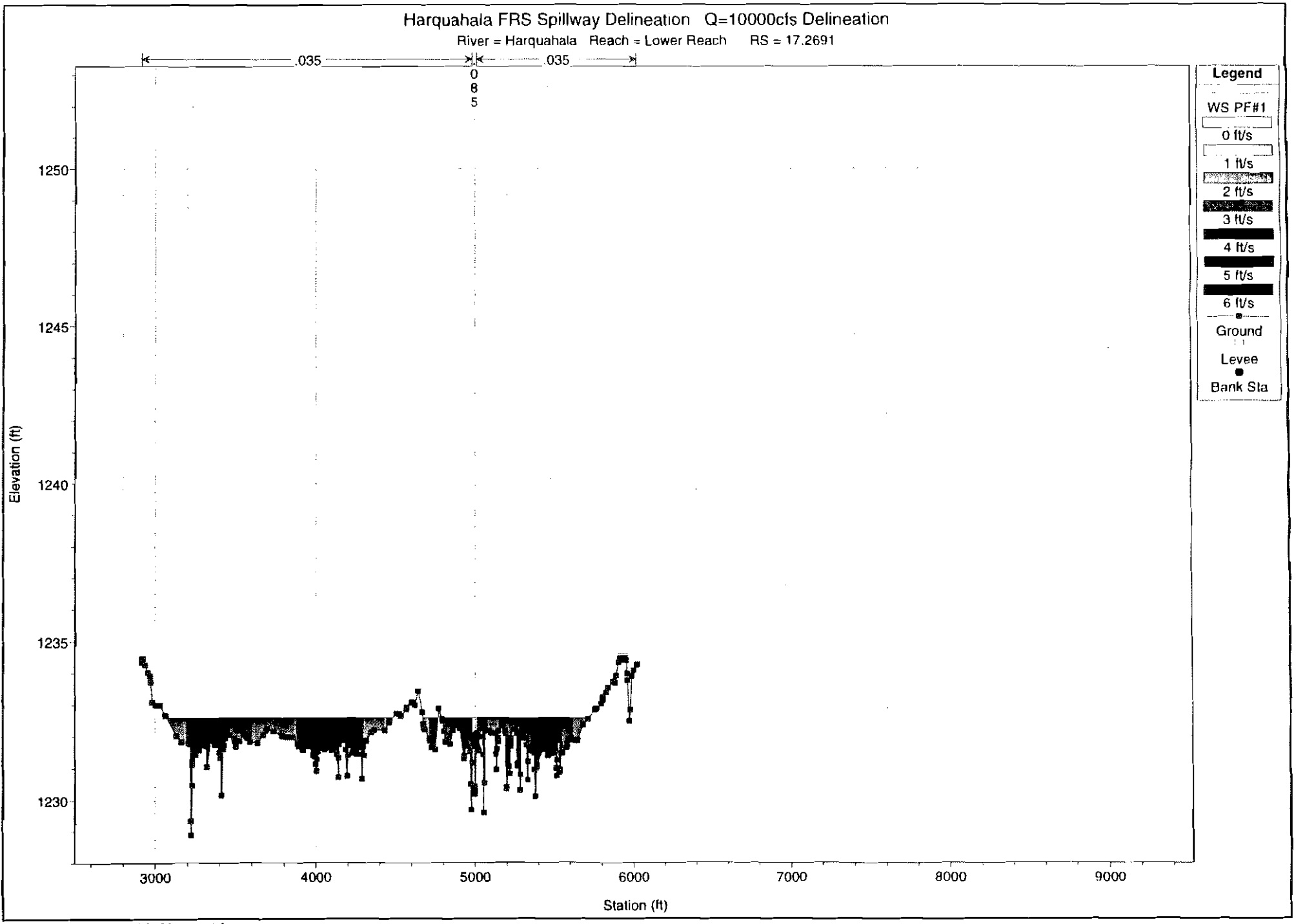
in Horiz. = 800) Vert. = 4 ft



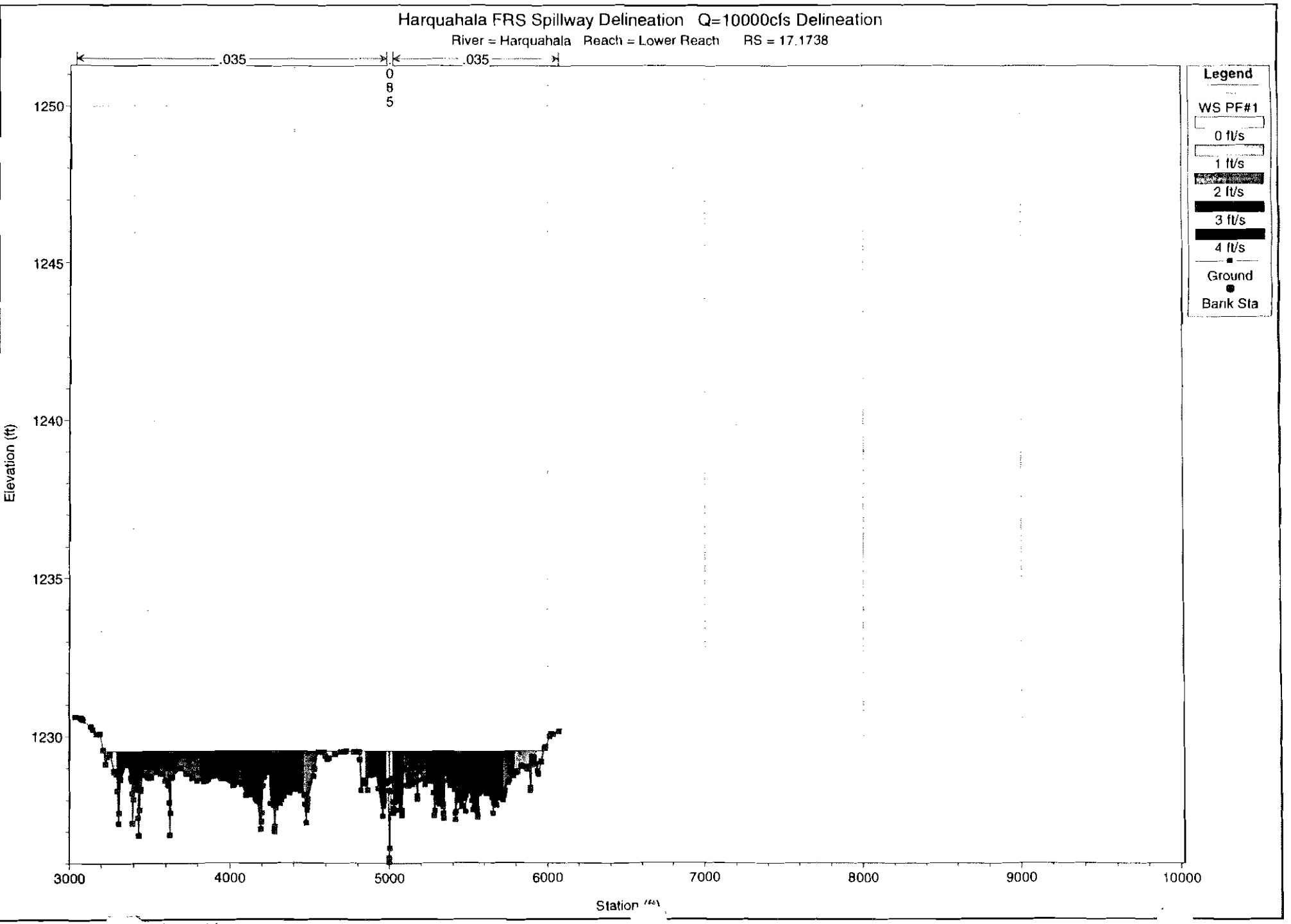
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



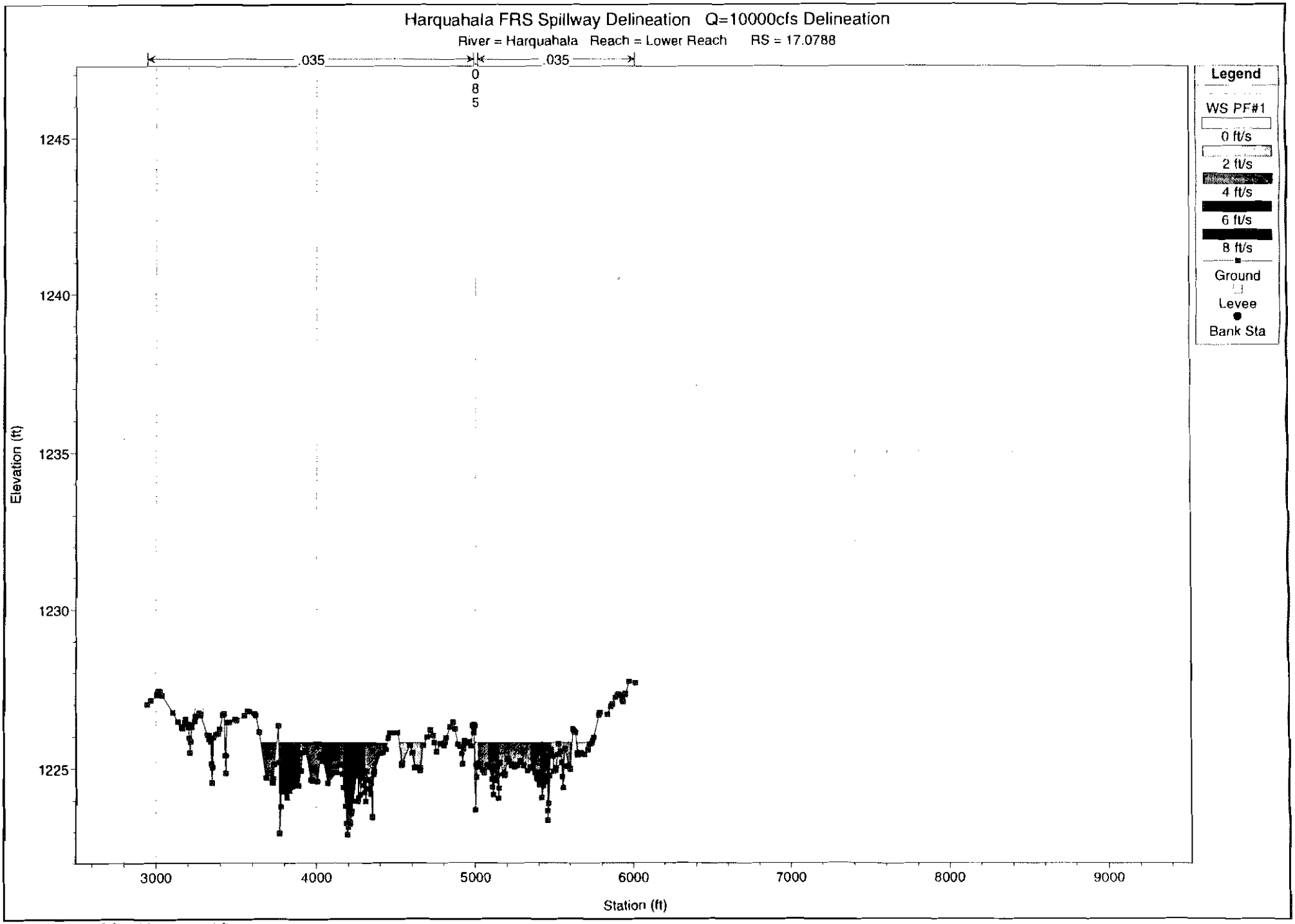
1 in Horiz. = 800 n Vert. = 4 ft



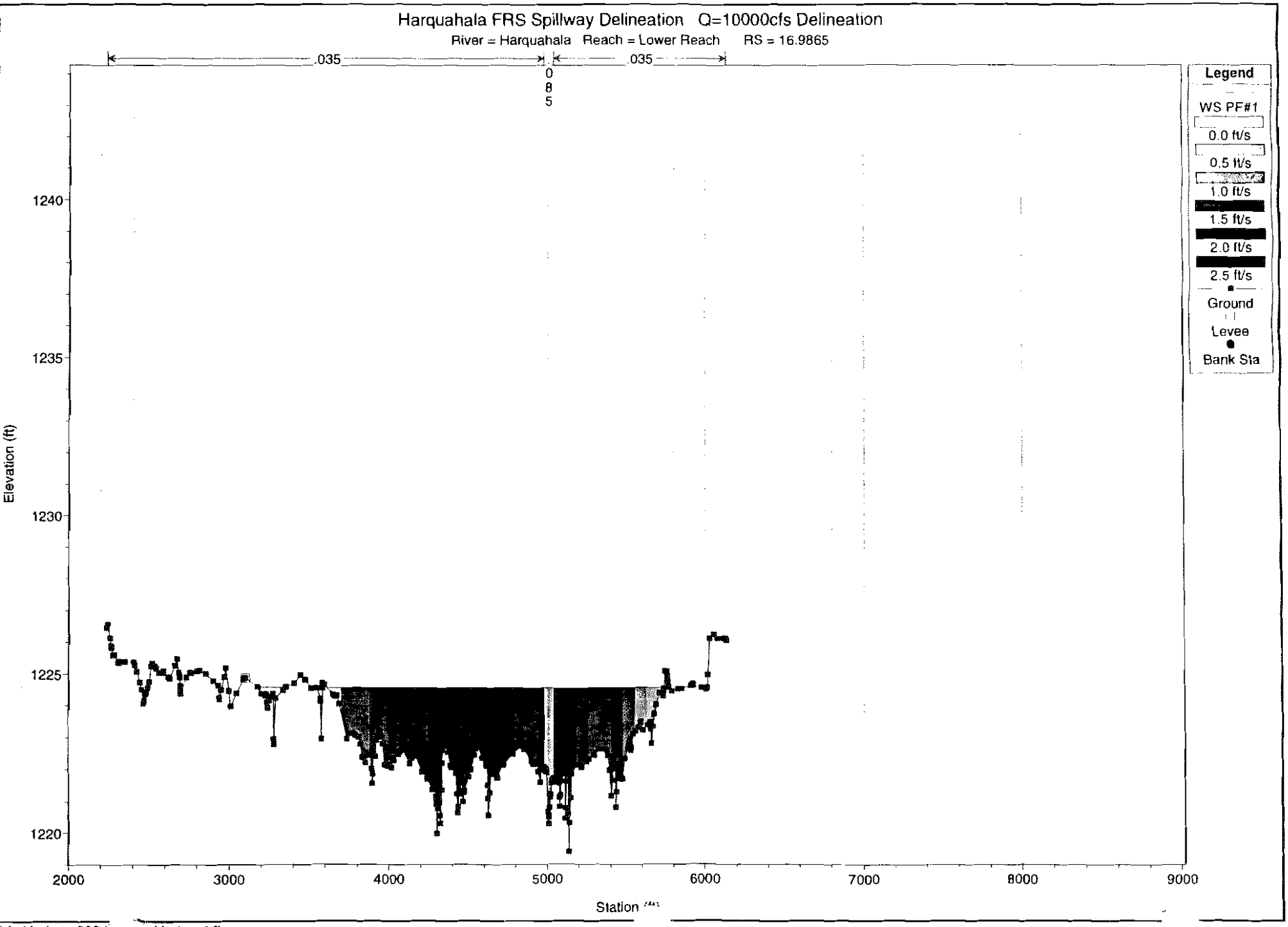
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



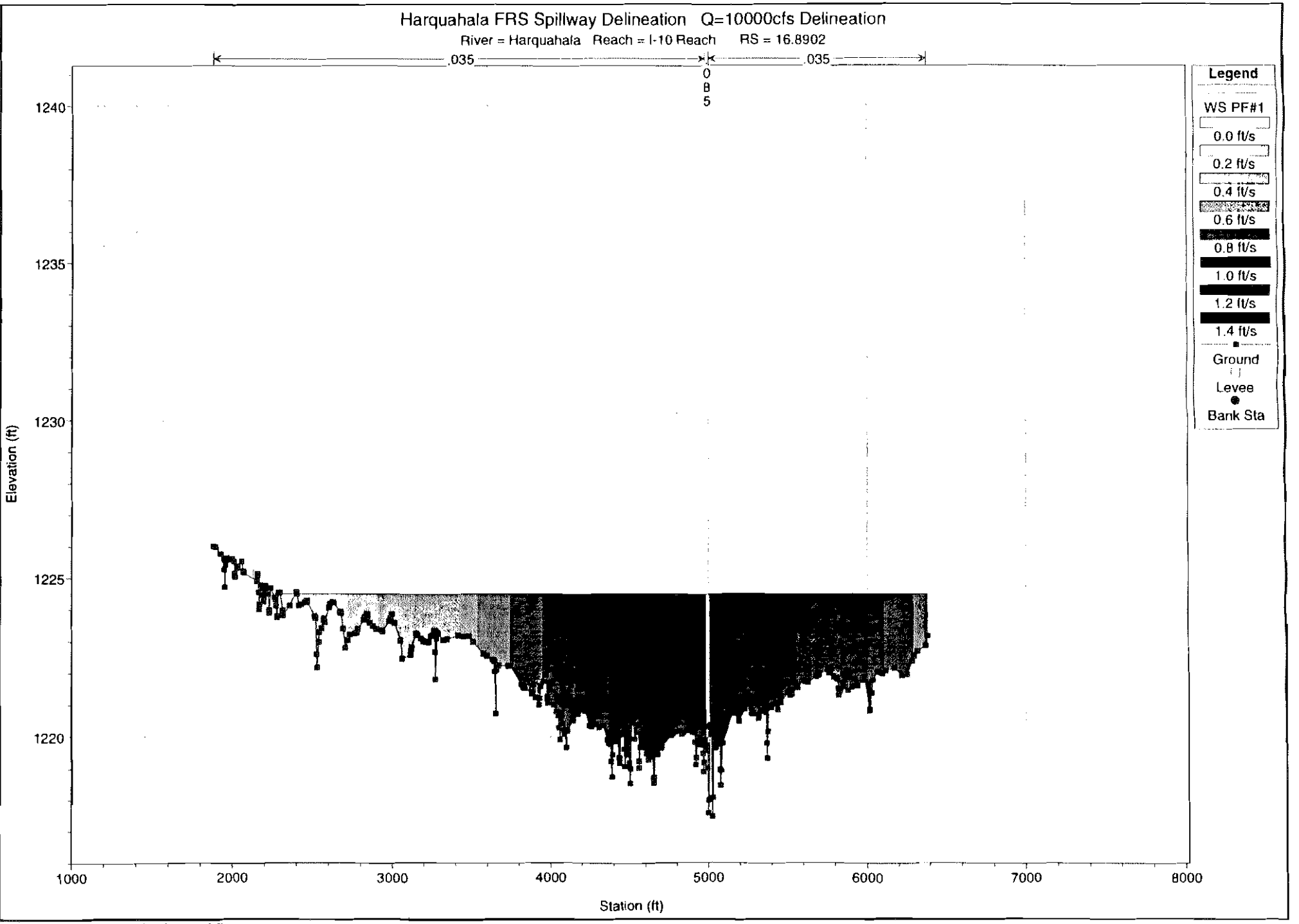
1 in Horiz. = 800 n Vert. = 4 ft



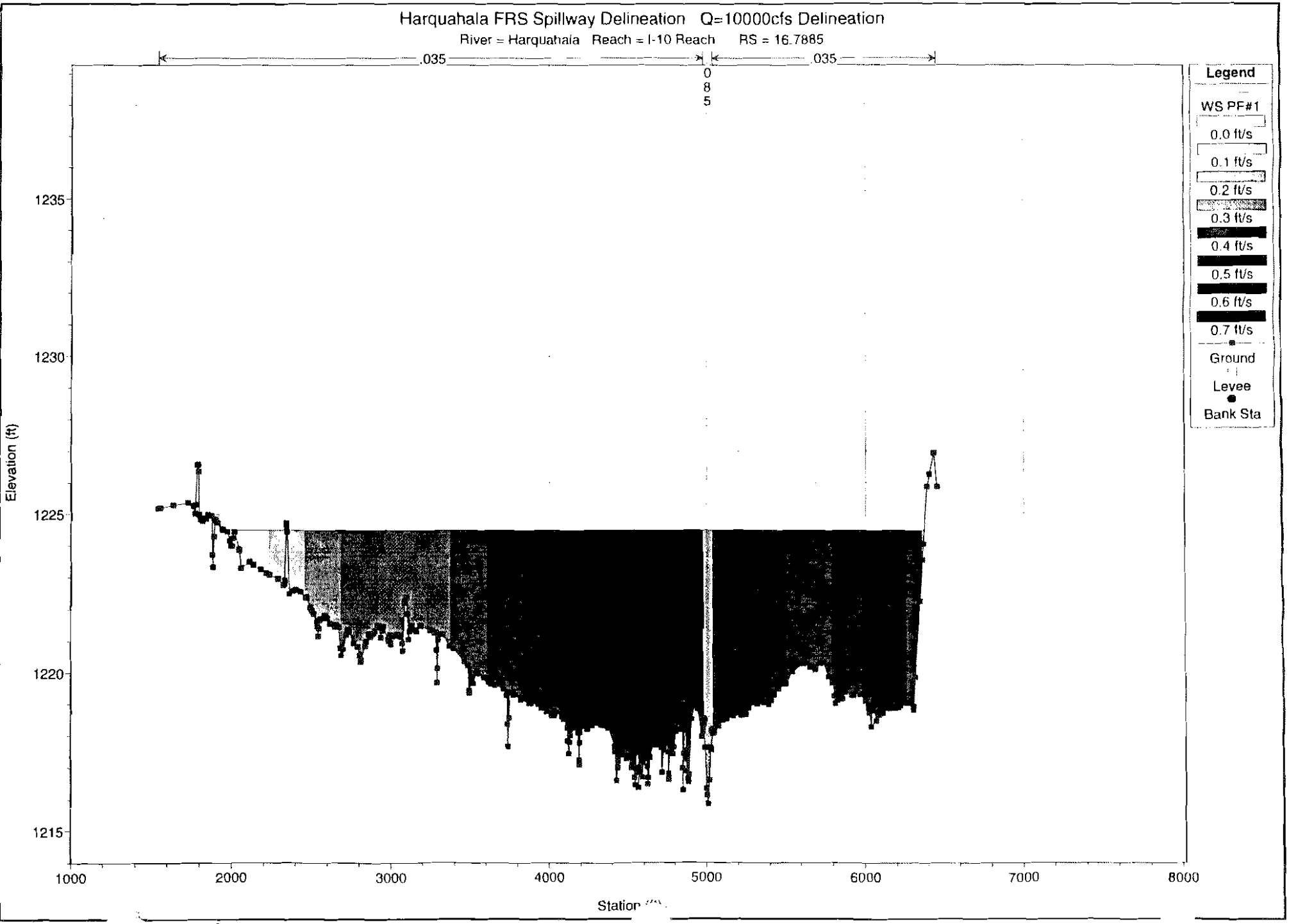
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



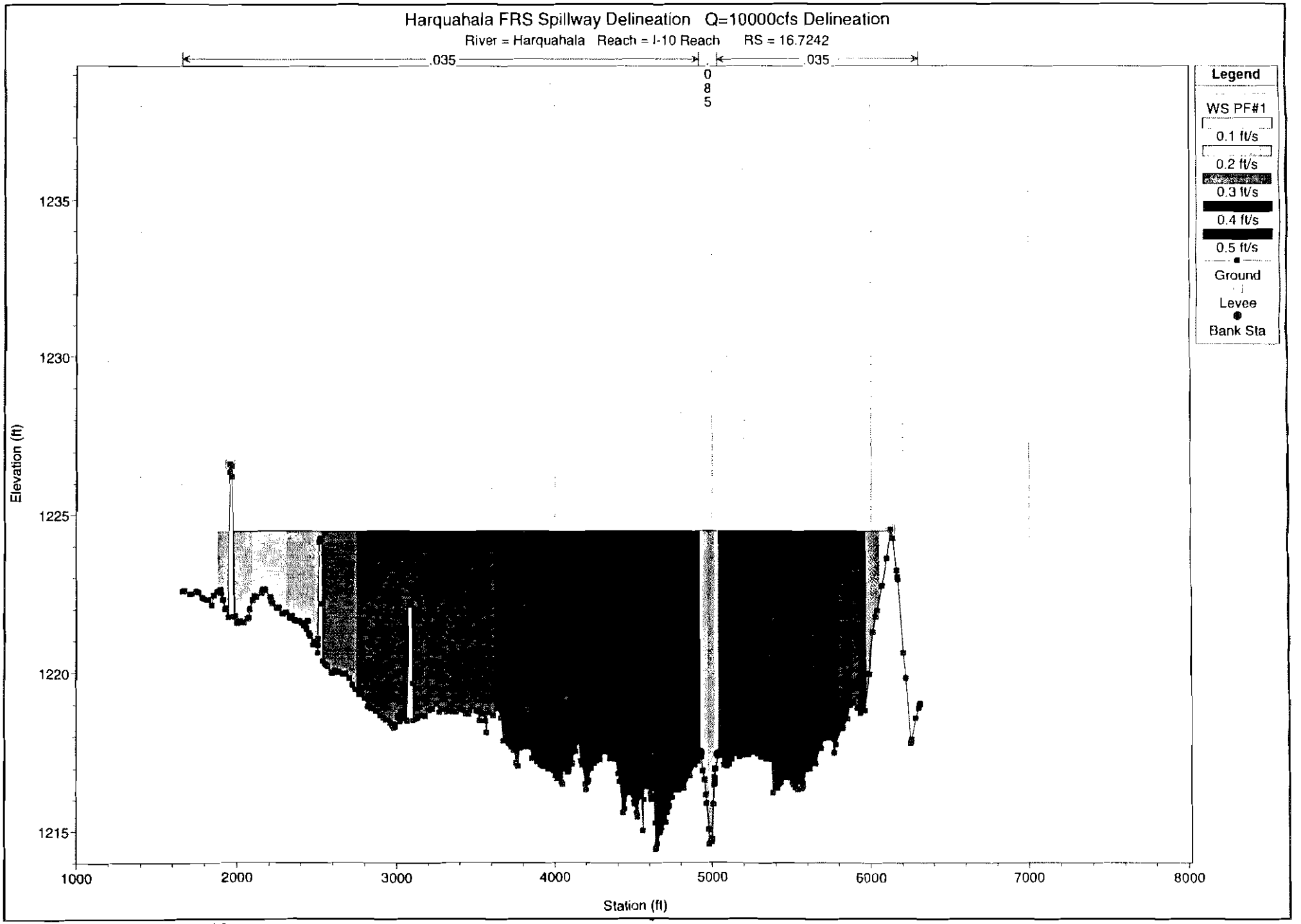
1 in Horiz. = 800 f) Vert. = 4 ft



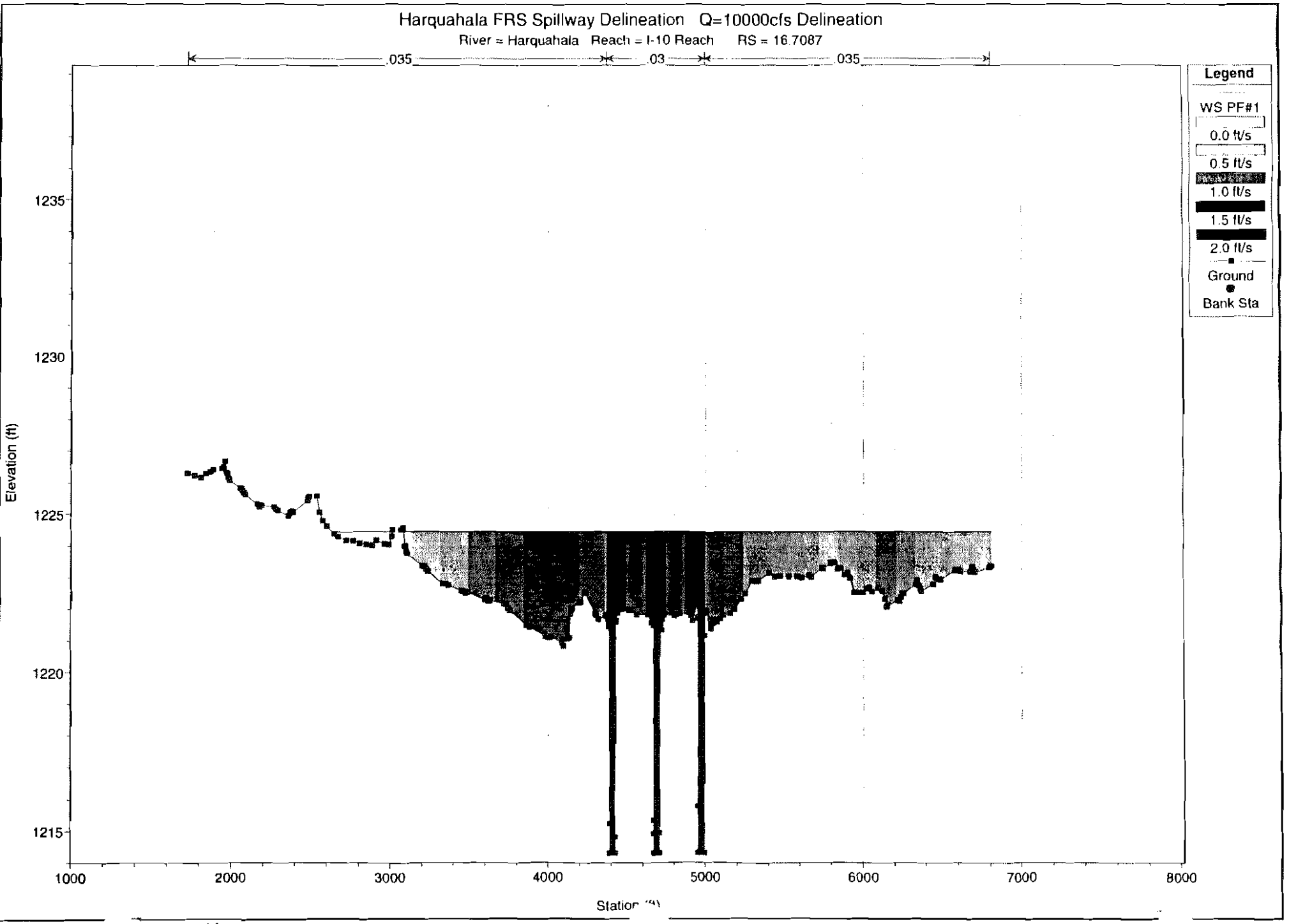
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



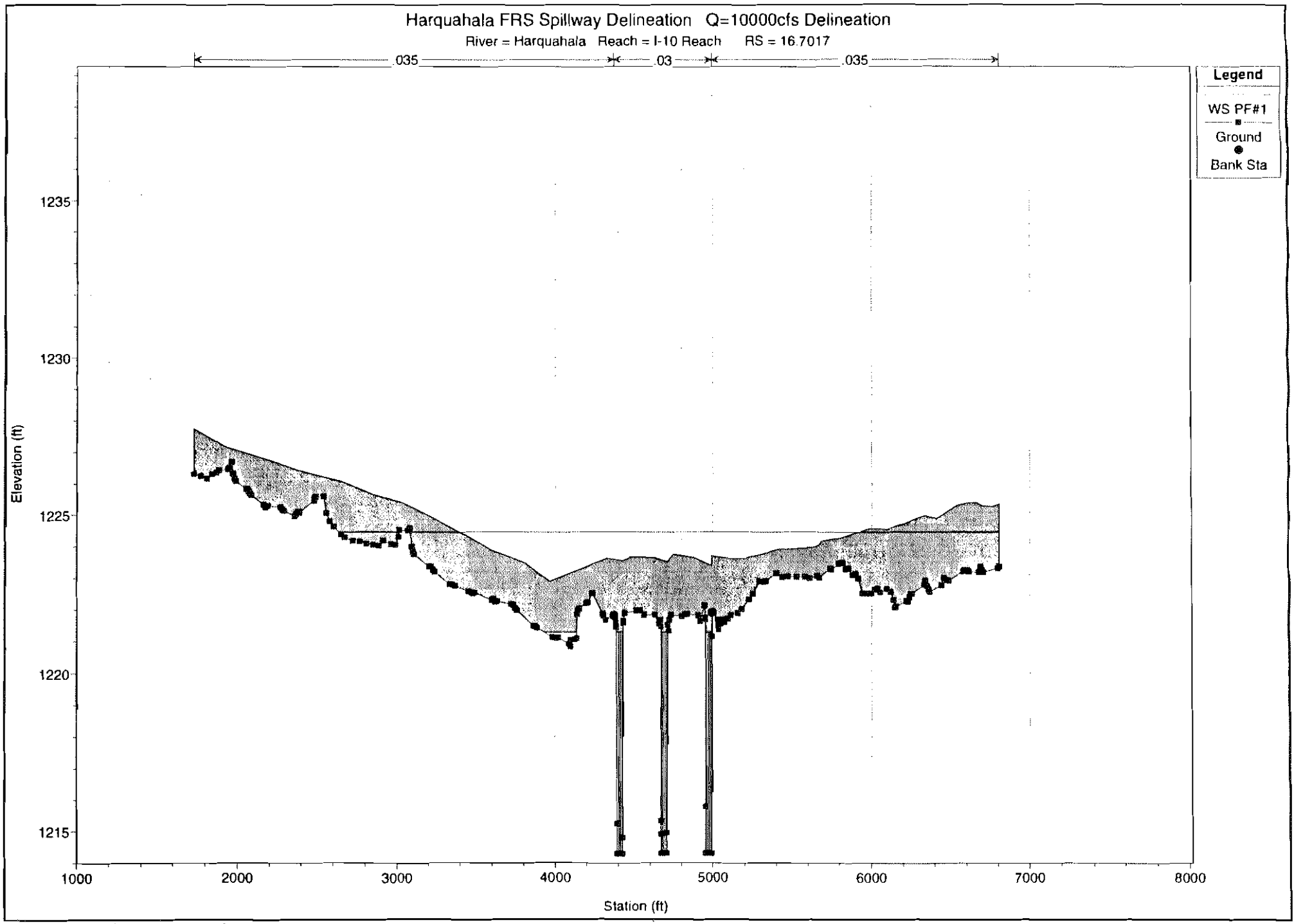
1 in Horiz. = 800 1 Vert. = 4 ft



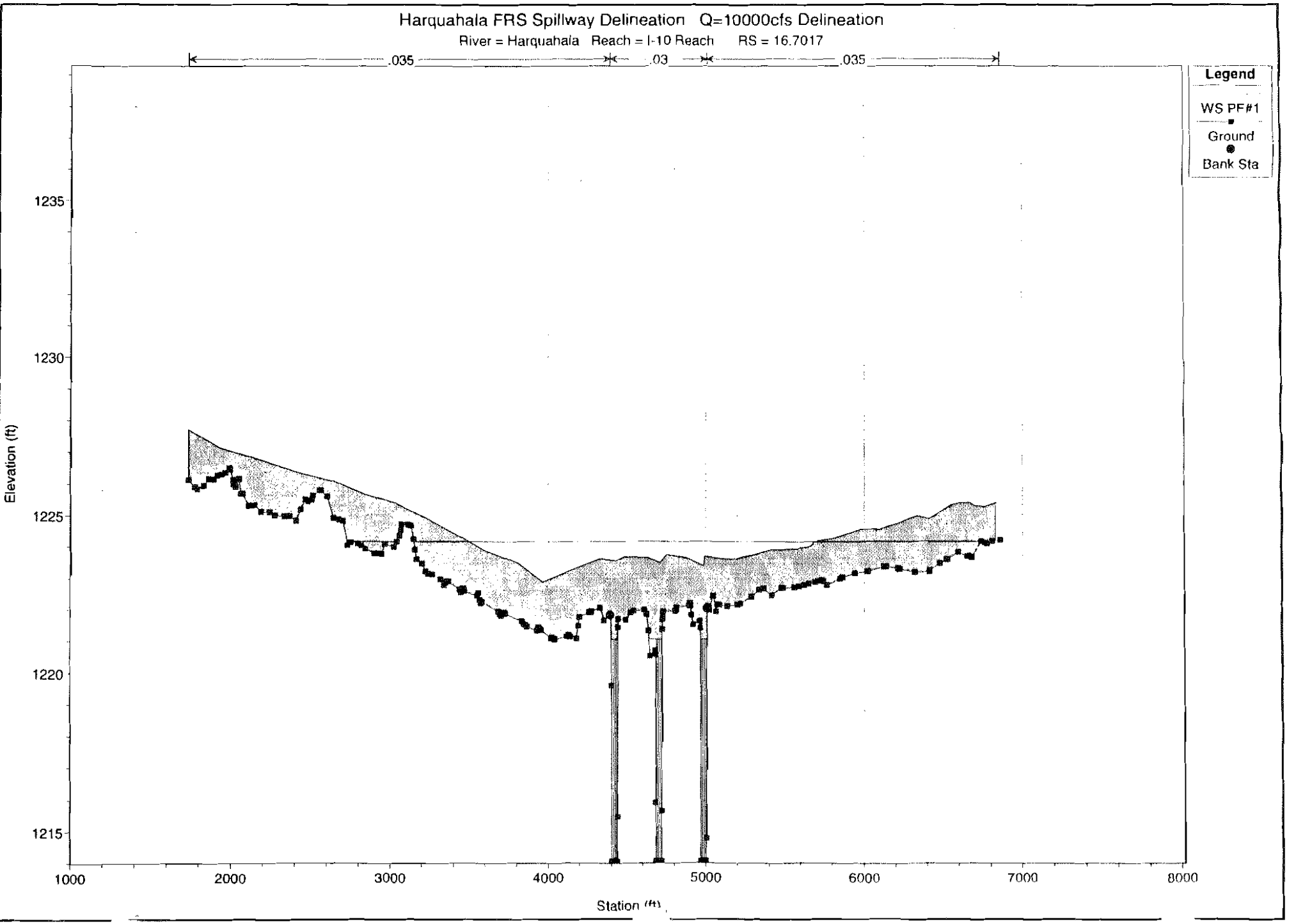
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



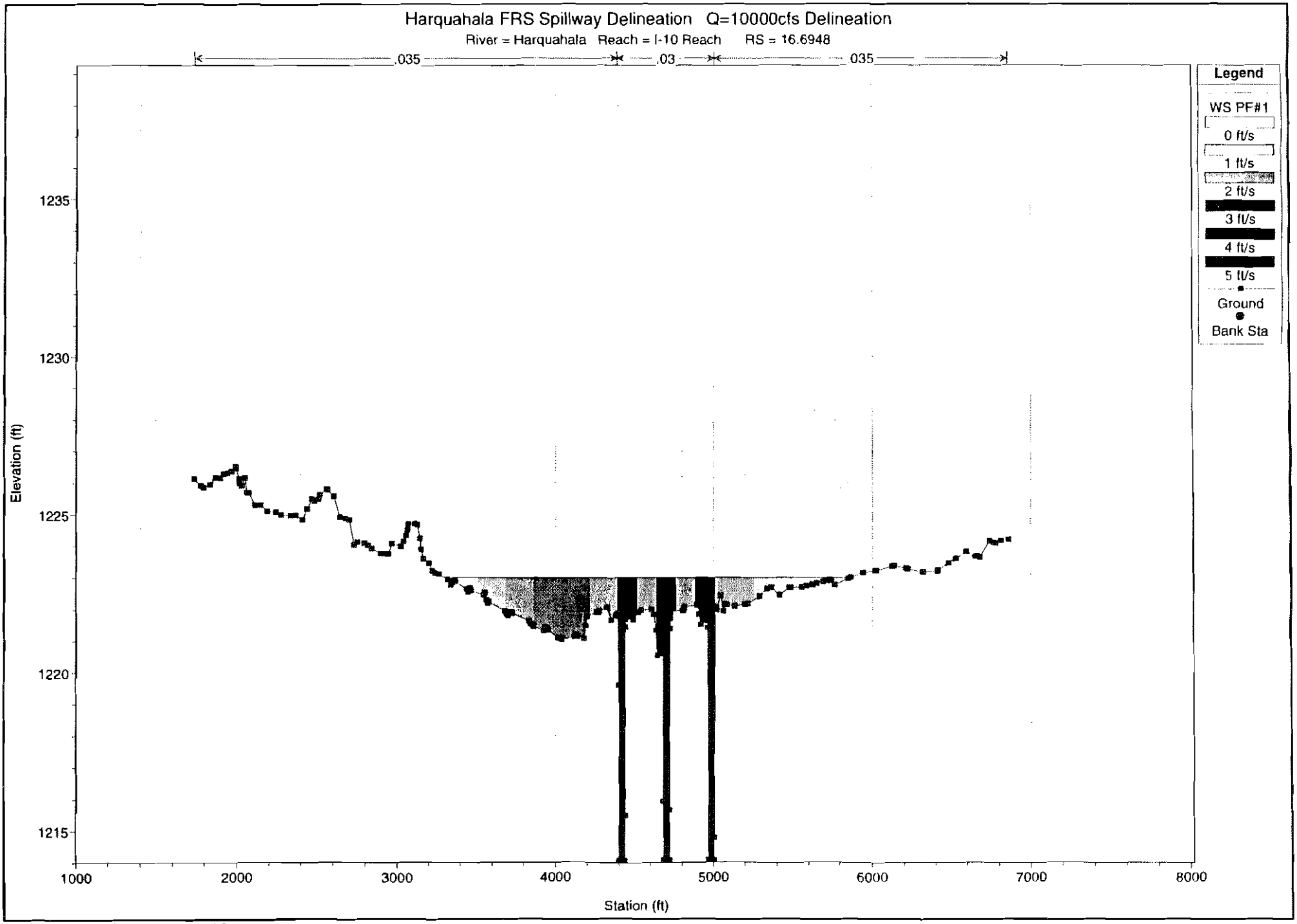
1 in Horiz. = 800 1 Vert. = 4 ft



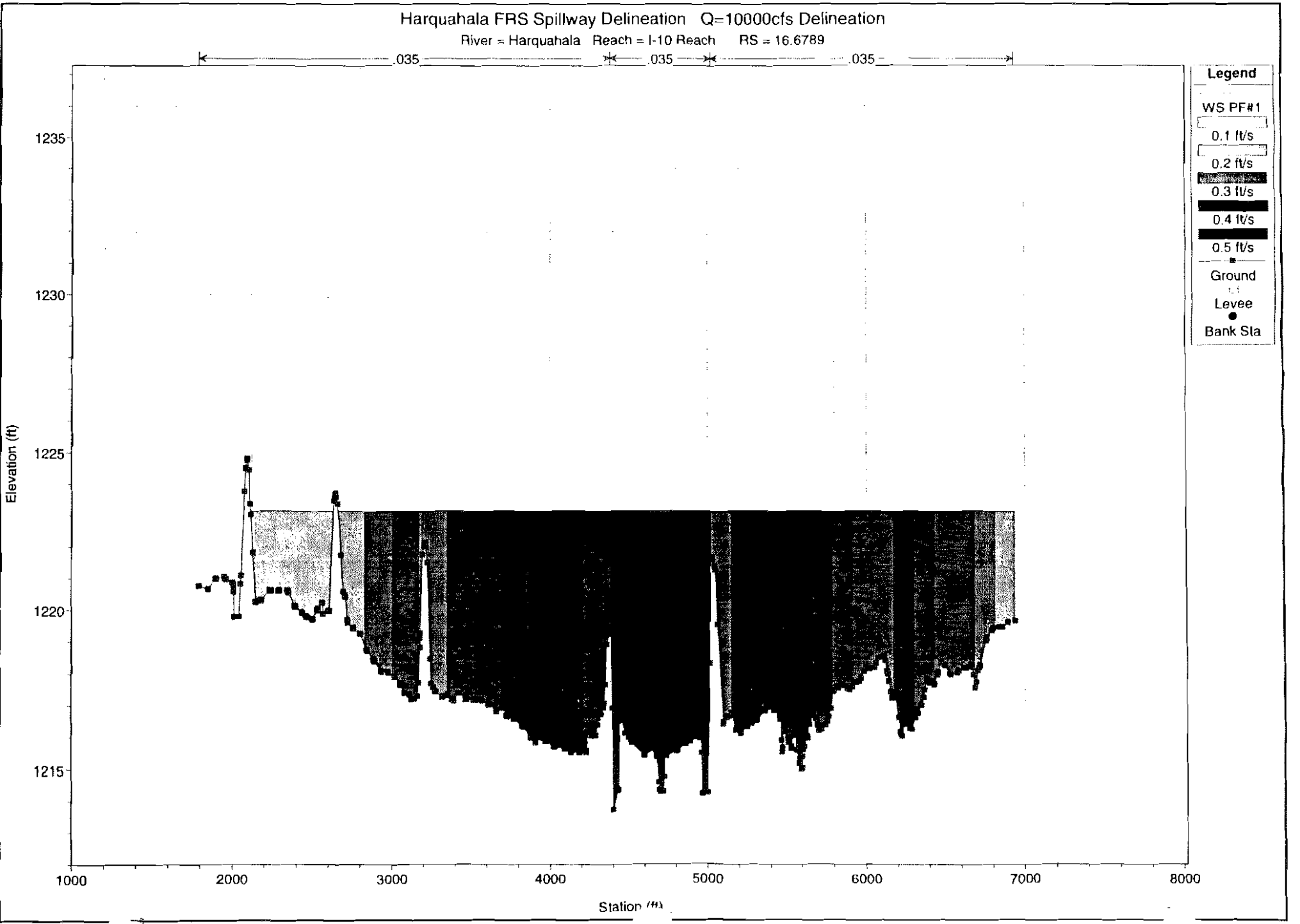
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



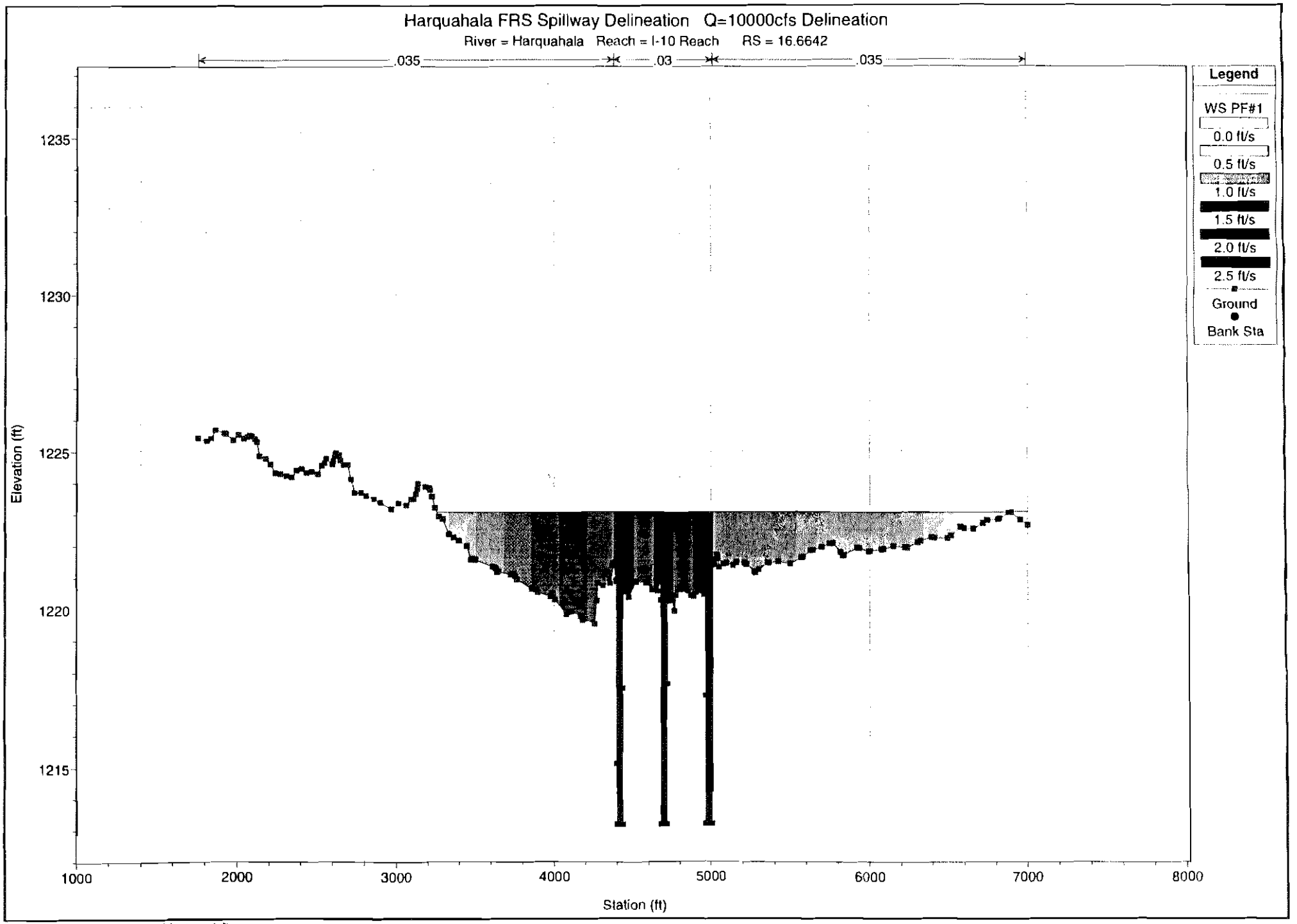
1 in Horiz. = 800 ' 1 Vert. = 4 ft



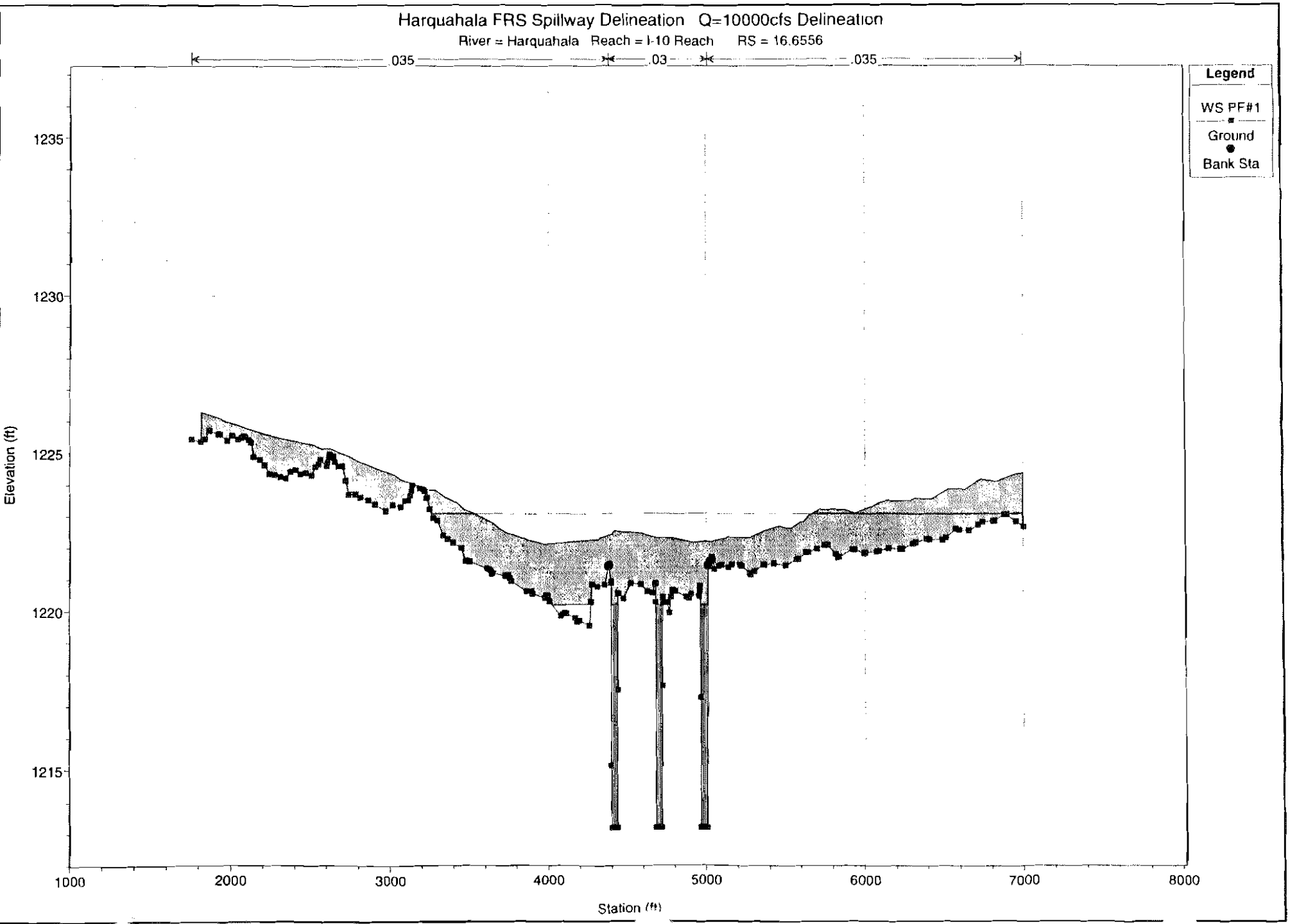
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



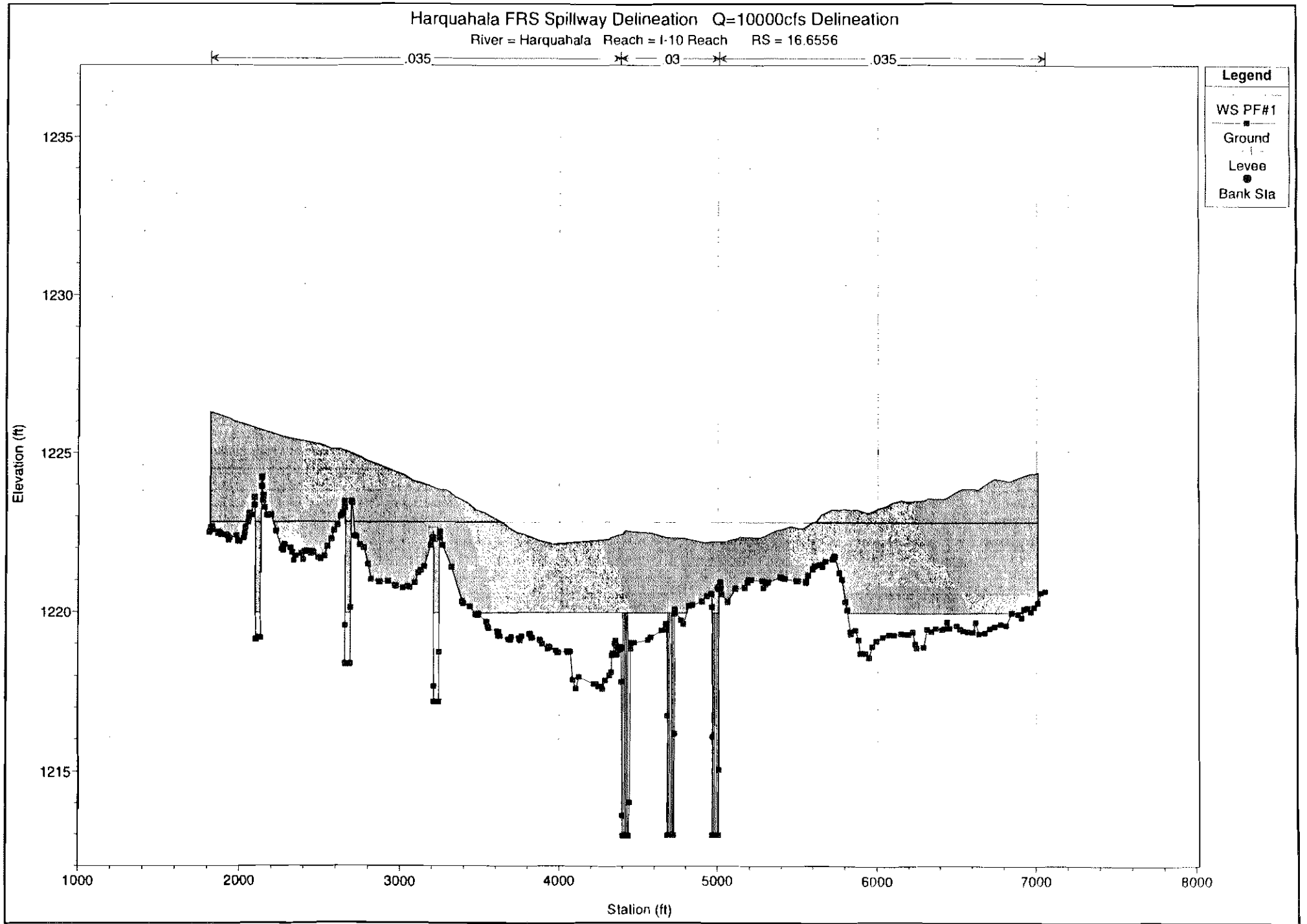
1 in Horiz. = 800 1 Vert. = 4 ft



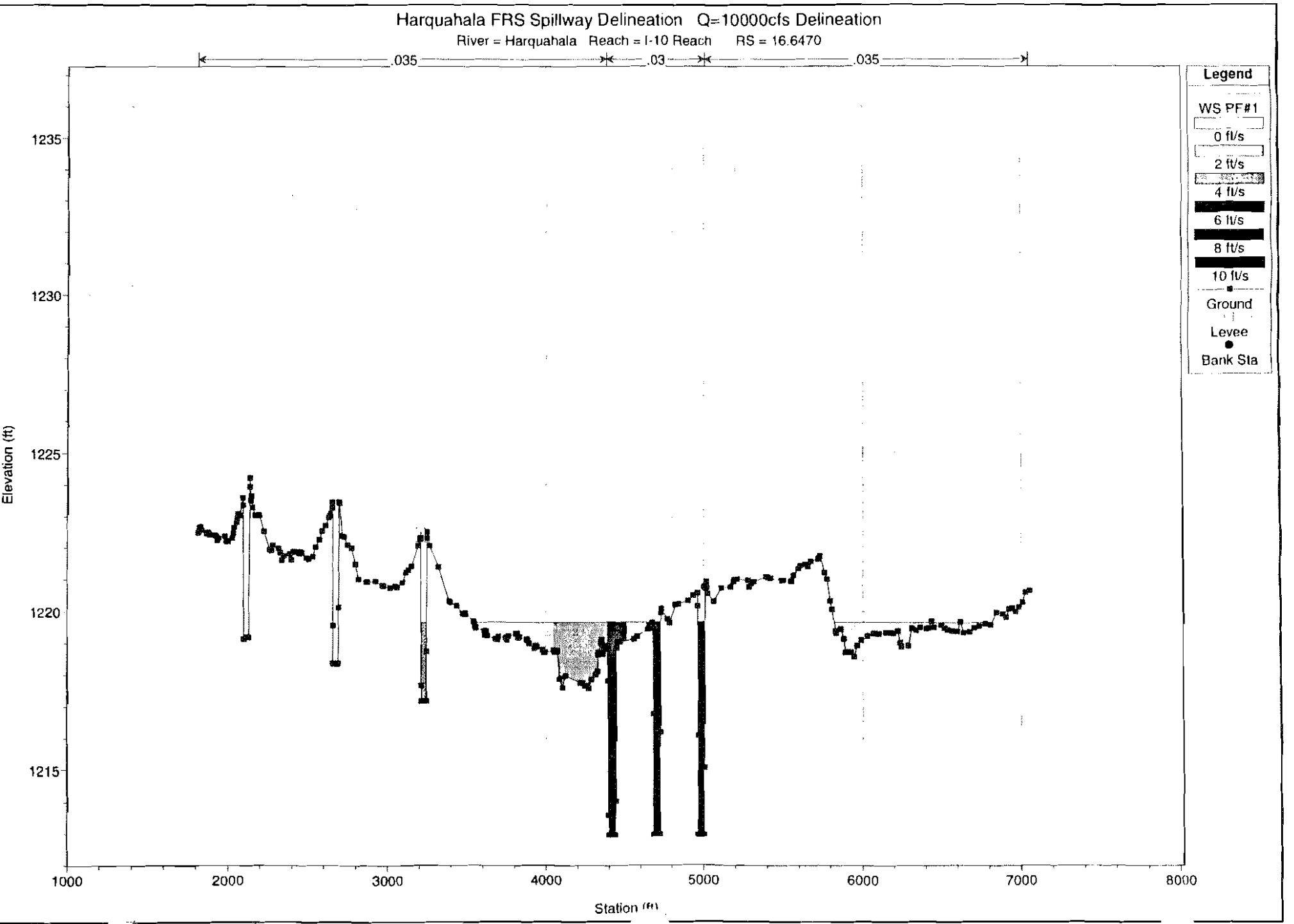
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



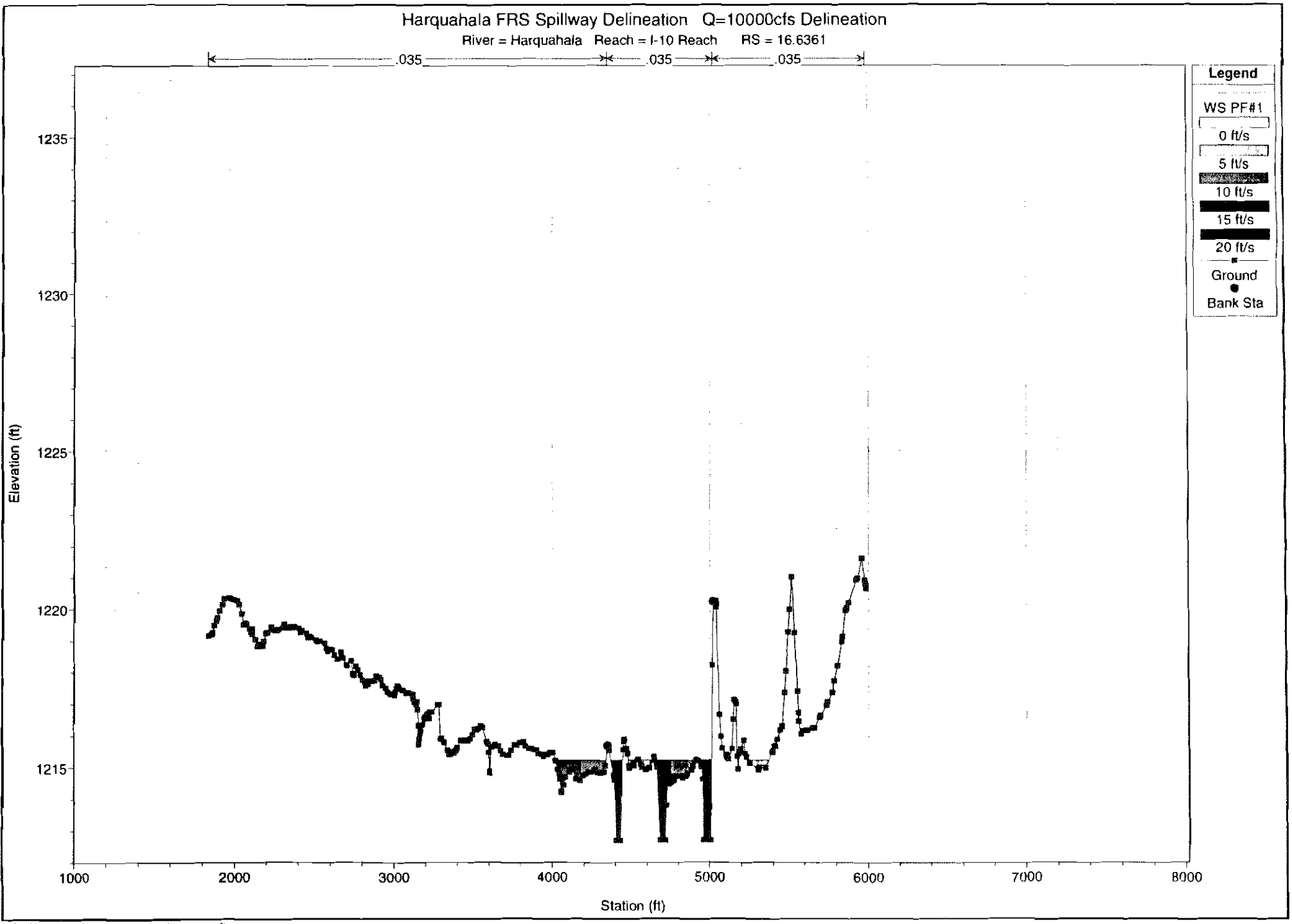
1 in Horiz. = 800 f 1 Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft



in Horiz. = 800 Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Appendix D: HEC RAS Output for Full Spillway Discharge

HEC-RAS Version 2.1 October 1997
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX        XX       XXXX
X     X  X        X    X       X   X      X  X     X
X     X  X        X            X   X     X    X    X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X      X    X        X
X     X  X        X    X       X   X     X    X        X
X     X  XXXXXX    XXXX        X    X    X    X   XXXXX
```

PROJECT DATA
Project Title: Harquahala FRS Spillway Delineation
Project File : harqua.prj
Run Date and Time: 5/25/98 9:50:56 AM

Project in English units

Project Description:
Harquahala FRS Spillway Delineation

PLAN DATA

Plan Title: Q=15000cfs Delineation
Plan File : j:\9721\hecras\harqua.p08

Geometry Title: Delineated Geometry Q=15000cfs
Geometry File : j:\9721\hecras\harqua.g09

Flow Title : Q=15000 cfs (Full discharge)
Flow File : j:\9721\hecras\harqua.f08

Plan Summary Information:
Number of: Cross Sections = 71 Mulitple Openings = 0
Culverts = 2 Inline Weirs = 0
Bridges = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum differenoe tolerance = 0.3
Flow tolerance factor = 0.001

Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: Q=15000 cfs (Full discharge)
Flow File : j:\9721\hecras\harqua.f08

Flow Data (cfs)

River	Reach	RS	PF#1
Harquahala	Upper Reach A	20.0000	15000
Harquahala	Split1	19.6872	1250
Harquahala	Split 1A	19.3216	190
Harquahala	Split 1B	19.3158	1060
Harquahala	Upper Mid Reach	18.9676	13940
Harquahala	Lower Mid Reach	18.5237	15000
Harquahala	Split2	17.5883	1980
Harquahala	Lower Reach	17.5767	13020
Harquahala	Upper Reach B	19.7349	13750
Harquahala	I-10 Reach	16.8902	15000

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Harquahala	Upper Reach A	PF#1	Known WS = 1421.36	
Harquahala	I-10 Reach	PF#1		Critical

GEOMETRY DATA

Geometry Title: Delineated Geometry Q=15000cfs
Geometry File : j:\9721\hecras\harqua.g09

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
Harquahala	Upper Reach A		Split 1
Harquahala	Upper Reach B	Split 1	Split 1A Ret

Harquahala	Split1	Split 1	1A/1B Jnct
Harquahala	Split 1A	1A/1B Jnct	Split 1A Ret
Harquahala	Split 1B	1A/1B Jnct	Split 1B Ret
Harquahala	Upper Mid Reach	Split 1A Ret	Split 1B Ret
Harquahala	Lower Mid Reach	Split 1B Ret	Split 2
Harquahala	Split2	Split 2	Split 2 Ret
Harquahala	Lower Reach	Split 2	Split 2 Ret
Harquahala	I-10 Reach	Split 2 Ret	

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach A RS: 20.0000

INPUT
Description: 20.0000 - Top of Spillway
Station Elevation Data num= 18

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    49001422.0334909.6461421.9834917.2271421.7184921.523142I.757 4922.191421.753
4924.9191421.6364925.5881415.0964926.245 1410.364996.387 1410.365008.933 1410.36
5074.394 1410.365075.4671416.8195075.9211421.7535078.7971421.7535080.0641421.796
5084.4541421.7015084.6621421.701    51001422.112
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4900	.034	924.919	.035	075.921	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4924.919	5075.921	140	140	140	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1417.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.40	Wt. n-Val.		0.030	
E.G. Elev (ft)	1420.56	Reach Len. (ft)	140.00	140.00	140.00
Crit W.S. (ft)	1417.15	Flow Area (sq ft)		1012.96	
E.G. Slope (ft/ft)	0.007751	Aree (sq ft)		1012.96	
Q Total (cfs)	15000.00	Flow (cfs)		15000.00	
Top Width (ft)	150.12	Top Width (ft)		150.12	
Vel Total (ft/s)	14.81	Avg. Vel. (ft/s)		14.81	
Max Chl Dpth (ft)	6.79	Hydr. Depth (ft)		6.75	
Conv. Total (cfs)	170377.4	Conv. (cfs)		170377.4	
Length Wtd. (ft)	140.00	Wetted Per. (ft)		161.87	
Min Ch El (ft)	1410.36	Shear (lb/sq ft)		3.03	
Alpha	1.00	Stream Power (lb/ft s)		44.84	
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)	9.17	13.21	13.80
C & E Loss (ft)	0.58	Cum SA (acres)	3.16	2.35	5.02

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach A RS: 19.9735

INPUT
Description: 19.9735
Station Elevation Data num= 34

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    48501396.7084860.8071396.463 4866.011396.5124872.9351396.5614877.426 1396.57
4887.1731395.9014888.3111395.8084899.4671394.0314903.5551393.5244910.2891391.835
4918.8191391.5414926.8831390.8664934.8381390.7214947.9131390.307 4954.231390.166
4962.4471390.1084982.0171390.1144988.2871390.0925013.0971390.1415024.0241390.162
5041.984  1390.25048.991 1390.245054.1171390.2735071.604 1390.725078.1181391.038
    50831391.4545095.1561392.3645101.8841393.2225108.2611393.7575118.371 1394.52
5128.9141395.3725136.3081396.1465145.0861396.489    51501396.706
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4850	.034	877.426	.031	5150	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4877.426	5150	139	146.2242	139	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1392.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	22.97	Wt. n-Val.		0.031	
E.G. Elev (ft)	1415.60	Reach Len. (ft)	139.00	146.22	139.00
Crit W.S. (ft)	1396.38	Flow Area (sq ft)		389.98	
E.G. Slope (ft/ft)	0.247363	Area (sq ft)		389.98	
Q Total (cfs)	15000.00	Flow (cfs)		15000.00	
Top Width (ft)	190.07	Top Width (ft)		190.07	
Vel Total (ft/s)	38.46	Avg. Vel. (ft/s)		38.46	
Max Chl Dpth (ft)	2.53	Hydr. Depth (ft)		2.05	
Conv. Total (cfs)	30159.5	Conv. (cfs)		30159.5	
Length Wtd. (ft)	143.21	Wetted Per. (ft)		190.29	
Min Ch El (ft)	1390.09	Shear (lb/sq ft)		31.65	
Alpha	1.00	Stream Power (lb/ft s)		1217.30	
Frctn Loss (ft)	3.13	Cum Volume (acre-ft)	9.17	10.96	13.80
C & E Loss (ft)	1.95	Cum SA (acres)	3.16	1.80	5.02

Warning - Tha velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach A RS: 19.9458

INPUT
Description: 19.9458
Station Elevation Data num= 46

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4848.6941394.8584852.2921394.9644862.947 1395.124867.0241395.1214873.3921395.261
4876.8031394.2474878.8011394.2474880.1881394.1434890.6351393.8384894.2291393.712
4905.4591393.1544914.7971392.7334930.189 1392.294934.9611392.2064948.0541391.732
4953.8331391.4754956.8351391.336 4971.891391.038 4977.361390.786 4984.361390.301
4991.7021390.2644993.9321389.9525002.8371389.0515005.0071389.5525012.7871390.497
5013.9781390.5635023.2091391.1655031.8681391.3225040.1971391.4785058.9541391.501
 5067.051391.6275084.4911391.6575095.3951391.7175112.1671391.803 5122.421391.623
5134.8471392.2385145.4151392.5445163.3061393.2925170.9961393.5265184.0161394.053
5200.9081394.0985210.5391394.3635234.7621394.3055238.5061394.3075241.293 1394.24
5250.4951394.125
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4848.694    .035 4971.89    .0855023.209    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       4971.895023.209              149214.1756     183            .1        .3
Left Levee      Station=4873.393      Elevation=1395.261
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1395.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.27	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1398.47	Reach Len. (ft)	149.00	214.18	183.00
Crit W.S. (ft)	1396.12	Flow Area (sq ft)	254.38	253.18	565.58
E.G. Slope (ft/ft)	0.037887	Area (sq ft)	254.38	253.18	565.58
Q Total (cfs)	15000.00	Flow (cfs)	3956.62	2489.33	8554.05
Top Width (ft)	376.92	Top Width (ft)	98.31	51.32	227.29
Vel Total (ft/s)	13.98	Avg. Vel. (ft/s)	15.55	9.83	15.12
Max Chl Dpth (ft)	6.15	Hydr. Depth (ft)	2.59	4.93	2.49
Conv. Total (cfs)	77063.1	Conv. (cfs)	20327.3	12789.0	43946.8
Length Wtd. (ft)	185.11	Wetted Per. (ft)	98.51	51.54	228.42
Min Ch El (ft)	1389.05	Shear (lb/sq ft)	6.11	11.62	5.86
Alpha	1.08	Stream Power (lb/ft s)	95.00	114.23	88.58
Frctn Loss (ft)	11.21	Cum Volume (acre-ft)	8.76	9.88	12.90
C & E Loss (ft)	5.91	Cum SA (acres)	3.01	1.39	4.65

Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach A RS: 19.9052

INPUT
Description: 19.9052
Station Elevation Data num= 63

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4781.1781390.992 4800.051390.8044814.8741390.5514848.6181389.3054851.5491389.276
4869.942 1389.594881.8321389.619 4896.621389.3954903.425 1389.364921.7571389.385
 4934.631389.399 4949.951389.3724964.8291388.8214978.9421388.5174995.9941380.051
4998.0281379.2224996.5931379.0994999.3361379.2695019.0691382.1885021.8621382.926
5033.0461384.9765039.0441386.057 5041.331386.5385055.2881387.4115085.1851388.606
5088.7611388.5885100.1711388.5615112.2261388.5285120.915  1388.45139.3791388.095
5149.1951388.0625167.3541387.871 5182.971387.1475183.3251387.1235183.491 1387.13
5185.9851387.2645192.894 1387.635193.3451387.6615197.473 1387.675212.4021387.729
5231.3881387.6545235.0131387.6255238.0251387.644 5252.851388.0525254.8421388.062
5258.0211388.116 5285.821388.4875288.0371388.2245295.179 1386.825305.6081387.356
5310.9331387.6245312.6781387.788 5315.851387.8755345.1651389.1335356.3821389.521
5377.2391389.9285396.0551389.4345397.6831389.3855399.1171389.3915410.3161389.589
5415.662 1389.815435.4981390.7665446.1971390.657
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4781.178    .0354978.942    .0855055.288    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       4978.9425055.288             305351.3504     259            .1        .3
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1390.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.72	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1392.17	Reach Len. (ft)	305.00	351.35	259.00
Crit W.S. (ft)	1390.70	Flow Area (sq ft)	166.14	516.06	772.98
E.G. Slope (ft/ft)	0.026633	Area (sq ft)	166.14	516.06	772.98
Q Total (cfs)	15000.00	Flow (cfs)	1173.61	5136.26	8690.13
Top Width (ft)	611.34	Top Width (ft)	161.34	76.35	373.66
Vel Total (ft/s)	10.31	Avg. Vel. (ft/s)	7.06	9.95	11.24
Max Chl Dpth (ft)	11.35	Hydr. Depth (ft)	1.03	6.76	2.07
Conv. Total (cfs)	91913.4	Conv. (cfs)	7191.4	31472.7	53249.3
Length Wtd. (ft)	293.38	Wetted Per. (ft)	161.38	79.20	373.98

Min Ch El (ft)	1379.10	Shear (lb/sq ft)	1.71	10.83	3.44
Alpha	1.05	Stream Power (lb/ft s)	12.09	107.83	38.64
Frctn Loss (ft)	5.83	Cum Volume (acre-ft)	8.05	7.99	10.09
C & E Loss (ft)	0.46	Cum SA (acres)	2.56	1.08	3.39

Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach A RS: 19.8387

INPUT
Description: 19.8387
Station Elevation Data num= 92

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4506.275 1383.274511.3831383.1684527.745 1382.864532.9791382.7024549.3071382.453
4561.0871382.2524562.3551382.338 4573.781382.9014587.8421382.6394588.4841382.615
4589.761 1382.624625.9551382.5854640.7881382.2384649.7731382.0674658.8991381.643
4663.297 1381.49  4675.21380.4474681.1141379.9224682.5461380.0434693.0241380.646
4712.171381.522 4732.471382.3984761.7841382.3234770.5831382.4044791.0641382.433
4807.4161382.4244815.2761382.4214840.3121382.2554853.5911381.8584864.7291381.429
4880.9171381.5984891.7031381.7394895.1411381.7294895.8791381.7274904.4341381.463
4909.461  1381.34921.1281381.1884930.1361381.2014941.6251381.185 4952.23 1380.62
4969.7471379.5144979.3281377.4614990.311  1374.74992.2211374.6385000.389  1374.3
5012.8841376.8995025.1571379.6095055.1551380.2435071.4571380.5235077.8871380.452
5083.3021380.4385115.5231380.5175115.908 1380.525116.037 1380.525117.0291380.545
 5165.441381.5535183.9211380.1675188.2221379.9765202.0931380.6695209.951 1381.04
5220.9231381.197  5234.61361.4165236.4331381.3525268.2011380.7525294.8771380.896
5322.2191381.2535336.2781381.4875344.0951381.7655353.0861381.7335370.3411381.706
5390.6761381.5735404.3821381.5955411.5641381.8055439.6671381.7995474.866 1382.06
5488.6031382.266 5493.981380.7495497.641 1381.235507.6751382.189  5508.6 1382.21
5525.3451383.1225527.2671383.1385557.3341382.2215557.8051382.2415559.3111382.398
5574.8581383.9755582.2671384.4435594.6891384.6065604.142 1384.815627.1251385.542
5627.3991385.5495639.1351384.895
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4506.275    .035 4952.23    .0855055.155    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       4952.235055.155               100 113.028     166          .1          .3
Left Levee      Station= 4573.78      Elevation=1382.901
Right Levee     Station=5527.267      Elevation=1383.138
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1382.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.25	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1384.21	Reach Len. (ft)	100.00	113.03	166.00
Crit W.S. (ft)	1383.19	Flow Area (sq ft)	423.89	494.88	808.92
E.G. Slope (ft/ft)	0.026707	Area (sq ft)	423.89	494.88	808.92
Q Total (cfs)	15000.00	Flow (cfs)	2913.28	3997.31	8089.42
Top Width (ft)	999.85	Top Width (ft)	429.73	102.92	467.19
Vel Total (ft/s)	8.68	Avg. Vel. (ft/s)	6.87	8.08	10.00
Max Chl Dpth (ft)	8.66	Hydr. Depth (ft)	0.99	4.81	1.73
Conv. Total (cfs)	91786.5	Conv. (cfs)	17826.6	24459.9	49500.0
Length Wtd. (ft)	146.19	Wetted Per. (ft)	429.95	104.10	467.46
Min Ch El (ft)	1374.30	Shear (lb/sq ft)	1.64	7.93	2.89
Alpha	1.07	Stream Power (lb/ft s)	11.30	64.02	28.85
Frctn Loss (ft)	7.82	Cum Volume (acre-ft)	5.98	3.91	5.38
C & E Loss (ft)	0.14	Cum SA (acres)	0.49	0.36	0.89

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach A RS: 19.8173

INPUT
Description: 19.8173
Station Elevation Data num= 128

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4341.9341381.1164345.682 1381.344354.8281381.1734362.2711381.0694375.6361380.535
4379.2681380.3434391.2531378.7594395.5471378.1414396.4971378.2894400.5021378.608
 4412.651379.8924415.7011379.5844421.1091379.1874427.0451379.3614433.1121379.544
4440.8621379.1774446.5051378.5844452.5571379.3364460.0851380.2754487.7541380.526
4493.5351380.536 4499.691380.5034521.3641380.4924529.9141380.4714546.0751380.314
4556.6521380.1394571.5171379.8294577.6861379.875 4586.021379.9744603.1351380.204
 4609.721380.2924614.139  1380.24636.5271379.8944649.4091379.9684658.0271380.143
4664.9491379.6364672.9831378.9564687.3881377.763 4694.381377.1314699.6631377.583
4707.2861378.1194729.4391379.1434732.2611379.2824734.8611379.3274767.9741380.002
4784.2921379.9964799.4091379.8444812.0571379.7474816.5131379.808 4841.191379.435
4843.8141379.3754845.4961379.3864868.1881379.5844871.1091379.4854876.109 1379.31
4883.2351379.2044889.7761379.0994890.2981379.0964890.9551379.0844907.9921378.791
4929.2711378.4284930.3081378.3974930.6241378.3934932.9671378.2434952.8491377.033
4959.2971377.422 4968.261377.9464974.3361377.6424980.2381377.3544985.7061375.696
5000.2891372.5455026.003 1375.855035.1971376.982 5036.451377.1565037.8041377.436
 5045.791377.4935073.6461377.7475073.7371377.7445090.7881377.1815115.2041376.629
5122.5561376.212  5138.31376.7975138.6731376.8165140.3751376.7235149.3361376.211
5149.8241376.1715152.5861376.3075169.0921377.5825196.7041377.6655205.421 1377.65
5213.8991377.782 5242.371377.7135261.7511376.9695266.8151376.6695300.7141377.215
5308.3961377.3225328.654 1376.885352.1691376.8825360.8561377.4295369.6361377.545
5394.5131377.187 5416.811377.4775434.3491377.4355435.1261377.458 5438.251377.406
5454.811 1377.065473.1561377.3455485.9291377.5725493.9041377.4685516.2931377.522
 5544.631377.7895555.9971377.953 5560.311377.5555572.1031376.5635590.6251377.934
```

```
5597.829 1378.63 5603.831378.5895619.8931378.7225628.3441378.6465651.7711378.925
5658.3521378.9915663.336 1379.175685.2291379.3995700.9771378.7865709.7341379.364
5733.6331380.2945756.3061380.5425762.2421380.612

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
4341.934    .035 4968.26    .0855073.737    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4968.265073.737              347435.1131     500            .1          .3
Left Levee       Station=4658.027       Elevation=1380.143
Blocked Obstructions      num=        1
   Sta L   Sta R    Elev
4341.9344493.5351380.536

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1379.73   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                1.00   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)            1380.73   Reach Len. (ft)            400.00     400.00     400.00
  Crit W.S. (ft)            1379.71   Flow Area (sq ft)          236.05     380.90    1375.75
  E.G. Slope (ft/ft)       0.015052   Area (sq ft)               236.05     380.90    1375.75
  Q Total (cfs)            15000.00   Flow (cfs)                1224.77    1911.80   11863.43
  Top Width (ft)             988.77   Top Width (ft)             237.83     105.48     645.46
  Vel Total (ft/s)             7.53   Avg. Vel. (ft/s)             5.19       5.02       8.62
  Max Chl Dpth (ft)            7.19   Hydr. Depth (ft)             0.99       3.61       2.13
  Conv. Total (cfs)        122263.5   Conv. (cfs)                9982.9    15582.9    96697.7
  Length Wtd. (ft)           400.00   Wetted Per. (ft)           238.10     106.40     645.83
  Min Ch El (ft)            1372.55   Shear (lb/sq ft)             0.93       3.36       2.00
  Alpha                        1.13   Stream Power (lb/ft s)       4.83      16.88      17.26
  Frctn Loss (ft)              6.68   Cum Volume (acre-ft)         5.49       2.91       3.84
  C & E Loss (ft)              0.03   Cum SA (acres)

Warning - Divided flow computed for this cross-section.
Warning - A flow split was encountered.  The program first calculated the momentum of both channels
          below the junction.  An energy balance was performed across the junction from the stream with
          the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
          cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
          surface was used.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION            RIVER: Harquahala
REACH: Upper Reach B       RS: 19.7349

INPUT
Description: 19.7349
Station Elevation Data     num=      110
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
4357.5961374.4234358.7851374.3554367.9631374.0144376.0431373.615  4385.1 1373.23
4393.0021373.4454401.9521373.4094405.4171373.0924408.3761372.9624413.6721372.953
4423.0071373.1854427.8021373.4444429.8711373.0894437.3591372.2454443.7971373.298
4445.3121373.6114453.2291373.7574458.6271373.2894474.853 1372.294475.885 1372.22
4476.4231372.1724483.7221372.2544499.7791372.1284503.9521371.759 4505.941371.467
4510.4161371.6224524.9341371.479 4526.311371.3714528.203  1371.3 4541.36 1370.43
4547.6391370.9854561.1161372.531 4568.52 1372.684593.3091372.5044595.7531372.439
4617.2661371.863 4620.891371.7414626.8351371.5164632.1021371.2494636.3211371.272
4642.1881371.8234663.9391371.945 4673.071371.9514687.6871371.4124691.7061371.383
4722.9611371.7394728.1021371.7924728.8681371.7384729.9641371.6344734.4241371.276
4758.8831369.193 4762.051368.9874779.3151367.6084788.6151366.9024801.346 1368.29
4810.289 1368.954815.6521369.0274837.6351369.9364838.3941369.9654838.535 1369.97
4838.692 1369.984860.8251370.2914863.2561370.2624878.0221369.8444899.068 1369.36
4900.8471369.3154902.2751369.2624913.9411368.6584919.9991368.3524924.8451368.401
4935.6191368.572  4938.11368.5784955.3031368.8754959.685 1368.854967.0491368.706
4974.3341367.6964975.8391367.4544978.2441367.2394985.7611366.3284991.8371366.392
 4999.951366.3315007.5211366.6965012.7381367.0535016.1351366.6865023.3061366.535
5031.8661368.185 5032.711368.3345033.1521368.4115034.6431368.6055049.4061370.597
  5059.61372.0565064.2151372.3515081.2391373.6285097.1941373.9525102.8351374.139
5109.0861375.0075109.7762375.0745112.2861375.1485123.8351375.257 5127.531375.433
5129.3011375.457 5130.821375.0765140.4571375.6485145.7631375.6735147.1481375.555
5150.5391375.9325159.0581376.8895169.6111378.2175182.0261379.6895182.9421379.757

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
4357.596    .0354967.049    .0855034.643    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4967.0495034.643             398466.6451     399            .1          .3
Left Levee       Station=4453.229       Elevation=1373.757

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1372.70   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                1.32   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)            1374.02   Reach Len. (ft)            398.00     466.65     399.00
  Crit W.S. (ft)            1372.69   Flow Area (sq ft)         1063.63     385.65      62.88
  E.G. Slope (ft/ft)       0.018842   Area (sq ft)              1063.63     385.65      62.88
  Q Total (cfs)            13750.00   Flow (cfs)               10259.45    2943.71     546.84
  Top Width (ft)             600.70   Top Width (ft)             498.87      67.59      34.24
  Vel Total (ft/s)             9.09   Avg. Vel. (ft/s)             9.65       7.63       8.70
  Max Chl Dpth (ft)            6.37   Hydr. Depth (ft)             2.13       5.71       1.84
  Conv. Total (cfs)        100169.4   Conv. (cfs)               74740.6    21445.1     3983.8
  Length Wtd. (ft)           410.55   Wetted Per. (ft)           499.50      67.97      34.50
  Min Ch El (ft)            1366.33   Shear (lb/sq ft)             2.50       6.67       2.14
  Alpha                        1.03   Stream Power (lb/ft s)      24.16      50.94      18.65
  Frctn Loss (ft)              6.25   Cum Volume (acre-ft)        90.59      10.46      52.94
  C & E Loss (ft)              0.09   Cum SA (acres)              53.03       3.25      25.38
```

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.6465

INPUT
Description: 19.6465
Station Elevation Data num= 81

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4438.759 1367.868 4452.451367.7714452.8211367.7564452.9811367.7494484.7541366.369
4486.586 1366.094489.842 1365.374494.4051364.4824497.811 1364.664515.1811366.064
 4525.291365.5994526.9861365.5714546.3121365.1524552.2761365.0694552.0041365.052
4552.4551365.007 4564.271364.4794578.4171365.8174581.1231366.0894590.7991366.262
4621.4911366.6654628.5971366.3694644.1981365.3884654.4851365.3014673.4191365.365
4686.1381365.2514692.9391365.2014698.4711365.1354715.6431365.0884718.8471365.111
4730.7991365.1294740.5321364.8624750.7311363.9424770.1081362.9974772.7471362.995
4774.4651363.0644776.3271363.1084791.2741363.2374803.492 1363.794805.3631363.763
4806.989 1363.754813.1641363.6294817.7971363.661 4834.841363.0764836.0671362.976
4837.2921362.8874842.2691362.533 4845.581362.849 4858.221363.597 4862.011363.499
4879.7711363.459 4884.761363.5144912.2171363.1834913.0351363.1764913.2071363.173
4930.2041362.6864938.607 1362.324957.0451362.4194969.3921362.2774976.2871362.092
4984.9221361.2654999.5821359.8545000.4771359.8955001.2071359.9755016.4621361.383
5019.4351361.3765033.7871361.2775046.8091362.2075054.0681362.7415058.8661363.131
5076.333 1364.575104.8641364.7555107.3341364.7555108.7041364.836 5118.681364.666
5130.4961364.4875132.3981364.7315156.6131368.1155161.7711368.5165166.5991369.051
5175.6631369.887
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4438.759    .0354976.287    .0855033.787    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4976.2875033.787              523455.3716     397            .1        .3
Left Levee      Station=4621.491      Elevation=1366.665
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1366.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.01	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1367.67	Reach Len. (ft)	523.00	455.37	397.00
Crit W.S. (ft)	1366.67	Flow Area (sq ft)	1121.50	327.21	287.08
E.G. Slope (ft/ft)	0.012573	Area (sq ft)	1121.50	327.21	287.08
Q Total (cfs)	13750.00	Flow (cfs)	9161.33	2040.22	2548.45
Top Width (ft)	668.30	Top Width (ft)	498.35	57.50	112.45
Vel Total (ft/s)	7.92	Avg. Vel. (ft/s)	8.17	6.24	8.88
Max Chl Dpth (ft)	6.81	Hydr. Depth (ft)	2.25	5.69	2.55
Conv. Total (cfs)	122625.3	Conv. (cfs)	81702.6	18195.1	22727.6
Length Wtd. (ft)	496.62	Wetted Per. (ft)	498.93	57.68	112.73
Min Ch El (ft)	1359.85	Shear (lb/sq ft)	1.76	4.45	2.00
Alpha	1.03	Stream Power (lb/ft s)	14.41	27.77	17.74
Prctn Loss (ft)	6.40	Cum Volume (acre-ft)	80.61	6.64	51.33
C & E Loss (ft)	0.05	Cum SA (acres)	48.47	2.58	24.71

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.5602

INPUT
Description: 19.5602
Station Elevation Data num= 82

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4645.9361358.6584662.5781358.2214669.0461358.0544670.2051358.0134681.5441357.748
4696.2521357.4664706.6161357.3144716.3331356.8134717.6541356.7854723.4611356.484
4727.9181356.1744732.4551355.7544736.7071355.861 4749.581356.0384766.377 1354.68
4775.363 1353.964791.8661354.591  4805.31355.0924808.2091355.2034817.1761355.064
4821.2841355.0324824.4561355.0394841.8821354.9864860.6471354.5124863.826  1354.4
4867.4671354.3294880.3821353.9274898.7881354.7314898.8921354.7364905.0691354.631
4912.7771353.7184913.2181353.6584915.5031353.8054923.6521354.3514926.0031354.456
4930.8521354.3194934.6851354.1934939.4571354.4314947.3351354.8174954.3071354.783
4959.2651354.7154961.4661354.7554964.9981354.7344974.6121354.9144985.9151355.264
4999.1371353.6494999.6941353.5825007.1931354.3145012.3811354.6835015.4031354.236
5018.9941353.9395024.8611353.6785029.1521354.3915036.1561355.3955053.4811355.795
5063.3821356.3695071.9671356.5935079.5381356.6045088.5621356.6545101.8151356.023
5104.0521356.1445115.7581356.4625121.4611357.235 5130.541358.8715145.1421360.807
5149.9251361.2885157.983 1361.745162.5091361.8875180.4271363.2395180.9351363.226
5181.3751363.244    51991363.1865208.7651363.7065210.0371363.7875214.092 1364.51
5216.3991364.9825217.0771365.1075222.9541365.4345233.0281367.0945240.0061368.034
5249.1531369.5495250.0531369.725
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4645.936    .0354985.915    .0855036.156    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4985.9155036.156              375377.9404     331            .1        .3
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1358.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.90	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1360.12	Reach Len. (ft)	375.00	377.94	331.00
Crit W.S. (ft)	1358.54	Flow Area (sq ft)	946.03	197.07	170.97
E.G. Slope (ft/ft)	0.018282	Area (sq ft)	946.03	170.07	170.97
Q Total (cfs)	13750.00	Flow (cfs)	11101.76	1153.47	1494.77
Top Width (ft)	464.36	Top Width (ft)	323.34	50.24	90.78
Vel Total (ft/s)	10.46	Avg. Vel. (ft/s)	11.74	5.85	8.74
Max Chl Dpth (ft)	4.64	Hydr. Depth (ft)	2.93	3.92	1.88
Conv. Total (cfs)	101693.1	Conv. (cfs)	82107.1	8530.9	11055.1
Length Wtd. (ft)	369.79	Wetted Per. (ft)	323.66	50.57	90.96
Min Ch El (ft)	1353.58	Shear (lb/sq ft)	3.34	4.45	2.15
Alpha	1.12	Stream Power (lb/ft s)	39.15	26.03	18.76
Frctn Loss (ft)	7.46	Cum Volume (acre-ft)	68.20	3.90	49.25
C & E Loss (ft)	0.09	Cum SA (acres)	43.54	2.01	23.78

Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Program found supercritical flow starting at this cross section.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.4887

INPUT
Description: 19.4887
Station Elevation Data num= 84

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4506.294	1353.982	4518.027	1353.834	4539.605	1353.496	4543.179	1353.359	4568.499	1352.712
4569.714	1352.623	4574.937	1352.384	4589.562	1352.284	599.071	1352.147	4617.933	1350.31
4618.706	1350.234	4619.321	1350.244	4643.006	1350.396	4643.196	1350.398	4643.496	1350.394
4665.967	1350.084	4676.563	1349.852	4697.227	1349.938	4705.551	1349.803	4714.823	1349.439
4725.656	1349.052	4730.542	1348.913	4739.045	1349.192	4760.559	1349.603	4770.338	1349.548
4794.901	1349.702	4815.151	1348.927	4817.509	1348.828	4821.256	1348.285	4827.366	1347.33
4834.394	1348.245	4843.527	1349.482	4847.758	1349.391	4859.041	1349.127	4866.277	1349.37
4872.025	1349.711	4883.647	1349.731	4887.588	1349.792	4890.055	1349.632	4900.102	1348.958
4912.258	1349.195	4914.309	1349.224	4917.222	1349.136	4929.943	1348.941	4952.431	1349.365
4954.322	1349.402	4955.313	1349.318	4970.923	1348.672	4978.253	1348.964	989.662	1349.224
4994.407	1348.454	4998.901	1347.871	5005.315	1348.655	5006.479	1348.685	5011.301	1348.285
5019.128	1348.602	5026.833	1349.146	5034.146	1349.576	5044.743	1349.986	5053.495	1350.279
5059.271	1350.489	5067.593	1350.658	5071.948	1350.809	5080.758	1350.971	5094.057	1351.431
5099.504	1351.556	5108.352	1352.029	5116.027	1352.465	5120.529	1352.56	5128.68	1352.379
5133.654	1352.201	5135.08	1352.237	5143.195	1352.258	5145.508	1352.475	5154.682	1353.555
5164.836	1354.874	5166.251	1354.901	5170.568	1355.038	5175.599	1355.157	5183.392	1355.929
5190.788	1357.159	5191.942	1357.352	5193.889	1357.696	5209.88	1359.748		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4506.294	.035	4989.662	.085	5006.479	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4989.662	5006.479		570	594.323	517	.1	.3

Right Levee Station=5120.529 Elevation= 1352.56

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1352.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.50	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1353.91	Reach Len. (ft)	570.00	594.32	517.00
Crit W.S. (ft)	1352.62	Flow Area (sq ft)	1136.34	66.96	222.51
E.G. Slope (ft/ft)	0.014949	Area (sq ft)	1136.34	66.96	222.51
Q Total (cfs)	13750.00	Flow (cfs)	11529.88	357.45	1862.67
Top Width (ft)	540.66	Top Width (ft)	415.31	16.82	108.53
Vel Total (ft/s)	9.64	Avg. Vel. (ft/s)	10.15	5.34	8.37
Max Chl Dpth (ft)	5.08	Hydr. Depth (ft)	2.74	3.98	2.05
Conv. Total (cfs)	112461.2	Conv. (cfs)	94302.8	2923.5	15234.8
Length Wtd. (ft)	559.21	Wetted Per. (ft)	415.79	16.96	108.64
Min Ch El (ft)	1347.87	Shear (lb/sq ft)	2.55	3.68	1.91
Alpha	1.04	Stream Power (lb/ft s)	25.88	19.66	16.00
Frctn Loss (ft)	6.09	Cum Volume (acre-ft)	59.23	2.75	47.75
C & E Loss (ft)	0.12	Cum SA (acres)	40.36	1.72	23.02

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.3761

INPUT
Description: 19.3761
Station Elevation Data num= 156

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3863.945	1345.844	3881.334	1345.683	902.812	1345.872	3914.904	1345.864	3915.971	1346.024
3927.074	1345.368	3952.373	1344.476	3971	1344.126	4025.703	1342.867	4031.85	1342.702
4033.912	1342.721	4040.406	1342.669	4065.822	1342.591	4069.304	1342.779	4118.738	1343.297
4124.999	1343.055	4134.53	1343.057	4151.617	1342.878	4186.844	1343.239	4192.821	1343.052
4216.212	1341.391	4231.011	1339.913	4231.105	1339.903	4231.221	1339.911	4231.593	1339.948
4251.98	1342.043	4267.577	1341.939	4277.574	1342.769	4291.904	1342.393	4303.504	1342.999
4310.85	1342.84	4333.839	1342.105	4338.655	1341.889	4354.226	1342.125	4356.778	1340.988
4366.598	1340.397	4372.631	1339.541	4376.982	1339.041	4383.071	1339.627	4391.461	1340.107
4398.843	1340.224	4414.338	1340.395	4435.289	1340.575	4438.749	1340.579	4439.533	1340.632
4440.184	1340.546	4455.32	1339.997	4464.783	1339.336	4470.796	1339.767	4489.92	1342.642

```
4493.0381342.5764515.1451341.8584541.0481342.438 4542.961342.4664547.891 1341.97
4551.6731341.6094552.9181341.6114583.1681341.5184584.852 1341.444596.9961340.987
4603.7681340.7774610.0921340.6014615.5991340.4724616.7771340.5534618.8391340.742
4630.9851341.8264636.5111342.3984642.9941342.1714652.1621341.9354656.7251341.918
4669.1811342.011    46911342.474 4699.05 1342.654710.8381343.2434717.8751343.547
4724.4111343.6634733.9251343.5434740.9161343.3924747.8991342.5154757.5261341.728
4767.3411341.7894784.2321342.5374784.8041342.6014785.8641342.3494796.8521340.118
4804.043 1340.614811.8261341.1384816.0191341.1264818.2451341.1714821.9211341.216
4830.2111340.3864836.0781339.7514841.9161341.314 4844.991341.7734846.6161341.743
4855.0491341.681 4887.871341.6624900.0831341.4964912.3121341.5694932.6761340.985
4941.8491340.8514957.1221341.2074972.9411341.4194980.9031341.5544989.2911341.799
    49971341.1615000.4461340.8145007.8391341.3295014.078 1341.985016.574  1341.7
5025.4111341.7215028.8831341.6665034.8481341.6325047.697 1340.975053.7041340.616
5061.4541340.5935075.276 1340.815077.7191340.8385079.103 1340.895089.996 1340.89
5097.9441341.2995110.8951341.5935126.9391341.8035143.431 1342.365155.0561342.689
5175.7151342.9665281.6361342.8695182.8391342.6965216.1771341.7025220.0681341.787
5220.3221341.7835273.9211341.7035275.7951341.6985287.5381342.5425300.4531341.401
5301.8971341.3675311.9861341.3525318.9741341.3295319.4711341.2895329.808 1340.39
5337.9491340.7955344.4931341.0135350.0831341.1295372.354 1341.415391.867 1341.82
5402.9081342.1815414.6811342.6965453.6541344.2595455.8371344.3535456.2081344.375
5459.2071344.6195475.4841346.0135484.6771346.7675496.9941347.983 5510.241349.263
5513.729 1349.52
```

```
Manning's n Values          num=        3
      Sta   n Val      Sta   n Val      Sta   n Val
3863.945     .0354989.291     .0855014.078     .035

Bank Sta: Left   Right      Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4989.2915014.078                578  578.96     500            .1          .3
Left Levee       Station=4186.844       Elevation=1343.239
Right Levee      Station=5175.715       Elevation=1342.966
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1343.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.95	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1343.96	Reach Len. (ft)	578.00	578.96	500.00
Crit W.S. (ft)	1343.14	Flow Area (sq ft)	1191.05	41.52	548.02
E.G. Slope (ft/ft)	0.019862	Area (sq ft)	1191.05	41.52	548.02
Q Total (cfs)	13750.00	Flow (cfs)	9618.15	143.91	3987.94
Top Width (ft)	1191.26	Top Width (ft)	758.07	24.79	408.40
Vel Total (ft/s)	7.72	Avg. Vel. (ft/s)	8.08	3.47	7.28
Max Chl Dpth (ft)	3.97	Hydr. Depth (ft)	1.57	1.68	1.34
Conv. Total (cfs)	97563.6	Conv. (cfs)	68245.9	1021.1	28296.6
Length Wtd. (ft)	540.50	Wetted Per. (ft)	759.71	24.88	408.59
Min Ch El (ft)	1340.81	Shear (lb/sq ft)	1.94	2.07	1.66
Alpha	1.02	Stream Power (lb/ft s)	15.70	7.17	12.10
Frctn Loss (ft)	9.76	Cum Volume (acre-ft)	44.01	2.01	43.18
C & E Loss (ft)	0.16	Cum SA (acres)	32.68	1.44	19.95

Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed valuea.
Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

```
CROSS SECTION          RIVER: Harquahala
REACH: Upper Reach B      RS: 19.2665

INPUT
Description: 19.2665
Station Elevation Data     num=      233
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 3618.331336.7363645.6921336.7283662.5661336.2283668.6861335.9853684.5411336.024
3710.3031336.3113714.1361336.3413715.2011336.3293716.9581336.299 3741.061335.771
3769.305 1335.543770.5041335.5323774.3961335.4373796.1771334.1553812.8221334.139
3821.5551333.8823833.3971333.4313838.4241333.1833854.9981334.1423856.124 1334.25
3870.5931334.173 3880.891334.1873885.7361334.1833888.197 1333.743892.2221333.228
3895.058 1333.353904.3561333.8953915.4561333.7133915.8751333.7033936.4711333.272
3960.4581333.0343966.9791332.8963973.1971332.2513975.4991331.9343977.1621332.103
 3984.48 1332.97 4005.85 1332.264009.1571332.1594012.1711332.2064014.8791332.255
  4085.11332.314 4089.511332.2124090.3411332.2694096.0421332.2564096.3091332.259
4099.6191332.3394103.8411332.4254105.1241332.4194112.6371332.1444113.5631332.108
4119.4721332.4394124.7451332.6924129.2411332.7044156.913  1332.74170.2971332.705
4170.8771332.7044171.7321332.6774186.3051332.1824193.8891331.8634197.6041331.627
4202.2781331.9354216.6311332.5214229.4131332.8434235.3831333.1514264.3721333.806
  4273.81333.8624288.8841333.6094302.1811333.6724313.136 1333.684326.4271333.726
4335.9131333.3224336.5791333.2994340.0491333.1974361.7541332.7014368.425 1332.89
4389.8751333.3584402.8521333.2284403.3721333.2244405.1671331.2534429.0731333.754
4434.7241333.7354455.0961333.3994456.0771333.236 4459.53 1332.784465.483 1331.78
4466.4581331.6694467.0391331.5764476.4941329.5114480.7121330.3844493.1621332.188
4493.4021332.2314493.5521332.2384517.3031333.1034524.5121333.2984526.6951333.214
4532.5951332.9154538.6291332.784 4545.751330.2724546.4331330.0254548.3181330.434
4553.4811331.2584555.3611331.6314557.8121331.8854559.008 1331.924578.597 1332.58
4587.3591332.7054595.9871332.793  4609.21332.8944624.065  1333.14636.9831333.269
4655.5531333.5124680.863 1333.83  4684.31333.8884689.2871334.0044693.9171333.552
4700.5991333.0464703.3591333.4144716.4881334.5034722.5871335.042 4724.481335.201
4748.7991334.4184771.8461335.0844778.9481335.1234782.2341334.9774799.6951334.482
4804.5641333.8724806.4791333.7034819.3051334.3114822.2431334.4544826.5761333.946
4834.0981332.8154837.2071333.2234842.2011333.5914851.0421333.4734855.5921333.438
4858.066 1333.654859.2831333.8394860.283 1333.884867.3581334.6084880.6571334.854
4889.7041334.9644892.1171335.1364908.6751334.2244919.1671333.859 4920.261333.843
```

```
4925.0071333.2324932.4371332.2314934.9891332.7864941.9381332.9864948.6341334.164
4957.7641334.5764966.578 1334.224977.9861332.9444979.0011333.5354987.803 1332.54
4999.5881331.0585002.392 1331.315009.0281332.3445015.8871332.2185016.3611333.292
5032.2281333.2085042.1041334.2645058.4021334.2925066.7521334.3275091.935 1334.21
5101.2721334.5085108.9321334.4225117.0391334.1525122.5421333.5145128.1241332.366
5133.5391333.0635136.8961333.7775151.0771333.5985159.2361333.8245167.849 1333.76
5174.3761334.3495192.7321334.3175200.938 1334.545221.037 1334.275224.746 1334.18
5232.0541333.426 5240.371334.5645246.2571334.7145263.8491334.7135285.6271334.172
5312.8191334.579 5333.981334.5495359.3251334.3995376.2921334.2775389.7921334.081
5424.6321333.1245451.5931332.6175469.7011332.1525469.7191332.1515481.615 1331.86
5484.1461331.6085501.3291331.9915504.2111332.1665558.0641332.1875560.5411332.263
5593.9721330.8195628.6221329.3325640.0251328.9555641.8131329.0835646.9311329.758
5651.0111329.2475657.1571328.6345662.8231328.6965670.7551328.9915694.8641330.259
5704.9881330.9415717.8931330.685 5742.531330.9875752.059  1331.45753.0561331.452
5757.9811331.5375790.3151332.4345803.5011332.6615841.271 1333.395852.0591333.656
5883.9571334.265 5903.661334.5975908.6731334.6435941.818 1335.195954.6361335.353
5964.8341335.6465990.521 1336.126000.081  1336.4
```

```
Manning's n Values          num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
 3618.33     .0354966.578     .0855042.104     .035

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
     4966.5785042.104                534558.4567      540              .1        .3
Left Levee       Station=3904.356       Elevation=1333.895
```

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1333.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.92	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1334.79	Reach Len. (ft)	534.00	558.46	540.00
Crit W.S. (ft)	1334.08	Flow Area (sq ft)	841.60	70.09	1063.90
E.G. Slope (ft/ft)	0.014669	Area (sq ft)	841.60	70.09	1063.90
Q Total (cfs)	13750.00	Flow (cfs)	4342.70	165.74	9241.56
Top Width (ft)	1438.28	Top Width (ft)	856.34	59.01	522.94
Vel Total (ft/s)	6.96	Avg. Vel. (ft/s)	5.16	2.36	8.69
Max Chl Dpth (ft)	5.24	Hydr. Depth (ft)	0.98	1.19	2.03
Conv. Total (cfs)	113528.2	Conv. (cfs)	35855.9	1368.4	76303.8
Length Wtd. (ft)	537.36	Wetted Per. (ft)	858.68	59.39	523.59
Min Ch El (ft)	1331.06	Shear (lb/sq ft)	0.90	1.08	1.86
Alpha	1.22	Stream Power (lb/ft s)	4.63	2.56	16.16
Frctn Loss (ft)	9.16	Cum Volume (acre-ft)	30.52	1.27	33.93
C & E Loss (ft)	0.01	Cum SA (acres)	21.97	0.88	14.61

```
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
          cross section slice/secant method to find critical depth.
```

```
CROSS SECTION          RIVER: Harquahala
REACH: Upper Reach B      RS: 19.1607

INPUT
Description: 19.1607
Station Elevation Data     num=      263
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
3547.9281328.2583566.8891328.1313582.318 1328.023596.8171327.9243618.4231327.682
 3641.431327.4383643.8711327.1093649.5641326.2673650.3281326.3133660.8561326.884
 3662.131327.0263703.0061326.7663718.4931326.6043726.414 1326.57 3743.951326.585
3803.0211325.919 3836.591325.1363846.173 1324.953848.8341324.9293858.2791325.092
3879.4441324.8113887.5761324.7313894.4271323.7323896.4451323.3213899.9641323.861
3903.2471324.5163933.4711324.5483950.9861324.6193957.193 1323.953959.6671323.563
3968.2771324.018 3972.141324.3513979.2571324.8373982.6141325.2553986.191 1325.09
3995.0021324.6713999.5751323.5734003.9771322.5764008.1271324.1054011.324 1324.75
4028.542 1324.634040.5511324.5434045.8271324.5184047.4681324.5044051.8461324.375
4058.5311324.1284060.0591324.0394062.0581324.1174075.047 1324.134090.0371324.793
4094.0951324.8494100.8991325.0894109.4341325.3514115.2251325.4224129.7191325.141
4140.5741324.8454141.9931324.6814146.2991324.6664150.4161324.4714159.8041324.693
4161.5241324.8224162.0971324.7334170.4291323.129 4171.321323.2884178.8621324.819
4180.913 1324.694185.5831324.2664194.1821323.7314195.5411323.6654223.3251324.562
4225.9511324.6514226.1461324.649 4247.461324.8014264.4321324.6924273.5771324.564
4277.5031324.5484288.3941324.4724300.4671324.314     43061323.935 4309.881323.573
4328.1161324.6054328.5821324.6314329.0671324.6454354.8321325.1884363.5261325.122
4366.6591324.9324380.9141324.619  4384.61323.732 4390.141322.6234397.9251324.154
  4399.41324.455  4403.41324.6854422.3131325.5864441.6461325.9554454.4131326.118
4472.1281325.6084476.7771325.4664482.856     13244489.8091322.7234494.1281323.454
4499.2711324.1474513.1631323.5374513.2221323.5384530.1271325.4894533.4041325.783
4538.2951325.8954567.0171325.9764571.0591326.0124581.4091325.4764592.3241324.757
4600.7811322.6124602.5651322.063 4605.391322.561 4614.66 1324.354619.3091323.672
4621.324 1323.844629.0611324.6044630.0241324.5984632.8861324.5764634.2761324.564
4639.8441324.4544646.1231324.2754652.5081324.1234657.9241323.5564659.896 1323.28
4691.7491325.9774695.0271326.2214700.2641326.4474706.6531326.5334741.3921326.318
4767.8561325.8964792.3271325.6824808.1111325.3924819.6111325.239 4837.571325.066
4845.9191324.8784857.489 1325.584858.0991325.6244873.9411325.9074898.7221326.344
 4898.931326.3454901.2531326.3664917.2731326.7674924.201 1326.924934.4541325.714
4935.3571325.6234936.2061325.676 4943.881326.2484948.1811326.4364952.572 1326.68
4965.5131326.7084966.2151326.706  4966.71326.6364974.9181325.5554977.0431326.052
4980.5191326.3794986.2781326.3324991.5421326.286  4992.91326.1624996.5941325.387
5001.0531324.6075003.5211325.0755008.8811326.3295026.1631326.0625034.2071325.932
5047.2081326.1095050.5781326.1515054.0251325.9195057.9861325.7155062.1321326.318
5065.8961326.6815073.9051326.6785089.0921326.635 5110.921326.6435123.305 1326.72
5141.8471326.2265145.0971325.9325162.4661326.4375172.3311326.9085179.0651326.931
5190.6051326.9295205.8961326.8085228.662  1326.65236.6771326.0185241.7321325.457
5246.8751325.9055256.1281326.3665260.4871326.4385262.6611326.5095295.6841326.938
5314.6661327.142 5317.681327.1835334.5731327.2115344.8111326.9625367.9851326.376
5374.0541326.189 5375.841325.8755387.0571323.5375391.3441324.4145397.7571324.968
5403.9331324.8095412.8191324.628  5433.11325.8515436.8841326.0185464.2921326.295
5491.4351326.5655498.479 1326.475527.6721325.7425559.8341324.3585567.2121324.174
 5570.711323.9895582.8041323.0355588.3051322.1685592.8021322.5135597.2341323.085
```

5599.104 1322.945599.6981322.9075606.187 1322.985608.7171322.9855614.8151321.451
5617.451320.7675621.6891321.5385628.4661322.8385632.9381323.2925641.195 1323.6
5652.2341323.4135657.7651323.3185666.3731323.6985673.7421323.8555683.9561323.818
5693.3721323.8815697.4361323.8885706.4521323.4795707.3461323.4615716.4741324.174
5719.0191324.3385722.7851324.2135733.4511324.3815767.0861324.649 5785.96 1324.79
5793.2281324.5055803.555 1324.345809.7461324.5635821.3191324.9325849.0661325.715
5850.61325.7395875.1271325.9535890.9411326.1855897.3861326.3065910.9311326.604
5931.8671326.962 5951.671326.9565954.5331326.8755963.2981326.7455969.3421326.985
5994.8141327.8126017.9381328.1986053.0381328.7076104.1071329.6186107.6361329.657
6108.425 1329.646110.797 1329.65 6140.491329.791

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
3547.928	.035	4991.542	.085	5008.881	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4991.5	5008.881		422	554.2729	519	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1326.07	Element			
Vel Head (ft)	0.70	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1326.77	Reach Len. (ft)	422.00	554.27	519.00
Crit W.S. (ft)	1326.09	Flow Area (sq ft)	1321.77	11.06	736.89
E.G. Slope (ft/ft)	0.014930	Area (sq ft)	1321.77	11.06	736.89
Q Total (cfs)	13750.00	Flow (cfs)	8311.96	19.50	5418.54
Top Width (ft)	1539.31	Top Width (ft)	1040.78	14.44	484.09
Vel Total (ft/s)	6.64	Avg. Vel. (ft/s)	6.29	1.76	7.35
Max Chl Dpth (ft)	5.30	Hydr. Depth (ft)	1.27	0.77	1.52
Conv. Total (cfs)	112532.5	Conv. (cfs)	68026.6	159.6	44346.3
Length Wtd. (ft)	474.52	Wetted Per. (ft)	1044.29	14.74	485.39
Min Ch El (ft)	1324.61	Shear (lb/sq ft)	1.18	0.70	1.41
Alpha	1.02	Stream Power (lb/ft s)	7.42	1.23	10.40
Frctn Loss (ft)	7.95	Cum Volume (acre-ft)	17.26	0.75	22.77
C & E Loss (ft)	0.07	Cum SA (acres)	10.34	0.41	8.37

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Upper Reach B RS: 19.0557

INPUT
Description: 19.0557
Station Elevation Data num= 249

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3277.6671320.2213281.2851320.1893315.3191319.9143325.4761319.9563339.5411319.917									
3373.1041319.8623376.6661319.715 3380.61 1319.783388.7311319.7023407.4911319.745									
3431.7621319.3283465.2641319.2633506.4571319.3473520.9491319.0583575.874 1317.81									
3579.5081317.1523584.7391316.1553592.823 1317.63594.6461317.947 3635.041318.106									
3636.2631318.1163638.5121318.0993661.7681318.0473691.5871318.0543693.7732317.561									
3699.4811317.0333704.5321316.2973711.4261317.5553714.7321318.3773738.5131318.708									
3749.3961318.8783751.7441318.8073764.4911318.3823774.8691318.1363800.2641317.919									
3801.2981317.9093801.8871317.8563805.4581317.5073814.1681316.5733816.3331316.765									
3825.798 1317.643840.7871318.1013844.5591318.2143867.4221318.5443884.903 1318.78									
3885.1451318.773 3866.051316.7393893.4091318.4213919.8221318.0063943.4561317.758									
3946.4251317.7173948.8021317.3513952.2851316.9833956.2981316.4673974.3811317.115									
3976.5561317.224 3995.11317.9284003.2171318.1914025.0671317.9134037.0311317.601									
4048.4182317.5194060.9191317.4824073.7651317.6094077.9191317.6514081.3221317.707									
4094.1891318.2114114.1631317.7274128.5831317.5864137.155 1316.554137.1671316.548									
4137.1731316.5494144.9981317.2634158.6261317.3034159.0021317.2974159.8161317.279									
4172.0381317.0584174.5491317.0414174.7691316.893 4179.66 1315.64180.0611315.525									
4187.1981317.2364187.5481317.2654193.6271317.1114206.171 1317.944207.8551317.365									
4211.6681316.4334220.3491314.5014224.6381315.2434244.2831317.5024251.5231317.502									
4257.1211317.527 4261.381317.6754274.7311317.955 4281.71318.1634287.4981318.051									
4297.9431317.7444306.3191317.467 4318.721317.8314340.2461318.6514350.8091318.668									
4372.4181318.8384375.9411318.8484383.473 1318.854386.0561318.846 4391.961318.474									
4403.4121318.4454407.7911318.4824410.3131318.5394417.0621318.575 4428.771319.289									
4439.7631319.9484449.0281319.7774471.8571319.1154488.151 1318.72 4496.091318.399									
4510.241318.0384529.1381317.8274546.1731317.6854549.2481317.3084556.7071316.954									
4559.6121317.1374568.0261317.5144570.1161317.6774580.648 1317.814587.1041318.024									
4598.5561318.356 4604.11318.3844625.054 1318.674634.323 1318.714637.073 1318.71									
4642.0991318.734 4651.081318.2744656.4521318.648 4662.31318.6584680.6371318.145									
4695.689 1317.924708.0371317.7344737.1671317.888 4752.321318.0654754.1051317.915									
4759.041317.3744763.6091318.0164766.207 1318.164775.6521318.4334793.1761318.658									
4812.561318.5834823.625 1318.574862.2521317.7384864.655 1317.654870.4081317.571									
4873.1811317.6634880.6641318.1864891.9381318.3544897.0531318.4844904.5171318.659									
4905.6681318.7014906.9831318.6634912.0421318.4144922.6911318.0144925.3011317.272									
4926.371 1316.324932.1781317.0934935.0781317.4144936.4461317.7674944.178 1318.4									
4953.573 1318.544964.7211318.691 49871318.3554991.9681318.2464993.7971317.675									
4999.8141315.7865006.4281316.9325010.8011318.1915018.337 1318.175033.0291318.262									
5038.2011318.1885050.459 1317.595059.734 1317.235066.1121317.5435077.937 1318.03									
5101.3471318.3465103.0131318.4065105.5461318.4635121.7681318.9885129.1171318.892									
5138.6581318.7255160.5341318.4885175.9721318.3055180.6351318.1225184.7391317.827									
5205.2511316.4645208.2621316.4395214.7361316.4875223.7611315.6435224.1111315.615									
5224.277 1315.625225.3511315.677 5231.411315.9875232.2581316.0665236.3521315.829									
5245.6631315.4575251.0671315.7785259.5911316.5015270.2421317.4395285.2541317.463									
5296.1851317.4485300.7781317.351 5326.241316.3725336.494 1316.235339.178 1316.06									
5357.031315.4575360.2841315.0085366.0491314.3085375.1581315.3715380.3941316.058									
5385.9051316.0785405.7191316.1475419.2641315.8025419.3781315.8015419.549 1315.8									
5443.7671315.5915447.1441315.8365449.6671315.9855454.6961315.8465469.3251316.042									
5496.5681316.609 5536.51317.0635551.9561317.0935575.4021315.5255577.3321315.418									
5579.5261315.3035587.4961316.2345589.0391316.4125589.3081316.4115592.3661316.431									
5632.9961316.6935636.1081316.6935639.7221316.7645671.7341317.5355673.8321317.598									
5711.6531318.4635714.9181318.509 5722.81318.6495750.1691319.1035760.7161319.074									
5795.7931319.7215819.9571320.0945842.8151320.2765854.8981320.471									

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

3277.667 .0354991.968 .0855010.801 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4991.9685010.801 446465.0548 437 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1318.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.82	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1319.39	Reach Len. (ft)	465.05	465.05	465.05
Crit W.S. (ft)	1318.77	Flow Area (sq ft)	888.71	31.19	1139.79
E.G. Slope (ft/ft)	0.016524	Area (sq ft)	888.71	31.19	1139.79
Q Total (cfs)	13750.00	Flow (cfs)	4316.29	95.89	9337.83
Top Width (ft)	1850.75	Top Width (ft)	1168.78	18.83	663.14
Vel Total (ft/s)	6.68	Avg. Vel. (ft/s)	4.86	3.07	8.19
Max Chl Dpth (ft)	4.26	Hydr. Depth (ft)	0.76	1.66	1.72
Conv. Total (cfs)	106965.6	Conv. (cfs)	33577.8	745.9	72641.9
Length Wtd. (ft)	465.05	Wetted Per. (ft)	1171.59	19.49	663.79
Min Ch El (ft)	1315.79	Shear (lb/sq ft)	0.78	1.65	1.77
Alpha	1.19	Stream Power (lb/ft s)	3.80	5.08	14.51
Frctn Loss (ft)	7.38	Cum Volume (acre-ft)	6.92	0.32	9.89
C & E Loss (ft)	0.01	Cum SA (acres)			

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split1 RS: 19.6872

INPUT
Description: 19.6872
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4757.063	1387.264	4762.458	1386.442	4778.267	1384.662	4797.35	1382.675	4817.948	1379.932
4825.321	1378.955	4868.618	1374.799	4879.334	1374.103	4900.683	1373.933	4952.217	1373.623
4960.424	1373.022	4969.512	1372.003	4979.943	1372.344	4980.227	1372.351	4980.476	1372.359
4981.362	1372.428	5004.884	1374.259	5014.033	1374.612	5020.668	1374.825	5046.321	1375.975
5079.981	1376.695	5087.596	1376.835	5092.597	1376.964	5121.514	1377.806	5121.843	1377.817
5122.787	1377.845	5149.823	1378.219	5164.731	1378.647	5177.4	1378.809	5190.5	1377.195
5200.859	1375.649	5214.039	1377.275	5221.038	1378.312	5238.6	1379.061	5242.937	1379.212
5259.039	1379.707	5267.721	1380.001	5283.875	1380.62	5290.66	1380.805	5302.964	1381.423
5309.382	1381.661	5331.66	1382.166	5336.081	1382.35	5360.274	1383.024	5361.745	1383.086
5363.059	1383.128	5377.895	1383.713	5400.548	1384.351	5403.613	1384.495	5420.249	1385.313
5427.008	1385.538	5441.625	1385.749	5460.693	1386.248	5469.224	1386.357	5484.287	1386.737

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4757.063	.035	4757.063	.035	5484.287	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4757.063 5484.287 167189.4667 230 .1 .3
Right Levee Station= 5177.4 Elevation=1378.809

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1375.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.		0.035	
E.G. Elev (ft)	1375.74	Reach Len. (ft)	167.00	189.47	230.00
Crit W.S. (ft)	1374.94	Flow Area (sq ft)		275.37	
E.G. Slope (ft/ft)	0.015080	Area (sq ft)		275.37	
Q Total (cfs)	1250.00	Flow (cfs)		1250.00	
Top Width (ft)	171.82	Top Width (ft)		171.82	
Vel Total (ft/s)	4.54	Avg. Vel. (ft/s)		4.54	
Max Chl Dpth (ft)	3.42	Hydr. Depth (ft)		1.60	
Conv. Total (cfs)	10179.2	Conv. (cfs)		10179.2	
Length Wtd. (ft)	189.47	Wetted Per. (ft)		172.05	
Min Ch El (ft)	1372.00	Shear (lb/sq ft)		1.51	
Alpha	1.00	Stream Power (lb/ft s)		6.84	
Frctn Loss (ft)	3.09	Cum Volume (acre-ft)	0.34	11.10	0.85
C & E Loss (ft)	0.02	Cum SA (acres)	0.16	5.64	

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split1 RS: 19.6513

INPUT
Description: 19.6513
Station Elevation Data num= 60

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4813.533	1385.041	4821.855	1383.717	4840.992	1380.677	4841.765	1380.609	4867.796	1377.58
4868.777	1377.434	4889.972	1375.561	4897.866	1375.206	4917.962	1373.924	4933.186	1373.012
4945.076	1372.508	4963.005	1371.547	4971.893	1371.358	4985.537	1370.211	4996.163	1369.562
4999.055	1369.227	5000.248	1369.168	5000.888	1369.214	5002.805	1369.325	5011.107	1369.967
5016.581	1370.201	5023.088	1370.531	5049.445	1370.899	5051.263	1370.911	5060.747	1371.038
5082.233	1371.449	5087.891	1371.386	5103.91	1370.265	5107.563	1369.995	5109.276	1370.106
5111.019	1370.186	5151.961	1372.056	5166.002	1372.565	5177.785	1373.082	5197.461	1373.573
5202.647	1373.738	5213.959	1374.355	5234.157	1375.157	5251.336	1375.677	5272.18	1376.29
5287.789	1376.873	5308.415	1377.55	5328.954	1378.361	5345.308	1378.924	5357.788	1379.135
5367.873	1379.448	5386.31	1380.146	5391.107	1380.266	5402.444	1380.865	5414.159	1381.278
5432.417	1381.694	5443.567	1381.953	5460.707	1382.199	5480.531	1382.834	5484.735	1382.971
5494.335	1383.415	5521.047	1384.428	5545.999	1385.067	5547.293	1385.087	5551.282	1385.063

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4813.533	.035	4813.533	.035	5551.282	.035

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4813.5335551.282               194272.8115     298              .1        .3
Right Levee      Station=5082.233       Elevation=1371.449

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1372.39   Element                     Left OB    Channel   Right OB
  Vel Head (ft)                0.24   Wt. n-Val.                               0.065
  E.G. Elev (ft)            1372.63   Reach Len. (ft)              194.00     272.81     298.00
  Crit W.S. (ft)            1371.85   Flow Area (sq ft)                       316.63
  E.G. Slope (ft/ft)       0.017690   Area (sq ft)                            316.63
  Q Total (cfs)             1250.00   Flow (cfs)                             1250.00
  Top Width (ft)             213.75   Top Width (ft)                          213.75
  Vel Total (ft/s)             3.95   Avg. Vel. (ft/s)                          3.95
  Max Chl Dpth (ft)            3.22   Hydr. Depth (ft)                          1.48
  Conv. Total (cfs)          9398.1   Conv. (cfs)                            9398.1
  Length Wtd. (ft)           272.81   Wetted Per. (ft)                        214.02
  Min Ch El (ft)            1369.17   Shear (lb/sq ft)                          1.63
  Alpha                        1.00   Stream Power (lb/ft s)                    5.45
  Frctn Loss (ft)              2.79   Cum Volume (acre-ft)          0.34        9.81       0.85
  C & E Loss (ft)              0.03   Cum SA (acree)                0.16        4.80


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION            RIVER: Harquahala
REACH: Split1               RS: 19.5997

INPUT
Description: 19.5997
Station Elevation Data     num=       68
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4856.8951385.7894858.9921385.4084869.3451383.5244885.5941380.7624897.7841377.929
4899.3451377.594 4909.081376.5944925.3781374.8894932.7841374.2444940.6861373.446
4955.3451370.4354967.5731366.4474975.0111366.9734979.0991365.7234984.587 1365.61
4997.2611365.1355004.576 1365.835019.2681366.508 5028.761367.0265043.2211367.173
 5060.571367.5535071.9961367.1365080.8641367.7485090.6191368.8035093.4691368.841
5098.1961368.8965123.0521369.073 5147.141369.7275163.6691369.716 5178.281369.995
5192.403 1370.21  5214.11370.3565222.1861370.2165233.7321369.6815254.1921369.845
5255.5641369.9155256.8531369.9085293.9481371.8335299.9241372.0315326.7071372.505
5327.4541372.5465328.1691372.5585356.4691373.4165377.4491374.1055379.1811374.176
5386.6971374.3135402.3351374.559 5407.051374.6175412.2521374.7825421.5231374.863
5438.4371374.892  5470.8 1375.865475.2831375.9635491.1371376.2515511.6941376.892
 5528.121377.4125540.0391377.6285561.8381378.0295576.056 1378.155581.4261378.133
5608.006 1378.075621.5341378.6055630.0041378.9295646.1171379.651 5648.741379.753
5649.4921379.7725685.579 1380.355688.1841380.406

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4856.895    .0354856.895    .0655688.184    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4856.8955688.184               166200.6815     260              .1        .3
Right Levee      Station=  5214.1      Elevation=1370.356

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1369.67   Element                     Left OB    Channel   Right OB
  Vel Heed (ft)                0.15   Wt. n-Val.                               0.065
  E.G. Elev (ft)            1369.81   Reach Len. (ft)              166.00     200.68     260.00
  Crit W.S. (ft)            1368.15   Flow Area (sq ft)                       403.64
  E.G. Slope (ft/ft)       0.006628   Area (sq ft)                            403.64
  Q Total (cfs)             1250.00   Flow (cfs)                             1250.00
  Top Width (ft)             187.16   Top Width (ft)                          187.16
  Vel Total (ft/s)             3.10   Avg. Vel. (ft/s)                          3.10
  Max Chl Dpth (ft)            4.53   Hydr. Depth (ft)                          2.16
  Conv. Total (cfs)         15353.8   Conv. (cfs)                           15353.8
  Length Wtd. (ft)           200.68   Wetted Per. (ft)                        188.05
  Min Ch El (ft)            1365.14   Shear (lb/sq ft)                          0.89
  Alpha                        1.00   Stream Power (lb/ft s)                    2.75
  Frctn Loss (ft)              2.10   Cum Volume (acre-ft)          0.34        7.56       0.85
  C & E Loss (ft)              0.01   Cum SA (acres)                0.16        3.55


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Marquahala
REACH: Split1               RS: 19.5616

INPUT
Description: 19.5616
Station Elevation Data     num=       68
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4913.406 1377.594930.4911373.3154944.194 1370.824984.369 1365.464985.9691365.231
4986.5171365.1964987.5691365.0685003.8371363.2685009.6991363.6615019.1561364.323
5025.8961364.2285046.7181367.0655048.718 1367.325052.308 1367.355062.1261367.284
5085.3631367.144 5097.97 1366.955114.0821366.563 5137.13 1366.625141.8471366.507
 5158.031366.2365175.1791366.3385190.4221366.0565201.2621366.5045222.8181366.981
5224.4111367.0295225.2391367.0485242.3931368.4065252.4561368.6865262.1811368.849
5274.9511369.1855292.4771368.5825293.7821368.4925294.9741368.4385309.4441369.716
5326.9161369.8435337.4951369.8725349.2351370.1285355.5251370.1135404.0841370.944
5404.2161370.9455404.3661370.9455405.8671370.7595422.5581368.7135423.8661368.959
```

```
5425.829 1369.215443.1421371.1875460.7311373.1745461.8151373.2225462.3271373.235
5465.0421373.3525495.5771374.3825509.612 1374.64 5521.86 1374.595545.781 1374.75
5547.4061374.7215553.489 1374.895565.4691375.149558[illegible].8241375.7585599.3211375.918
5621.583 1376.245648.7121376.5535666.5531376.8515692.2331377.1435692.5251377.147
5712.1841376.344 5715.341376.3025737.4361377.364

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4913.406    .0354913.406    .0655737.436    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4913.4065737.436              175207.8089     272            .1          .3
Right Levee      Station=5052.308       Elevation= 1367.35
Blocked Obstructions      num=        1
   Sta L   Sta R    Elev
5274.9515737.4361369.185

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1367.50   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.21   Wt. n-Val.                            0.065
  E.G. Elev (ft)            1367.71   Reach Len. (ft)            175.00     207.81    272.00
  Crit W.S. (ft)            1366.95   Flow Area (sq ft)                     336.77
  E.G. Slope (ft/ft)       0.018897   Area (sq ft)                          336.77
  Q Total (cfs)             1250.00   Flow (cfs)                           1250.00
  Top Width (ft)             261.79   Top Width (ft)                        261.79
  Vel Total (ft/s)             3.71   Avg. Vel. (ft/s)                        3.71
  Max Chl Dpth (ft)            4.23   Hydr. Depth (ft)                        1.29
  Conv. Total (cfs)          9093.2   Conv. (cfs)                          9093.2
  Length Wtd. (ft)           207.81   Wetted Per. (ft)                     262.34
  Min Ch El (ft)            1363.27   Shear (lb/sq ft)                        1.51
  Alpha                        1.00   Stream Power (lb/ft s)                  5.62
  Frctn Loss (ft)              2.82   Cum Volume (acre-ft)         0.34       5.85       0.85
  C & E Loss (ft)              0.00   Cum SA (acres)               0.16       2.51


Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The cricical depth with the lowest, valid, water
                surface was used.

CROSS SECTION          RIVER: Harquahala
REACH: Split1             RS: 19.5223

INPUT
Description: 19.5223
Station Elevation Data     num=       62
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
4942.6591377.0224947.9661374.4494986.7251362.1774987.665 1361.884987.8131361.863
4988.2251361.8315002.0321360.6795009.836 1361.46 5021.731362.4955036.0511362.711
5060.9951363.054 5073.971362.648 5080.421362.5165098.3761362.8475098.6071362.854
5120.6171362.9465127.1011363.0115141.0851363.8335147.8141364.9955156.9321365.709
5169.8461365.7445190.3681366.0165224.9771365.9235226.4951365.9055229.4371366.137
5237.1861366.7265261.9571368.3995270.8351368.9725281.6571369.1185289.6211369.173
5307.7091369.1385336.1931370.3975341.2781370.5295369.5961371.088  5384.71371.143
5386.2751371.1525404.7391371.3595407.4831371.4195419.1571371.6215427.3251371.689
5456.1891371.8225460.722 1371.855484.6981372.416  5507.11372.9495508.5251372.974
5547.1941372.3815552.8151372.4515573.7911372.7295585.2661373.1985594.2181373.408
5616.5671374.0175638.058 1374.435653.114 1374.755672.3951375.1025685.2271375.461
5707.1851375.7195714.3341375.5385722.9521375.6425756.2541376.0865773.5771376.418
5794.3161376.7255823.2421376.313

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4942.659    .0354942.659    .0655823.242    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4942.6595823.242              178186.7914     295            .1          .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1364.68   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.21   Wt. n-Val.                            0.065
  E.G. Elev (ft)            1364.89   Reach Len. (ft)            178.00     186.79    295.00
  Crit W.S. (ft)                      Flow Area (sq ft)                     339.92
  E.G. Slope (ft/ft)       0.010100   Area (sq ft)                          339.92
  Q Total (cfs)             1250.00   Flow (cfs)                           1250.00
  Top Width (ft)             167.19   Top Width (ft)                        167.19
  Vel Total (ft/s)             3.68   Avg. Vel. (ft/s)                        3.68
  Max Chl Dpth (ft)            4.00   Hydr. Depth (ft)                        2.03
  Conv. Total (cfs)         12437.8   Conv. (cfs)                         12437.8
  Length Wtd. (ft)           186.79   Wetted Per. (ft)                     167.87
  Min Ch El (ft)            1360.68   Shear (lb/sq ft)                        1.28
  Alpha                        1.00   Stream Power (lb/ft s)                  4.70
  Frctn Loss (ft)              2.14   Cum Volume (acre-ft)         0.34       4.24       0.85
  C & E Loss (ft)              0.01   Cum SA (acres)               0.16       1.49


Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Harquahala
REACH: Split1             RS: 19.4869

INPUT
Description: 19.4869
Station Elevation Data     num=       66
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
 4964.681366.5274972.9421363.3724987.7911358.6284994.8331357.3044998.419 1357.78
```

```
5008.5071359.1325013.9941359.5925017.0691359.8755030.9411359.8935038.4971359.965
5043.0621359.9515045.8361359.802 5053.591359.5145058.7931360.1415075.9671362.016
5080.1181362.1595115.3381363.6795125.6811363.9065152.2421364.4085162.7511364.594
5187.3951365.0035206.8411364.9475227.5291364.8875230.0221364.732 5245.161364.231
5250.4051364.0815251.6191364.0495274.7041365.2525275.3171365.2915297.9491365.757
5315.9221366.122 5316.571366.1225319.7561366.0815344.3111365.8265350.1311365.086
5352.734  1364.85353.6191364.7045354.9641364.8575369.7561366.3585392.5821367.098
5407.4141367.4475430.9591367.3815444.1241367.357 5461.351367.3825471.1831366.915
5504.127 1364.755516.6121363.3595518.5581363.2395522.2991363.4315529.748 1363.85
5546.7811364.4945567.5661365.1465570.2471365.2015573.2571365.2565601.6821365.823
5616.1841366.4275623.5551366.7335632.6161366.673 5654.671366.823 5663.811364.956
 5665.971364.5885670.199 1365.345682.9151367.1715690.9511367.3045707.1641367.333
5748.2231368.616
```

Manning's n Values num= 2

Sta	n Val	Sta	n Val	Sta	n Val
4964.68	.035	4964.68	.0655748.213		.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4964.685748.213		459469.5331		543	.1	.3

Right Levee Station=5187.395 Elevation=1365.003

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1362.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.		0.065	
E.G. Elev (ft)	1362.74	Reach Len. (ft)	459.00	469.53	543.00
Crit W.S. (ft)	1361.35	Flow Area (sq ft)		266.27	
E.G. Slope (ft/ft)	0.013078	Area (sq ft)		266.27	
Q Total (cfs)	1250.00	Flow (cfs)		1250.00	
Top Width (ft)	109.64	Top Width (ft)		109.64	
Vel Total (ft/s)	4.69	Avg. Vel. (ft/s)		4.69	
Max Chl Dpth (ft)	5.09	Hydr. Depth (ft)		2.43	
Conv. Total (cfs)	10930.3	Conv. (cfs)		10930.3	
Length Wtd. (ft)	469.53	Wetted Per. (ft)		110.66	
Min Ch El (ft)	1357.30	Shear (lb/sq ft)		1.96	
Alpha	1.00	Stream Power (lb/ft s)		9.22	
Frctn Loss (ft)	7.67	Cum Volume (acre-ft)	0.34	2.94	0.85
C & E Loss (ft)	0.01	Cum SA (acres)	0.16	0.90	

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split1 RS: 19.3980

INPUT
Description: 19.3980
Station Elevation Data num= 53

```
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
4767.3221356.7974783.3061355.0834797.3621354.5994813.3241354.0424825.5841353.585
4834.6041353.7284848.2681353.5724854.0981353.4164864.9981353.7044887.5021354.444
4906.0351354.8944915.6561354.8684946.2811354.8914951.8651352.8994956.1491352.107
4959.5781352.4484976.3951353.5494985.3681353.3084988.2291353.2144989.6971353.183
4992.8571352.8865000.3561352.1325007.7231352.7925010.1761353.0935022.4061352.779
5034.2231352.5755036.0961352.5355045.9271352.2435051.4311353.2025059.8991354.778
5082.2241355.1245090.3591355.3455117.1181355.0235122.9971355.0695138.042 1355.38
5145.5981355.5725148.5361355.5525164.7131355.5095178.752    13555180.3881354.946
5182.3051354.8965185.0621354.5675197.3331353.2975204.3651353.7625215.614 1354.09
5232.4971353.8215240.9391353.4455250.1561353.284 5251.711353.1945255.2111353.422
5268.6211354.4655277.3641354.6055303.5681355.195
```

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
4767.322	.035	4783.306	.0654906.035		.0354946.281		.0655059.899		.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4783.3065059.899		399433.8286		377	.1	.3

Right Levee Station= 5145.6 Elevation=1355.572

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1354.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.		0.065	
E.G. Elev (ft)	1355.05	Reach Len. (ft)	433.83	433.83	433.83
Crit W.S. (ft)	1354.36	Flow Area (sq ft)		288.67	
E.G. Slope (ft/ft)	0.021159	Area (sq ft)		288.67	
Q Total (cfs)	1250.00	Flow (cfs)		1250.00	
Top Width (ft)	220.84	Top Width (ft)		220.84	
Vel Total (ft/s)	4.33	Avg. Vel. (ft/s)		4.33	
Max Chl Dpth (ft)	2.65	Hydr. Depth (ft)		1.31	
Conv. Total (cfs)	8593.3	Conv. (cfs)		8593.3	
Length Wtd. (ft)	433.83	Wetted Per. (ft)		221.67	
Min Ch El (ft)	1352.11	Shear (lb/sq ft)		1.72	
Alpha	1.00	Stream Power (lb/ft s)		7.45	
Frctn Loss (ft)	6.64	Cum Volume (acre-ft)	0.24	1.16	0.85
C & E Loss (ft)	0.03	Cum SA (acres)			

Warning - Divided flow computed for this cross-section.
Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split 1A RS: 19.3216

INPUT

```
Description: 19.3216
Station Elevation Data     num=       22
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4756.0441351.1234776.431 1350.794793.281 1350.434798.1711350.1564816.9131349.099
4823.3341348.8054841.1161348.0444847.669 1347.554855.5991346.8854859.2371347.412
4869.0651348.763 4900.061349.0914912.3561349.2444949.5361348.7284962.854 1347.24
4964.9441346.9464968.1621347.0014977.5031346.9215000.222 1346.765004.7921347.646
5017.6221349.1145033.4661348.776

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
4756.044     .0354912.356     .0655017.622     .035

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
      4912.3565017.622               338431.8443      325            .1            .3
Right Levee      Station=5017.622       Elevation=1349.114

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1348.29   Element                    Left OB    Channel    Right OB
  Vel Head (ft)                0.08   Wt. n-Val.                  0.035      0.065
  E.G. Elev (ft)            1348.36   Reach Len. (ft)            338.00     431.84     325.00
  Crit W.S. (ft)            1347.73   Flow Area (sq ft)           19.43      63.85
  E.G. Slope (ft/ft)       0.007577   Area (sq ft)                19.43      63.85
  Q Total (cfs)              190.00   Flow (cfs)                  53.23     136.77
  Top Width (ft)              87.27   Top Width (ft)              30.29      56.98
  Vel Total (ft/s)             2.28   Avg. Vel. (ft/s)             2.74       2.14
  Max Chl Dpth (ft)            1.53   Hydr. Depth (ft)             0.64       1.12
  Conv. Total (cfs)          2182.7   Conv. (cfs)                611.6     1571.2
  Length Wtd. (ft)           418.70   Wetted Per. (ft)            30.44      57.18
  Min Ch El (ft)            1346.76   Shear (lb/sq ft)            0.30       0.53
  Alpha                        1.04   Stream Power (lb/ft s)      0.83       1.13
  Frctn Loss (ft)              5.84   Cum Volume (acre-ft)        4.87       2.14       6.94
  C & E Loss (ft)              0.00   Cum SA (acres)              7.02       2.83       5.08


Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
REACH: Split 1A             RS: 19.2398

INPUT
Description: 19.2398
Station Elevation Data     num=       43
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4619.3731342.885 4644.291343.4244679.0231343.0374679.7251343.0224683.2651342.983
4708.1131342.7044716.7761342.6554734.8411342.5394750.2241342.2774783.1881341.669
 4794.541341.339 4804.491341.059 4827.891341.9434832.5921342.1744857.1991343.548
4857.6571343.5644858.5491343.5344885.223 1342.76 4910.821341.3154913.399  1341.2
4915.9571341.3284926.411 1341.854953.6131342.1734968.0211342.3094978.6671342.161
4979.7161342.0784992.5051341.4524999.4681341.0095000.8011341.0245006.0151341.566
5014.5311342.5235024.1581342.4725035.2991342.4415043.5161342.5795072.503 1343.08
5091.833 1343.545098.551  1343.55104.5741343.5235132.0711343.7715132.3221343.773
5133.0651343.776 5169.181343.7445172.9741343.895

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
4619.373     .0354857.657     .0655091.833     .035

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
      4857.6575091.833               377381.3855      359            .1            .3
Left Levee       Station=4857.657       Elevation=1343.564
Right Levee      Station=5091.833       Elevation= 1343.54


CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1342.41   Element                    Left OB    Channel    Right OB
  Vel Head (ft)                0.12   Wt. n-Val.                            0.065
  E.G. Elev (ft)            1342.53   Reach Len. (ft)            377.00     381.39     359.00
  Crit W.S. (ft)            1342.25   Flow Area (sq ft)                      67.38
  E.G. Slope (ft/ft)       0.033636   Area (sq ft)                           67.38
  Q Total (cfs)              190.00   Flow (cfs)                            190.00
  Top Width (ft)              122.00   Top Width (ft)                        122.00
  Vel Total (ft/s)             2.82   Avg. Vel. (ft/s)                       2.82
  Max Chl Dpth (ft)            1.40   Hydr. Depth (ft)                       0.55
  Conv. Total (cfs)          1036.0   Conv. (cfs)                           1036.0
  Length Wtd. (ft)           379.30   Wetted Per. (ft)                      122.16
  Min Ch El (ft)            1341.01   Shear (lb/sq ft)                       1.16
  Alpha                        1.00   Stream Power (lb/ft s)                 3.27
  Frctn Loss (ft)              5.78   Cum Volume (acre-ft)        4.79       1.49       6.94
  C & E Loss (ft)              0.00   Cum SA (acres)              6.90       1.95       5.08


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
REACH: Split 1A             RS: 19.1676

INPUT
Description: 19.1676
Station Elevation Data     num=       26
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
```

```
4785.979 1337.024787.6451337.0794790.9231337.2344815.7861337.5114827.7311337.389
 4839.571336.0744844.7731335.6184850.8631335.7134858.4781335.8674872.4231335.984
4884.6921336.1534888.0641336.2294894.3761335.6664900.6031335.262 4906.141335.718
4920.491  1336.64933.5361336.9554948.1141337.3534953.725 1337.334978.7321337.311
4991.9521336.5474999.9221336.0075017.5531336.4695018.4291336.517 5056.77 1337.68
5057.6261337.706

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4785.979    .0354978.732    .065 5056.77    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4978.732 5056.77              441456.6185     438              .1        .3
Right Levee      Station= 5056.77       Elevation= 1337.68

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1336.61   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.14   Wt. n-Val.                  0.035      0.065
  E.G. Elev (ft)            1336.75   Reach Len. (ft)            441.00     456.62    438.00
  Crit W.S. (ft)            1336.44   Flow Area (sq ft)           58.90       9.51
  E.G. Slope (ft/ft)       0.008691   Area (sq ft)                58.90       9.51
  Q Total (cfs)              190.00   Flow (cfs)                 180.72       9.28
  Top Width (ft)             116.79   Top Width (ft)              86.14      30.66
  Vel Total (ft/s)             2.78   Avg. Vel. (ft/s)             3.07       0.98
  Max Chl Dpth (ft)            1.35   Hydr. Depth (ft)             0.68       0.31
  Conv. Total (cfs)          2038.1   Conv. (cfs)                1938.6       99.5
  Length Wtd. (ft)           448.30   Wetted Per. (ft)            86.28      30.69
  Min Ch El (ft)            1336.01   Shear (lb/sq ft)             0.37       0.17
  Alpha                        1.17   Stream Power (lb/ft s)       1.14       0.16
  Frctn Loss (ft)              6.73   Cum Volume (acre-ft)         4.54       1.15       6.94
  C & E Loss (ft)              0.01   Cum SA (acres)               6.53       1.28       5.08


Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
REACH: Split 1A             RS: 19.0811

INPUT
Description: 19.0811
Station Elevation Data     num=       49
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
4574.3241331.5874599.9211331.4464604.4471331.4364616.5081331.3534634.7741331.438
 4641.661331.4114660.4711331.2774666.4541331.1384712.3341330.1214713.1711330.155
4724.4121330.4954736.0721330.3094751.0861330.2674764.5351330.3034769.9521330.344
4781.3791330.3134813.683 1330.384854.7241329.9124863.1541329.8154870.2961329.456
4872.5471329.2994875.5181329.4754884.3981330.1024887.7371330.2734891.0811330.332
4891.3371330.3244895.7251330.1984900.0571330.1044904.9321329.9474913.1931329.817
4923.2731329.604 4931.731329.4914948.9171329.6984959.796 1329.954974.5091329.148
  4980.1 1328.864998.3321327.9574999.4121328.2515008.6311329.6555014.336 1329.72
5026.0911329.6465055.845 1329.89 5074.351330.2735081.4651330.4955088.312 1330.73
5163.9531330.9785169.0141331.0185173.8741331.0975180.9991331.001

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4574.324    .0354959.796    .0655008.631    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4959.7965008.631              421445.8344     442              .1        .3
Left Levee       Station=4887.737       Elevation=1330.273

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1329.80   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.22   Wt. n-Val.                  0.035      0.065      0.035
  E.G. Elev (ft)            1330.02   Reach Len. (ft)            421.00     445.83     442.00
  Crit W.S. (ft)            1329.80   Flow Area (sq ft)            6.64      43.17       3.31
  E.G. Slope (ft/ft)       0.032221   Area (sq ft)                 6.64      43.17       3.31
  Q Total (cfs)              190.00   Flow (cfs)                  15.54     169.29       5.17
  Top Width (ft)             120.68   Top Width (ft)              38.95      46.01      35.72
  Vel Total (ft/s)             3.58   Avg. Vel. (ft/s)             2.34       3.92       1.56
  Max Chl Dpth (ft)            1.84   Hydr. Depth (ft)             0.17       0.94       0.09
  Conv. Total (cfs)          1058.5   Conv. (cfs)                  86.6      943.1       28.8
  Length Wtd. (ft)                    Wetted Per. (ft)            38.95      46.20      35.72
  Min Ch El (ft)            1327.96   Shear (lb/sq ft)             0.34       1.88       0.19
  Alpha                        1.11   Stream Power (lb/ft s)       0.80       7.37       0.29
  Frctn Loss (ft)                     Cum Volume (acre-ft)         4.21       0.87       6.93
  C & E Loss (ft)                     Cum SA (acres)               5.90       0.88       4.90


Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION            RIVER: Harquahala
REACH: Split 1A             RS: 18.9967

INPUT
```

Description: 18.9967
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4646.364	1322.561	4646.446	1322.561	4672.079	1322.518	4717.819	1322.434	4721.595	1322.46
4740.104	1322.236	4748.401	1322.154	4748.951	1322.153	4760.743	1321.847	4767.233	1321.854
4770.358	1321.674	4773.138	1321.904	4778.884	1322.042	4780.894	1322.087	4781.639	1321.982
4785.751	1321.365	4792.691	1321.846	4797.238	1322.407	4816.958	1322.505	4826.431	1322.588
4831.463	1322.622	4834.665	1322.653	4848.803	1322.809	4894.361	1323.392	4914.514	1322.882
4918.159	1322.775	4920.222	1322.434	4927.974	1321.367	4933.178	1322.208	4934.494	1322.447
4937.238	1322.462	4955.974	1322.524	4966.428	1322.446	4978.752	1322.209	4990.172	1322.104
4997.834	1321.401	4999.891	1321.214	5001.685	1321.486	5014.612	1322.616	5018.446	1322.626
5036.551	1322.794	5048.491	1322.915	5051.558	1322.961	5054.472	1322.945	5071.556	1322.727
5099.948	1322.507	5104.63	1322.409						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4646.364	.035	4978.752	.065	5018.446	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

4978.752	5018.446	407	423.507	419	.1	.3

Left Levee Station=4894.361 Elevation=1323.392
Right Levee Station=5051.558 Elevation=1322.961

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1322.96	Element			
Vel Head (ft)	0.09	Wt. n-Val.	0.035	0.065	0.035
E.G. Elev (ft)	1323.05	Reach Len. (ft)	407.00	423.51	419.00
Crit W.S. (ft)	1322.67	Flow Area (sq ft)	39.09	37.60	5.72
E.G. Slope (ft/ft)	0.008520	Area (sq ft)	39.09	37.60	5.72
Q Total (cfs)	190.00	Flow (cfs)	106.62	76.38	6.99
Top Width (ft)	139.58	Top Width (ft)	67.12	39.69	32.76
Vel Total (ft/s)	2.31	Avg. Vel. (ft/s)	2.73	2.03	1.22
Max Chl Dpth (ft)	1.74	Hydr. Depth (ft)	0.58	0.95	0.17
Conv. Total (cfs)	2058.4	Conv. (cfs)	1155.1	827.5	75.8
Length Wtd. (ft)	415.52	Wetted Per. (ft)	67.31	39.80	32.76
Min Ch El (ft)	1321.21	Shear (lb/sq ft)	0.31	0.50	0.09
Alpha	1.11	Stream Power (lb/ft s)	0.84	1.02	0.11
Frctn Loss (ft)	6.76	Cum Volume (acre-ft)	3.98	0.46	6.88
C & E Loss (ft)	0.02	Cum SA (acres)	5.38	0.44	4.56

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1A RS: 18.9165

INPUT
Description: 18.9165
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4859.028	1316.374	4871.512	1316.495	4890.848	1316.327	4893.921	1316.282	4912.131	1316.202
4922.791	1316.136	4926.398	1315.837	4933.181	1315.491	4944.671	1315.674	4952.647	1315.414
4958.093	1315.711	4964.438	1315.697	4973.176	1315.681	4984.143	1315.024	4984.253	1315.001
4985.185	1315.083	4992.057	1315.299	4995.378	1315.015	4998.608	1314.345	5002.398	1314.938
5007.193	1316.132	5008.561	1316.151	5013.703	1316.103	5027.405	1316.043	5032.812	1315.778
5033.927	1315.751	5037.759	1315.599	5061.772	1315.773	5064.295	1315.945	5075.85	1315.841
5094.451	1315.785	5117.98	1315.984	5120.902	1315.991	5122.681	1315.565	5128.021	1314.233
5130.317	1314.701	5137.387	1315.831	5149.634	1316.021	5165.178	1316.333	5172.105	1316.259

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4859.028	.035	4973.176	.065	5007.193	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

4973.176	5007.193	354	346.165	218	.1	.3

Right Levee Station=5008.561 Elevation=1316.151

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1315.99	Element			
Vel Head (ft)	0.28	Wt. n-Val.	0.035	0.065	
E.G. Elev (ft)	1316.26	Reach Len. (ft)	0.00	0.00	0.00
Crit W.S. (ft)	1315.99	Flow Area (sq ft)	17.22	27.75	
E.G. Slope (ft/ft)	0.042339	Area (sq ft)	17.22	27.75	
Q Total (cfs)	190.00	Flow (cfs)	75.35	114.65	
Top Width (ft)	82.01	Top Width (ft)	48.58	33.43	
Vel Total (ft/s)	4.22	Avg. Vel. (ft/s)	4.37	4.13	
Max Chl Dpth (ft)	1.75	Hydr. Depth (ft)	0.35	0.83	
Conv. Total (cfs)	923.4	Conv. (cfs)	366.2	557.2	
Length Wtd. (ft)	0.00	Wetted Per. (ft)	48.61	33.72	
Min Ch El (ft)	1314.34	Shear (lb/sq ft)	0.94	2.18	
Alpha	1.00	Stream Power (lb/ft s)	4.10	8.99	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)			
C & E Loss (ft)	0.06	Cum SA (acres)			

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical

depth. the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 19.3158

INPUT
Description: 19.3158
Station Elevation Data num= 42

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4874.672 1348.35  4912.71348.2394914.5751348.2224916.4071348.2074919.5451348.193
4944.2431348.0154950.631 1347.924970.2791347.5164978.9381347.5354992.1731347.412
5000.7991347.2885007.5251347.4925019.7951347.5895036.7741346.8295050.0171346.281
5059.3161346.3535065.4861346.3055077.0941347.2215086.4691348.0635107.9221348.058
5124.4541348.1725160.048 1347.585167.6521347.4325181.2261345.8775181.8461345.801
5181.9721345.8045191.0351346.231 5198.721346.7145206.8111347.0515214.2051346.802
 5216.161346.7485217.0821346.6885224.8381345.7415238.0071347.4115241.8691347.938
5245.173 1348.125249.5611347.7085269.4671347.1315276.4271347.2365280.0591347.403
5297.3711348.4125307.3341348.347
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4874.672	.035	5019.795	.065	5086.469	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
5019.7	5086.469	371	400.1655	350	.1	.3

Right Levee Station=5124.454 Elevation=1348.172

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1348.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.035	0.065	0.035
E.G. Elev (ft)	1348.38	Reach Len. (ft)	371.00	400.17	350.00
Crit W.S. (ft)	1348.17	Flow Area (sq ft)	48.42	88.75	170.57
E.G. Slope (ft/ft)	0.011059	Area (sq ft)	48.42	88.75	170.57
Q Total (cfs)	1060.00	Flow (cfs)	133.71	257.92	668.37
Top Width (ft)	373.23	Top Width (ft)	99.50	66.67	207.05
Vel Total (ft/s)	3.44	Avg. Vel. (ft/s)	2.76	2.91	3.92
Max Chl Dpth (ft)	2.45	Hydr. Depth (ft)	0.49	1.33	0.82
Conv. Total (cfs)	10079.7	Conv. (cfs)	1271.5	2452.6	6355.6
Length Wtd. (ft)	369.91	Wetted Per. (ft)	99.52	66.78	207.45
Min Ch El (ft)	1346.28	Shear (lb/sq ft)	0.34	0.92	0.57
Alpha	1.07	Stream Power (lb/ft s)	0.93	2.67	2.22
Frctn Loss (ft)	5.95	Cum Volume (acre-ft)	4.06	4.51	23.47
C & E Loss (ft)	0.02	Cum SA (acres)	6.97	3.25	28.23

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 19.2400

INPUT
Description: 19.2400
Station Elevation Data num= 52

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4564.7611343.6124569.1071343.806 4579.041343.6074615.269 1342.534621.2181342.507
4662.8051342.0944696.4571342.0124702.4851342.0764712.4811342.1524719.1421342.085
4756.4781341.503 4759.511341.6474765.1711341.616  4787.81341.3394789.7471341.251
4801.9561340.9864814.4641340.5584834.0261342.1534834.9921342.1844835.3261342.211
 4836.461342.2034879.7281341.8514891.0061341.592 4897.441341.3894911.9681340.969
4916.5631340.8374919.4121340.9434930.4321341.3994941.361 1341.524953.8221341.549
4983.9121341.1094993.144 1341.024998.0971339.5984999.2541339.3375000.7561339.579
5006.2351340.4635006.9371340.3865019.7051339.9055032.7121341.5485033.6211341.672
5034.9991341.6785062.1171341.3925063.2541341.3655069.3461341.3655105.5451341.284
5130.9191341.6285139.1161341.7455141.068 1341.765163.2491342.8585165.0571342.892
5167.6281342.9015168.2111342.883
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4564.761	.035	4993.144	.065	5034.999	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4993.1	5034.999	384	406.012	396	.1	.3

Left Levee Station=4835.326 Elevation=1342.211

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1342.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.	0.035	0.065	0.035
E.G. Elev (ft)	1342.41	Reach Len. (ft)	384.00	406.01	396.00
Crit W.S. (ft)	1342.04	Flow Area (sq ft)	82.66	69.70	63.29
E.G. Slope (ft/ft)	0.025987	Area (sq ft)	82.66	69.70	63.29
Q Total (cfs)	1060.00	Flow (cfs)	405.08	358.35	296.57
Top Width (ft)	289.92	Top Width (ft)	136.39	41.85	111.68
Vel Total (ft/s)	4.92	Avg. Vel. (ft/s)	4.90	5.14	4.69
Max Chl Dpth (ft)	2.70	Hydr. Depth (ft)	0.61	1.67	0.57
Conv. Total (cfs)	6575.4	Conv. (cfs)	2512.8	2222.9	1839.7
Length Wtd. (ft)		Wetted Per. (ft)	136.42	42.30	111.69
Min Ch El (ft)	1339.34	Shear (lb/sq ft)	0.98	2.67	0.92
Alpha	1.00	Stream Power (lb/ft s)	4.82	13.74	4.31
Frctn Loss (ft)		Cum Volume (acre-ft)	3.50	3.78	22.53

```
C & E Loss (ft)                    Cum SA (acres)              5.97       2.75       26.95

Warning - The energy equation could not be balanced within the specified number of iterations.  The
          program used critical depth for the water surface and continued on with the calculations.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
          cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
          surface was used.

CROSS SECTION          RIVER: Marquahala
REACH: Split 1B           RS: 19.1631

INPUT
Description: 19.1631
Station Elevation Data     num=      46
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4591.237 1336.474594.6041336.4764603.8381336.4494644.9761336.4334653.2191335.064
4655.4021334.8814658.1691335.0614676.664 1336.134736.5951336.2434761.8911336.328
4772.2731336.1864828.3081335.8814835.3621335.944 4848.271335.898 4891.141335.695
4897.5951335.4614913.364 1334.934918.6661335.1984931.7121335.5914936.3571335.558
4956.6921335.239 4967.851335.5114982.7751335.8184992.8091334.8714999.4481334.116
5008.3981335.2045015.2011335.9155030.7821335.6255037.1351335.582 5038.291335.448
 5045.311334.6475048.4581334.788 5068.291335.3685095.5211335.6485111.7141335.813
5116.0551335.9315129.5461335.7415154.5861335.4695165.2191335.4985176.9451335.389
5213.1971336.3825225.6251336.6415252.9311336.4215258.1911336.4165260.6411336.249
5263.5151336.131

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4591.217    .0354982.775    .0655015.201    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     4982.7755015.201              390419.9715     385          .1          .3
Left Levee       Station=4761.891       Elevation=1336.328
Right Levee      Station=5225.625       Elevation=1336.641

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)            1336.15   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.30   Wt. n-Val.                  0.035      0.065      0.035
  E.G. Elev (ft)            1336.45   Reach Len. (ft)            390.00     419.97     385.00
  Crit W.S. (ft)            1336.15   Flow Area (sq ft)           93.85      36.29     112.32
  E.G. Slope (ft/ft)       0.025462   Area (sq ft)                93.85      36.29     112.32
  Q Total (cfs)             1060.00   Flow (cfs)                 380.92     142.15     536.93
  Top Width (ft)             424.36   Top Width (ft)             202.32      32.43     189.41
  Vel Total (ft/s)             4.37   Avg. Vel. (ft/s)             4.06       3.92       4.78
  Max Chl Dpth (ft)            2.03   Hydr. Depth (ft)             0.46       1.12       0.59
  Conv. Total (cfs)          6643.0   Conv. (cfs)                2387.2      890.6     3364.9
  Length Wtd. (ft)           392.60   Wetted Per. (ft)           202.36      32.62     189.49
  Min Ch El (ft)            1334.12   Shear (lb/sq ft)             0.74       1.77       0.94
  Alpha                        1.02   Stream Power (lb/ft s)       2.99       6.93       4.50
  Frctn Loss (ft)              6.66   Cum Volume (acre-ft)         2.73       3.29      21.74
  C & E Loss (ft)              0.03   Cum SA (acres)               4.47       2.40      25.59

Warning - The energy equation could not be balanced within the specified number of iterations.  The
          program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
          than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
          depth, the calculated water surface came back below critical depth.  This indicates that there is
          not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
          cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
          surface was used.

CROSS SECTION          RIVER: Marquahala
REACH: Split 1B           RS: 19.0836

INPUT
Description: 19.0836
Station Elevation Data     num=      53
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4695.756 1330.254716.637 1330.334728.954 1330.22 4737.931330.0994751.2021329.715
4780.9231329.1254790.1091328.9594797.8891328.8514823.096 1328.954848.073 1328.96
4889.1411328.5614896.8771328.5084912.5551328.4794964.1491328.5524969.9741328.253
4973.7831328.0554977.0071327.9844990.9851327.4914996.3121325.886 4999.841324.911
5001.8661325.3695009.8141327.3525024.576 1327.615036.6441327.7915066.2091327.907
5076.0511327.978 5079.011327.504 5087.651327.4545089.7121327.7565102.6241327.699
5105.9741327.6775109.2291327.6125139.0291327.2745141.5171327.5765148.112 1328.07
5150.5581328.0335169.3471327.7635177.2031327.7345197.2071327.7375214.3921327.854
5217.5161328.2335224.6411328.1355228.7271328.1095248.1661327.7955253.8061327.841
5267.9891328.2525272.7951328.0765277.7261328.0235292.2531328.1155293.1161328.125
5297.6191328.4635323.2141330.3335337.3151330.227

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4695.756    .0354964.149    .0655036.644    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     4964.1495036.644              337360.4106     372          .1          .3

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)            1328.60   Element                    Left OB    Channel   Right OB
```

Vel Head (ft)	0.21	Wt. n-Val.	0.035	0.065	0.035
E.G. Elev (ft)	1328.81	Reach Len. (ft)	337.00	360.41	372.00
Crit W.S. (ft)	1328.37	Flow Area (sq ft)	6.82	90.63	201.91
E.G. Slope (ft/ft)	0.012112	Area (sq ft)	6.82	90.63	201.91
Q Total (cfs)	1060.00	Flow (cfs)	6.21	262.94	790.85
Top Width (ft)	414.67	Top Width (ft)	79.29	72.50	262.89
Vel Total (ft/s)	3.54	Avg. Vel. (ft/s)	0.91	2.90	3.92
Max Chl Dpth (ft)	3.69	Hydr. Depth (ft)	0.09	1.25	0.77
Conv. Total (cfs)	9631.8	Conv. (cfs)	56.5	2389.2	7186.1
Length Wtd. (ft)	367.42	Wetted Per. (ft)	79.29	73.18	263.04
Min Ch El (ft)	1324.91	Shear (lb/sq ft)	0.07	0.94	0.58
Alpha	1.08	Stream Power (lb/ft s)	0.06	2.72	2.27
Frctn Loss (ft)	5.89	Cum Volume (acre-ft)	2.28	2.67	20.35
C & E Loss (ft)	0.01	Cum SA (acres)	3.21	1.98	23.59

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 19.0153

INPUT
Description: 19.0153
Station Elevation Data num= 60

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4714.252	1324.506	4721.373	1324.529	4726.935	1324.527	4730.237	1324.643	4752.105	1324.775
4775.303	1324.564	4790.471	1324.484	4799.966	1324.293	4844.606	1323.572	4880.212	1322.963
4887.344	1321.963	4888.676	1321.757	4890.493	1321.958	4900.221	1322.812	4915.543	1322.713
4929.191	1322.754	4944.084	1322.209	4969.873	1321.258	4975.699	1321.862	4979.633	1322.165
4987.076	1322.208	4992.661	1322.079	4994.544	1321.598	4999.212	1320.412	5001.813	1320.731
5006.673	1321.944	5027.703	1321.795	5043.757	1321.864	5050.837	1320.179	5051.066	1320.098
5051.524	1320.188	5060.434	1321.433	5061.975	1321.485	5064.511	1321.557	5071.388	1320.097
5072.157	1319.926	5073.472	1320.193	5086.038	1322.245	5092.085	1321.992	5095.939	1321.327
5101.113	1321.923	5103.609	1322.444	5130.753	1322.324	5138.182	1322.246	5147.559	1322.293
5153.845	1322.223	5189.629	1321.536	5193.115	1321.479	5196.511	1321.962	5206.738	1321.996
5213.956	1322.139	5225.306	1322.108	5233.083	1322.082	5236.057	1322.167	5243.665	1322.459
5264.817	1322.692	5298.553	1323.086	5314.893	1323.756	5324.444	1324.239	5366.172	1324.438

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4714.252	.035	4987.076	.065	5006.673	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4987.076	5006.673		395	431.192	6	422

Left Levee Station= 4900.22 Elevation=1322.812

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1322.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.035	0.065	0.035
E.G. Elev (ft)	1322.91	Reach Len. (ft)	395.00	431.19	422.00
Crit W.S. (ft)	1322.56	Flow Area (sq ft)	33.67	22.03	168.37
E.G. Slope (ft/ft)	0.022026	Area (sq ft)	33.67	22.03	168.37
Q Total (cfs)	1060.00	Flow (cfs)	157.57	79.76	822.66
Top Width (ft)	317.82	Top Width (ft)	52.54	19.60	245.68
Vel Total (ft/s)	4.73	Avg. Vel. (ft/s)	4.68	3.62	4.89
Max Chl Dpth (ft)	2.63	Hydr. Depth (ft)	0.64	1.12	0.69
Conv. Total (cfs)	7142.3	Conv. (cfs)	1061.7	537.5	5543.1
Length Wtd. (ft)	420.62	Wetted Per. (ft)	52.61	19.98	246.56
Min Ch El (ft)	1320.41	Shear (lb/sq ft)	0.88	1.52	0.94
Alpha	1.02	Stream Power (lb/ft s)	4.12	5.49	4.59
Frctn Loss (ft)	5.78	Cum Volume (acre-ft)	2.12	2.21	18.77
C & E Loss (ft)	0.06	Cum SA (acres)	2.70	1.52	21.42

Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.9337

INPUT
Description: 18.9337
Station Elevation Data num= 63

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4762.993	1318.294	4763.869	1318.302	4767.699	1318.222	4778.225	1318.326	4803.18	1317.893
4811.076	1317.788	4813.949	1317.651	4817.525	1317.603	4827.22	1317.49	4850.74	1317.016
4870.042	1316.275	4870.922	1316.241	4871.373	1316.273	4878.992	1316.964	4890.656	1317.127
4918.483	1317.609	4951.203	1316.995	4970.623	1316.796	4975.072	1316.446	4977.892	1316.173
4980.382	1316.287	4987.136	1316.497	4992.996	1315.446	5000.158	1314.24	5008.011	1315.691
5012.004	1316.489	5027.076	1316.09	5046.344	1315.675	5050.575	1315.759	5076.284	1316.541
5107.439	1316.444	5124.591	316.504	5130.392	1314.987	5133.337	1314.252	5138.07	1315.493
5141.286	1316.149	5150.928	1316.103	5162.038	1316.069	5185.023	1315.624	5193.47	1315.45
5194.841	1315.536	5203.611	1316.162	5207.054	1316.219	5244.099	1316.226	5257.353	1316.268
5273.623	1315.963	5287.384	1315.634	5292.437	1314.966	5296.49	1314.468	5300.418	1314.847
5304.418	1315.45	314.056	1315.505	5343.174	1315.763	5365.868	1315.771	5370.87	1315.777
5379.161	1315.61	5385.57	1315.422	5397.149	1315.87	5397.224	1315.874	5397.854	1315.91

5426.9231317.7495448.3171318.6165453.7341318.448

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
4762.993 .0354987.136 .0655012.004 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4987.1365012.004 391410.0502 393 .1 .3
Left Levee Station=4918.483 Elevation=1317.609

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1316.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.035	0.065	0.035
E.G. Elev (ft)	1316.83	Reach Len. (ft)	391.00	410.05	393.00
Crit W.S. (ft)	1316.45	Flow Area (sq ft)	4.23	32.75	291.49
E.G. Slope (ft/ft)	0.009379	Area (sq ft)	4.23	32.75	291.49
Q Total (cfs)	1060.00	Flow (cfs)	7.52	86.16	966.32
Top Width (ft)	441.59	Top Width (ft)	14.84	24.87	401.88
Vel Total (ft/s)	3.23	Avg. Vel. (ft/s)	1.78	2.63	3.32
Max Chl Dpth (ft)	2.42	Hydr. Depth (ft)	0.28	1.32	0.73
Conv. Total (cfs)	10945.5	Conv. (cfs)	77.7	889.7	9978.1
Length Wtd. (ft)	394.22	Wetted Per. (ft)	14.87	25.27	402.62
Min Ch El (ft)	1314.24	Shear (lb/sq ft)	0.17	0.76	0.42
Alpha	1.02	Stream Power (lb/ft s)	0.30	2.00	1.41
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	1.95	1.94	16.54
C & E Loss (ft)	0.01	Cum SA (acres)	2.40	1.30	18.28

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.8560

INPUT
Description: 18.8560
Station Elevation Data num= 60
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
4807.862 1312.914810.8621312.9894844.2161312.6794857.7851312.5154870.0771312.369
4884.4551312.1454892.4011311.2054894.5241310.9154896.0431311.2174900.5941312.134
4914.4591311.9124938.1941311.3134950.2741311.7744951.5831311.8494957.5361311.819
4987.761311.9324992.0321311.115 4999.381309.3265005.7811310.8585009.1571311.848
5024.947 1312.045025.2491312.0455025.2611312.0455025.5291312.0345052.2341311.017
5058.5421309.1475058.577 1309.145058.6461309.152 5066.141310.3625068.4621310.618
5105.0591312.3245111.4871312.6695120.1891312.4585149.6261311.6875229.0611309.804
5244.0071309.4975265.5071311.4045266.1061311.4545266.5651311.4415279.0651311.539
5283.1921309.6615284.1681309.4495285.1921309.6485294.3161311.0495300.162 1311.03
5310.7841311.1255340.6081311.5765353.8741311.5055377.0891311.3625381.8171310.941
5390.4861310.3565394.3631310.7055401.1511311.4125412.7131311.1575421.6451311.013
5440.1761311.1885455.738 1311.545463.7231311.6295485.6421312.1685497.2951311.857

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
4807.862 .035 4987.76 .0655025.249 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4987.765025.249 365431.1373 427 .1 .3
Left Levee Station= 4987.76 Elevation=1311.932
Right Levee Station=5340.608 Elevation=1311.576

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1311.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.065	0.035
E.G. Elev (ft)	1311.84	Reach Len. (ft)	365.00	431.14	427.00
Crit W.S. (ft)	1311.58	Flow Area (sq ft)		20.90	236.06
E.G. Slope (ft/ft)	0.017015	Area (sq ft)		20.90	236.06
Q Total (cfs)	1060.00	Flow (cfs)		66.05	993.95
Top Width (ft)	374.78	Top Width (ft)		18.61	356.17
Vel Total (ft/s)	4.13	Avg. Vel. (ft/s)		3.16	4.21
Max Chl Dpth (ft)	2.44	Hydr. Depth (ft)		1.12	0.66
Conv. Total (cfs)	8126.3	Conv. (cfs)		506.4	7619.9
Length Wtd. (ft)	427.18	Wetted Per. (ft)		19.15	357.35
Min Ch El (ft)	1309.33	Shear (lb/sq ft)		1.16	0.70
Alpha	1.01	Stream Power (lb/ft s)		3.66	2.95
Frctn Loss (ft)	5.24	Cum Volume (acre-ft)	1.93	1.68	14.16
C & E Loss (ft)	0.03	Cum SA (acres)	2.33	1.09	14.86

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split 1B RS: 18.7744

INPUT
Description: 18.7744
Station Elevation Data num= 74
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
4903.2461306.6664919.4391306.8874960.9221306.3764975.7731306.1534990.0371305.571

```
4993.8721304.924 4999.131304.1175007.4071305.7525008.0761305.8455033.3941305.894
5038.5821305.9935042.9251305.9485068.7261305.7155089.184 1306.055104.8471306.476
5120.8111306.377 5132.581306.1755142.5871306.3065166.0811306.3915200.3061305.712
5207.4311305.5495208.8711305.2435213.676 1303.995218.3321304.8025223.3011305.695
5225.5561306.071 5229.821306.1655255.2421306.3595261.1871306.3085268.4221306.188
5300.2281305.9775309.1361305.863 5311.671305.8255335.442 1305.775378.9181305.497
5415.7721305.4925484.3721304.4935494.5281304.3045504.4741304.5275524.7021305.067
5541.7631305 4365560.8831305.2565589.7831305.0285594.3261304.9715594.8871304.885
5598.0031304.399 5602.111303.6335603.0161303.7795607.3171304.8795623.4041304.742
5628.4991304.6955632.848 1304.575641.4611304.7835657.1821305.1085665.4261304.994
5671.7521304.683 5682.871304.1285690.1521304.2345702.1011305.0485710.8021303.496
5712.6871303.205 5715.911303.5035731.4941304.8835740.9141304.8855752.5161305.054
5761.8941305.1425780 7791305.4275786.7211305.5595806.249 1305.785828.7761306.139
5841.3541306.2945842.7441306.2295845.3141306.1595853.7431305.981

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4903.246    .0354975.773    .0655008.076    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4975.7735008.076              292295.6265     292            .1        .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1305.66   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.16   Wt. n-Val.                            0.065      0.035
  E.G. Elev (ft)          1305.81   Reach Len. (ft)            292.00     295.63     292.00
  Crit W.S. (ft)          1305.43   Flow Area (sq ft)                      13.62     322.78
  E.G. Slope (ft/ft)     0.009247   Area (sq ft)                           13.62     322.78
  Q Total (cfs)           1060.00   Flow (cfs)                             23.79    1036.21
  Top Width (ft)           481.00   Top Width (ft)                         18.97     462.03
  Vel Total (ft/s)           3.15   Avg. Vel. (ft/s)                        1.75       3.21
  Max Chl Dpth (ft)          2.45   Hydr. Depth (ft)                        0.72       0.70
  Conv. Total (cfs)       11023.1   Conv. (cfs)                            247.4    10775.7
  Length Wtd. (ft)         292.08   Wetted Per. (ft)                       19.23     462.96
  Min Ch El (ft)          1304.12   Shear (lb/sq ft)                        0.41       0.40
  Alpha                      1.02   Stream Power (lb/ft s)                  0.71       1.29
  Frctn Loss (ft)            3.82   Cum Volume (acre-ft)         1.93       1.51      11.42
  C & E Loss (ft)            0.02   Cum SA (acres)               2.33       0.91      10.85

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Harquahala
REACH: Split 1B           RS: 18.7184

INPUT
Description: 18.7184
Station Elevation Data     num=       66
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4916.4331302.3274938.9271302.3544954.1171302.036 4969.991302.1564987.302 1302.14
4993.6711301.2334998.704 1300.435004.1611301.2115012.5151302.1225018.7071302.367
5024.5051302.3815042.2241302.3565088.2121302.2115127.1021302.354  5141.6 1302.37
5150.1571302.4795158.8771302.661 5190.271302.865  5212.31302.1575234.9291301.525
5239.8361301.5495242.4141301.5925246.294 1301.565251.2371301.5175254.6911300.998
 5257.331300.5445258.3231300.6755268.589 1302.255273.0631302.2575304.5731302.199
5323.8571301.9245351.2591301.7965356.5721301.615 5364.651301.183  5368.71301.136
5377.3741301.036 5397.861300.9455459.8851300.9855470.7161301.0035477.9981300.966
5489.6021300.9745557.3021300.934 5574.241300.8415637.6981301.3335639.3011301.346
5639.8521301.353 5645.661301.3815663.3281301.1275664.3341301.1015669.6091300.211
5674.8231299.3035676.278 1299.745683.182 1301.755694.823 1301.695729.1621301.222
5766.356 1301.165769.8561301.1765773.201 1301.175840.0631301.4035841.329 1301.33
5850.4721300.7775853.2911300.9915863.276 1301.395889.1881301.8945920.9131302.439
5922.1631302.423

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4916.433    .0354987.302    .0655018.707    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4987.3025018.707              378422.3776     347            .1        .3
Right Levee      Station=5683.182       Elevation= 1301.75

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1301.66   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.31   Wt. n-Val.                            0.065      0.035
  E.G. Elev (ft)          1301.98   Reach Len. (ft)            378.00     422.38     347.00
  Crit W.S. (ft)          1301.66   Flow Area (sq ft)                      10.40     229.80
  E.G. Slope (ft/ft)     0.020042   Area (sq ft)                           10.40     229.80
  Q Total (cfs)           1060.00   Flow (cfs)                             23.46    1036.54
  Top Width (ft)           380.29   Top Width (ft)                         17.68     362.61
  Vel Total (ft/s)           4.41   Avg. Vel. (ft/s)                        2.26       4.51
  Max Chl Dpth (ft)          2.36   Hydr. Depth (ft)                        0.59       0.63
  Conv. Total (cfs)        7487.5   Conv. (cfs)                            165.7     7321.8
  Length Wtd. (ft)         348.76   Wetted Per. (ft)                       17.85     363.29
  Min Ch El (ft)          1300.43   Shear (lb/sq ft)                        0.73       0.79
  Alpha                      1.03   Stream Power (lb/ft s)                  1.64       3.57
  Frctn Loss (ft)            4.07   Cum Volume (acre-ft)         1.93       1.43       9.57
  C & E Loss (ft)            0.04   Cum SA (acres)               2.33       0.78       8.08

Warning - The energy equation could not be balanced within the specified number of iterations.  The
                program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
```

```
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
                depth, the calculated water surface came back below critical depth.  This indicates that there is
                nor a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
                cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
                surface was used.

CROSS SECTION           RIVER: Harquahala
REACH: Split 1B            RS: 18.6384

INPUT
Description: 18.6384
Station Elevation Data     num=      105
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
4824.6031299.2294832.1551299.4444851.0151298.7114852.2111298.6424867.9671296.653
4871.5311296.2424877.9231296.766 4888.681297.3574899.9971296.9134904.261  1296.8
4907.2131296.7284912.7381296.6334917.9741296.485 4924.081296.3344929.4251296.922
4933.5311297.4734941.8181297.725 4959.641298.092 4982.44 1297.444989.8471297.225
 4994.97 1296.214999.5611295.3175005.7281296.4925010.8561297.4755013.0311297.458
5018.419 1297.285031.6881296.789 5038.941297.1225048.9111297.4195055.9971297.047
5058.8461296.9345060.8721296.7295061.1091296.6865070.2611295.3195073.6121295.611
5082.5541296.4675100.3211296.8445113.5331297.1485123.9761297.2165138.6291297.087
5141.2251296.7975146.5141296.3215150.3891296.403 5153.961296.6495159.1351296.748
 5172.021296.9365181.369 1295.745184.0471295.3395187.8831295.7375198.0771297.062
5210.7181297.0885256.1581297.8215259.1521297.8255280.0451297.6795367.2821297.365
5375.6681297.3495376.9951297.3075381.9581297.635 5390.35 1298.075394.748 1298.07
5411.4941297.911 5419.071297.981 5436.251297.0565437.9741296.8875438.499 1296.89
5469.0941296.4125472.086 1296.195478.8421295.6615480.2921295.7285486.3781296.116
5498.3581296.2315521.7041296.0265533.601    12965534.6221295.9815538.8171295.423
5547.1361294.3135551.8231295.1825554.2281295.7155576.3871295.9175596.6921296.222
5627.4221296.2155638.9731296.2825670.4131296.3755671.2521296.2965673.8441296.042
5685.3491294.8545688.0031294.5535697.5471296.2365699.7931296.7775737.8771297.192
5750.676  1297.35753.1331297.3115754.9681297.2995796.3061297.346 5839.781297.224
5863.0621297.2495868.1241297.2765891.9441297.4325914.6011297.609 5917.251297.651
5927.8821297.5375980.9351297.161 5987.151297.8045989.1511298.2546001.9851298.292

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4824.603    .035 4959.64    .0655010.856    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       4959.645010.856               452474.4267     303            .1        .3
Left Levee       Station= 4959.64       Elevation=1298.092
Right Levee      Station=5796.306       Elevation=1297.346

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1297.00   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.16   Wt. n-Val.                            0.065      0.035
  E.G. Elev (ft)          1297.16   Reach Len. (ft)             452.00    474.43     303.00
  Crit W.S. (ft)          1296.74   Flow Area (sq ft)                      14.72     317.44
  E.G. Slope (ft/ft)     0.007625   Area (sq ft)                           14.72     317.44
  Q Total (cfs)           1060.00   Flow (cfs)                             25.94    1034.06
  Top Width (ft)           419.75   Top Width (ft)                         17.42     402.34
  Vel Total (ft/s)           3.19   Avg. Vel. (ft/s)                        1.76       3.26
  Max Chl Dpth (ft)          2.69   Hydr. Depth (ft)                        0.84       0.79
  Conv. Total (cfs)        12139.4   Conv. (cfs)                           297.0    11842.3
  Length Wtd. (ft)          347.49   Wetted Per. (ft)                       17.74     403.39
  Min Ch El (ft)          1295.32   Shear (lb/sq ft)                        0.39       0.37
  Alpha                      1.02   Stream Power (lb/ft s)                  0.70       1.22
  Frctn Loss (ft)            4.46   Cum Volume (acre-ft)          1.93      1.31       7.39
  C & E Loss (ft)            0.01   Cum SA (acres)                2.33      0.61       5.04

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Harquahala
REACH: Split 1B            RS: 18.5485

INPUT
Description: 18.5485
Station Elevation Data     num=      105
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
4492.6891292.828 4497.161292.8934509.6131293.0984515.8531293.1384521.207 1293.24
4528.9461293.535 4546.641293.3664550.5051293.2594578.9551293.0544596.4461292.896
4602.0211292.9344611.3871292.8434643.237 1292.694652.1141292.5854682.4961292.372
4699.5861292.3564708.3891292.1284714.4851292.2484722.4121292.7714740.5731292.859
4752.3951293.0674761.9081292.1674765.5981292.2414771.6211291.875 4777.721291.903
4792.8171292.5124799.2941292.3134805.9671291.9524806.9221292.0474810.3821292.122
4811.4611292.1334814.6441291.4434818.6361290.6154819.6041290.752 4825.941292.159
4836.7671292.333 4837.121292.3344838.0181292.3384847.671 1292.354851.5831291.975
4858.7081291.5384866.108 1291.774874.2891291.9084886.9141292.0764895.595 1292.27
4924.0511292.1314945.0671292.0894959.3571292.1784987.1141292.1514990.4661291.318
4999.813 1290.175001.463 1290.345014.6971291.5055017.3711291.5375023.9581291.678
5041.5611291.8425044.9481291.8475051.044 1291.925096.7491292.5245111.5861292.767
5119.0391292.7525124.4821292.7395160.2561292.7365170.8231292.7175189.6181292.708
5227.6041292.3155241.8491292.2015242.484 1292.195248.0371292.1215263.4511291.842
5274.0141292.0165276.378 1292.075286.9771290.6485289.085 1290.385289.2941290.403
5304.0231292.1525331.4491291.9445346.0261291.9445356.5111291.8745361.7721291.785
5366.1141291.8865376.5381292.0045396.7971292.3495408.2491292.5325412.4111291.885
5418.2521290.7955421.9091291.8825424.829 1292.875458.3541292.8985477.6281292.896
5513.3481292.9065515.6741292.9165519.7431292.9025544.6451292.816 5582.311292.684
5586.0831292.6685612.2481292.6645646.0891292.6395651.7241292.6715677.243 1292.67
5731.0631293.0875744.818 1292.545762.158  1292.45789.4731292.9525792.8881292.993
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4492.689    .035 4987.114    .065 5051.044    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
     4987.1145051.044              660632.2013     440            .1          .3
Left Levee      Station=4752.395      Elevation=1293.067
Right Levee     Station=5515.674      Elevation=1292.916

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1292.44   Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.25   Wt. n-Val.                0.035      0.065      0.035
  E.G. Elev (ft)          1292.69   Reach Len. (ft)           0.00       0.00       0.00
  Crit W.S. (ft)          1292.44   Flow Area (sq ft)        85.05      67.51     114.91
  E.G. Slope (ft/ft)     0.026160   Area (sq ft)             85.05      67.51     114.91
  Q Total (cfs)           1060.00   Flow (cfs)              306.05     258.22     495.73
  Top Width (ft)           530.32   Top Width (ft)          224.27      63.93     242.13
  Vel Total (ft/s)           3.96   Avg. Vel. (ft/s)          3.60       3.82       4.31
  Max Chl Dpth (ft)          2.27   Hydr. Depth (ft)          0.38       1.06       0.47
  Conv. Total (cfs)        6553.7   Conv. (cfs)            1892.2     1596.5     3065.0
  Length Wtd. (ft)           0.00   Wetted Per. (ft)        224.69      64.17     242.75
  Min Ch El (ft)          1290.17   Shear (lb/sq ft)          0.62       1.72       0.77
  Alpha                      1.02   Stream Power (lb/ft s)    2.22       6.57       3.34
  Frctn Loss (ft)            0.00   Cum Volume (acre-ft)
  C & E Loss (ft)            0.06   Cum SA (acres)


Warning - The energy equation could not be balanced within the specified number of iterations.  The
          program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
          than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
          depth, the calculated water surface came back below critical depth.  This indicates that there is
          not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
          cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
          surface was used.

CROSS SECTION          RIVER: Harquahala
REACH: Upper Mid Reach    RS: 18.9676

INPUT
Description: 18.9676
Station Elevation Data    num=     242
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
3503.6261314.2693515.1941314.2963537.0391314.0563547.8851313.9943557.6161311.333
3558.0631311.2213558.7231311.3863566.781 1313.273594.3961313.578 3618.151313.737
3629.3411313.8443655.0861313.5973678.5481313.2063685.9781312.2393691.2651311.825
3705.0871313.0773706.2381312.1723707.4911313.1893746.5321314.0533759.4921313.887
3789.9251313.2663816.0771313.0543848.9141312.6213885.3961311.9713891.4461311.972
3908.5391312.0963919.1211312.2193922.2481311.7293930.0791310.8333932.9151311.189
3941.2181311.7723954.8181312.1163973.0021312.3293990.0641311.6933996.2271311.479
4007.7121311.7964010.9951311.8334016.6431311.4634022.3371310.8344029.0861311.251
4033.277 1311.334047.3231312.0564052.311 1312.344054.3451312.0144062.0861310.684
4070.6751310.7974075.5521311.0564087.345 1311.76    40951312.2634099.3511311.963
4111.5021311.1174120.1311311.7044120.788 1311.774134.1451312.3024157.7891312.386
4141.4961311.3854148.3721309.5944152.173 1310.164156.267  1311.84159.0351311.759
4161.1031311.6524165.2021311.425 4166.961321.3514168.6851311.4854174.9061312.142
4191.7361310.1974210.5281312.4344229.7611312.2974250.9741312.2314285.2331311.859
4296.7821311.7044307.1891312.1864321.397 1312.774328.4811312.7464335.8271312.611
4375.6551312.1334400.5041312.0594430.9081312.1714432.2431312.1844493.6451312.572
 4508.671312.6674508.8311312.6674565.474 1312.334569.2711312.3754580.3071312.585
4597.3161312.625 4601.921312.622 4607.821312.5824641.7371312.3974647.6211310.466
4650.4421309.5464654.008 1310.374659.4721311.7364665.189 1311.914674.1121311.995
4686.1481311.8444687.4551311.7654688.0571311.5224694.6361308.909 4705.711311.856
4705.8691311.8944706.477  1311.94750.1181312.309 4758.41  1312.24786.2141311.758
4801.872 1311.944810.6971311.8934814.3951311.1114818.2751310.1944824.3381309.758
4825.0441309.5634825.4091309.6314828.0531309.8144833.9241310.2474838.1311310.618
4839.0281310.7294852.1691310.9054856.743 1311.294862.8391311.0784871.4131309.009
4872.7091308.7044873.6121308.9114888.614 1311.874897.9451311.9764913.5891312.291
4918.5011312.3794923.1461312.1234925.9811311.9224940.4271310.7934945.8581311.021
4950.5231310.5944955.4191310.8974966.6981311.8354971.6531312.4294976.5281312.423
4984.5951312.0954991.7381311.6635002.0821309.7945002.5461309.6975011.7071311.279
5015.1341312.0135021.6181312.0655026.685 1312.125050.4491312.4215054.0241312.456
5068.7441312.4415113.045 1312.115135.4411311.9255145.343 1311.925167.1081311.973
5224.4351312.0555232.2041311.1295235.6261310.9335240.5841310.593 5250.221309.956
5253.2421309.7825255.7291309.9135256.2941309.761 5261.651308.7585262.0761308.675
5262.7371308.8275275.7061311.0035303.2231311.7575312.5121312.1255328.0341311.837
5335.0251311.9415339.3751311.8915341.9021311.8025370.5441310.2155378.8131308.627
 5381.67 1308.185383.0021308.3825386.1481308.927 5392.251309.858 5411.081310.833
5426.5461311.2865439.8571311.1765461.7541310.2775467.1911310.1595467.2541310.103
5468.3391310.0415479.0441309.6035492.2021310.2175496.2611310.4075499.1671310.358
5505.2371310.3285529.8221310.1685536.7461308.6445537.8791308.3215541.5261308.698
5544.2651309.0035546.476 1309.055550.9211309.4245554.9661307.3835556.4621306.751
5565.5871309.9635566.2071310.1795566.5781310.1925571.4951310.2445602.3171310.448
5614.5471310.4945622.9231309.7525625.4151309.3825627.5981309.6025634.3061310.135
 5665.79 1310.635686.9761310.9865695.5961311.2235713.1021312.092  5723.61311.947
5724.525 1311.87 5727.131311.8635748.427 1311.545754.2711310.6085755.9821310.415
 5757.081310.547 5763.331310.9615776.957 1310.985779.0021310.2425784.1561308.516
5786.608 1309.025788.7921308.4215791.4381309.1215800.2341310.6985817.8231310.813
  5842.71310.821 5853.081311.0875857.5761311.138 5869.371311.4185896.9331311.852
 5939.831312.5685949.6651312.7395959.9631312.9416015.7931313.2286025.3591312.996
6034.2681312.8266034.3261312.8256040.5161313.3796044.7471313.7766068.3651314.175
6081.463  1314.46095.9741314.309
```

```
Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
3503.626    .035 4976.528    .085 5026.685    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4976.52 5026.685              559607.2768     521            .1          .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1312.59   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.64   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)            1313.23   Reach Len. (ft)             559.00     607.28     521.00
  Crit W.S. (ft)            1312.59   Flow Area (sq ft)           813.81      56.99    1425.01
  E.G. Slope (ft/ft)       0.015161   Area (sq ft)                813.81      56.99    1425.01
  Q Total (cfs)            13940.00   Flow (cfs)                 3819.56     132.87    9987.55
  Top Width (ft)            2049.68   Top Width (ft)             1085.01      50.16     914.51
  Vel Total (ft/s)             6.07   Avg. Vel. (ft/s)              4.69       2.33       7.01
  Max Chl Dpth (ft)            5.84   Hydr. Depth (ft)              0.75       1.14       1.56
  Conv. Total (cfs)        113212.5   Conv. (cfs)                31020.4     1079.1    81113.0
  Length Wtd. (ft)           533.75   Wetted Per. (ft)           1089.48      50.57     917.91
  Min Ch El (ft)            1309.70   Shear (lb/sq ft)              0.71       1.07       1.47
  Alpha                        1.12   Stream Power (lb/ft s)        3.33       2.49      10.30
  Frctn Loss (ft)              6.79   Cum Volume (acre-ft)         34.06       6.84      74.09
  C & E Loss (ft)              0.06   Cum SA (acres)               30.84       2.81      36.64


Warning - The energy equation could not be balanced within the specified number of iterations.  The
          program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
          depth, the calculated water surface came back below critical depth.  This indicates that there is
          not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION          RIVER: Harquahala
REACH: Upper Mid Reach     RS: 18.8526

INPUT
Description: 18.8526
Station Elevation Data     num=      225
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
3737.6451308.4493753.5771308.4213770.7081307.8583782.7141307.3483791.421 1307.06
3805.5871306.1013810.9161305.7633816.5021305.8723828.0411306.1193832.9381306.184
3841.0491306.3783841.125 1306.383841.9911306.2413851.2321304.7243851.7211304.655
3852.1461304.7333868.3651306.2343869.5661306.2223918.903  1305.83932.4321305.684
3942.6491305.6913995.2021305.4364011.982 1305.294014.7561305.2534016.6861305.259
4031.651 1305.234053.9171304.9564067.702 1304.884076.1431304.8654100.2811304.875
4106.1991304.8924114.0511305.0434114.6691305.0524115.6721305.0344125.7411304.807
4133.5521304.3934134.175 1304.384134.8321304.4194138.3671304.6524146.6221305.164
4179.4591305.2364194.7691305.3064204.3121305.4144213.8421305.4294241.2151305.683
4265.1811305.0724267.8521305.0324269.393 1304.714271.4731304.2584277.581    1303
4289.2471305.0944289.9621305.208 4290.221305.2394306.0921305.0594313.0461305.332
4346.9621304.3314349.4471304.2324351.1581304.2284371.228 1304.344375.472 1303.85
4376.7221303.7194385.8651304.816 4387.061304.9324390.1681304.959 4449.411305.355
4457.529 1305.224472.1581304.8044505.8311303.9014548.2931304.0614557.1861304.124
4570.0241304.3864597.5631304.9014601.6031305.0144606.6591305.0784613.0831305.137
4628.139 1304.774666.8831303.8184687.9271304.5844688.1051304.591 4688.161304.592
4688.237 1304.594703.1681304.0764705.5441303.7984710.3761303.2494714.1711303.447
4718.7941303.9384738.7061303.5574740.5781303.5344744.2571303.7334753.7431303.562
4768.9391303.5624772.4931302.8114775.8951302.3384791.552 1304.034792.2231304.094
4792.3841304.1014816.8551304.522 4831.941304.3494839.6421304.2444841.5351304.188
4850.8811303.7434856.9161303.7564869.4941304.3314878.3511304.0734878.4511304.074
4880.9721304.1714891.8011304.6624900.2441304.794 4923.211305.1844924.1261305.192
4925.9221305.254 4943.011305.7284957.1341305.0224959.8861304.7594963.865 1304.43
 4970.461304.1154974.6131303.7864978.2811303.6654984.981 1303.914988.7021303.508
4990.7381303.4694999.1581302.2674999.7271302.1035000.6041302.208 5005.271302.891
5012.3871303.4455014.213 1303.655016.7811303.739 5028.891304.2215029.7461304.265
 5043.861304.5885046.7521304.5935098.1291304.6455105.8221304.642 5107.16 1304.66
5171.8281304.4445176.0921304.4485179.605 1304.435181.9331304.3375195.6451303.757
5197.3271303.8145224.1441304.4415243.6181304.8855244.8811304.8965246.5051304.879
5294.9291303.7835299.6911303.5195310.133 1303.015315.1211303.3575324.6361304.061
5351.3351304.522 5358.471304.6315364.8581304.443 5401.291303.4955409.9091302.628
 5410.151302.6045413.0151302.9445418.3871303.5995418.6941303.6015426.9491303.841
5430.6041303.7935446.3961303.4735452.804 1302.335453.8551302.0685465.4731303.234
5466.0061303.3195466.7141303.3385480.1261304.234 5499.981303.8395526.3371303.508
5536.682 1303.36 5545.561303.8045551.952 1304.365561.6191304.6825570.5161304.642
5574.5091304.7095639.6391304.5625642.683 1304.575658.2591304.5335660.2261304.475
5676.561 1304.435716.2271304.3095722.3651304.2295731.9751304.0545743.3821303.888
5769.9841303.308  5771.11303.0995776.8671302.1145782.8421301.1395784.2221300.834
5792.458 1303.525793.6821303.8255796.5721303.8015808.4851303.6775824.441 1303.72
5842.6471303.7615847.2421303.0285851.9961302.5945857.2381302.939 5862.021303.425
5879.3951303.7665880.5371303.7895881.2231303.7985911.7521304.1875922.1921303.864
5929.5381303.6875941.0131302.2515945.9591301.3745953.7581302.771 5962.921304.073
5991.2691304.309 5995.121304.3266020.4321304.6356025.6711304.6966026.3971304.706
6026.6041304.7096026.7731304.7096027.6071304.7226082.0541305.4656113.749 1305.65
  6114.61305.6486115.5911305.6586116.5481305.6716145.6871306.0336156.8251306.269

Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
3737.645    .035 4943.01    .085 5043.86    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4943.01 5043.86               533581.9578     508            .1          .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1305.61   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.45   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)            1306.06   Reach Len. (ft)             533.00     581.96     508.00
  Crit W.S. (ft)            1305.46   Flow Area (sq ft)           940.17     161.91    1595.78
```

E.G. Slope (ft/ft)	0.010821	Area (sq ft)	940.17	161.91	1595.78
Q Total (cfs)	13940.00	Flow (cfs)	4302.85	409.18	9227.97
Top Width (ft)	2147.87	Top Width (ft)	985.20	98.53	1063.35
Vel Total (ft/s)	5.17	Avg. Vel. (ft/s)	4.58	2.53	5.78
Max Chl Dpth (ft)	4.78	Hydr. Depth (ft)	0.95	1.64	1.50
Conv. Total (cfs)	134005.3	Conv. (cfs)	41363.3	3933.5	88708.6
Length Wtd. (ft)	517.97	Wetted Per. (ft)	986.34	98.83	1065.06
Min Ch El (ft)	1302.10	Shear (lb/sq ft)	0.64	1.11	1.01
Alpha	1.08	Stream Power (lb/ft s)	2.95	2.50	5.85
Frctn Loss (ft)	7.00	Cum Volume (acre-ft)	22.80	5.31	56.02
C & E Loss (ft)	0.02	Cum SA (acres)	17.56	1.77	24.81

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION RIVER: Harquahala
REACH: Upper Mid Reach RS: 15.7424

INPUT
Description: 18.7424
Station Elevation Data num= 168

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4053.5041300.9134071.8061300.7984099.7041300.7464113.4571300.393 4138.351299.716
  4144.31298.4094145.7611298.1034154.1031299.3334154.5971299.4244159.088 1299.36
4190.4871299.0974196.854 1298.614200.6321298.2514203.9151298.6254210.7631299.354
4217.5211299.3964224.3641299.4084240.4671299.2354253.5131299.0614264.4891299.102
 4271.841299.146  4272.61299.1534290.2611299.103 4299.821299.2354323.5411298.696
4328.8261298.487 4360.111297.8454373.2131297.9834392.0291298.1864393.2771298.224
  4395.51298.2214408.4171297.5064409.1061297.3814411.6861297.0614412.7481296.943
4416.4611296.1414419.3661295.2954422.2071295.8354431.847  1298.14434.7151298.135
4448.9321298.0474476.6281297.6434493.8661297.3154497.9131295.5024499.6821296.711
 4506.091297.357 4525.271297.4294529.5861297.3444532.7951296.8244537.3061295.987
4542.7531296.9654545.9091297.4164574.2491297.6914589.7051297.884 4603.551297.775
 4614.991297.7744634.2571297.5454645.8241297.3164670.9551297.1294679.8111297.079
4688.6271297.0484691.2461297.0394693.7591297.0124707.1631296.929 4713.551296.988
4733.399 1297.014748.7871297.1054774.267 1297.53 4797.081297.0144814.6211296.876
 4832.611296.5634845.0791296.1864845.9541296.4724847.7071295.754 4849.551295.218
4856.0961295.7764858.9191295.8874861.4811296.1134883.6791296.5234906.313 1296.76
4951.2051297.495  4955.71297.5684988.1141297.1134988.9681297.1024989.027  1297.1
4989.4771296.9844999.2631294.5054999.6981294.4114999.9971294.4715005.1491295.294
5009.9831296.071 5022.191296.2675041.8521296.6015042.3881296.6065055.6221296.546
5058.271 1296.485065.6931296.2225070.3491296.6345076.2121296.8885110.2171297.099
5115.8391297.1555124.9331297.1125150.3291297.0295155.6381297.0055172.566 1297.08
5179.958 1297.025219.4921296.9115222.6811296.9175235.0811296.9525250.4261296.907
5261.6661296.9045269.4511296.3675279.3511295.8695281.6041295.9785288.3921296.193
5305.7751296.6555309.5581296.712 5322.961296.7655353.4121296.968  5362.91296.925
5426.5281297.1195452.2161296.8795482.3961296.6025515.3611296.9585528.575 1297.02
5531.1821296.4175536.3191295.373 5543.06 1296.755544.3841296.9495548.3561296.949
5573.3261296.686 5581.071296.8195594.0241296.8815613.2521296.8925635.6641296.799
5653.3541297.344 5657.851297.5295668.9721297.8655679.3331297.534 5682.531297.453
5688.8511297.4395695.2951297.4555706.033 1297.495726.1881297.6145759.1181297.438
5770.0481297.3745772.1681297.0335779.6751295.4725784.3581296.4865788.2931297.366
5818.3261297.6235842.088 1297.795849.726  1297.55859.0141297.4215885.6391297.449
    5895 1297.575931.3891297.6155933.1921297.6195937.5051296.7695947.7511294.738
5948.2361294.8065949.0581294.897 5962.99  1296.75965.8181296.982 5976.681297.481
5982.7281297.7756017.1451298.2196037.3541298.697
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
4053.504    .0354988.114    .085 5022.19    .035
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4988.114	5022.19		586595.6793	540	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1298.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1299.04	Reach Len. (ft)	586.00	595.68	540.00
Crit W.S. (ft)	1298.38	Flow Area (sq ft)	739.56	88.50	1339.93
E.G. Slope (ft/ft)	0.017337	Area (sq ft)	739.56	88.50	1339.93
Q Total (cfs)	13940.00	Flow (cfs)	4473.44	381.43	9085.13
Top Width (ft)	1695.66	Top Width (ft)	659.80	34.08	1001.78
Vel Total (ft/s)	6.43	Avg. Vel. (ft/s)	6.05	4.31	6.78
Max Chl Dpth (ft)	3.97	Hydr. Depth (ft)	1.12	2.60	1.34
Conv. Total (cfs)	105870.4	Conv. (cfs)	33974.5	2896.9	68999.0
Length Wtd. (ft)	552.80	Wetted Per. (ft)	661.64	34.55	1003.07
Min Ch El (ft)	1294.41	Shear (lb/sq ft)	1.21	2.77	1.45
Alpha	1.02	Stream Power (lb/ft s)	7.32	11.95	9.80
Frctn Loss (ft)	6.19	Cum Volume (acre-ft)	12.52	3.64	38.91
C & E Loss (ft)	0.08	Cum SA (acres)	7.49	0.88	12.77

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Harquahala
REACH: Upper Mid Reach RS: 18.6296

INPUT

Description: 18.6296
Station Elevation Data num= 193

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4130.883	1293.589	4133.371	1293.573	4137.808	1293.358	4171.782	1292.007	4175.654	1291.994
4178.375	1291.969	4190.167	1291.881	4204.821	1291.749	4211.065	1291.538	4212.895	1291.622
4216.031	1291.547	4227.865	1290.969	4231.778	1290.776	4233.233	1290.948	4238.998	1291.637
4241.406	1291.555	4241.956	1291.543	4249.532	1291.414	4303.092	1291.583	4309.525	1291.61
4317.491	1291.661	4324.866	1290.485	4330.017	1289.822	4347.475	1289.036	4351.767	1292.127
4363.867	1292.216	4394.168	1291.958	4400.829	1291.936	4403.459	1291.949	4433.751	1292.218
4440.466	1292.239	4457.545	1292.005	4492.568	1291.851	4522.397	1291.516	4538.477	1291.404
4553.749	1291.23	4585.131	1290.807	4595.861	1290.383	4602.486	1290.066	4606.415	1290.195
4624.152	1290.819	4646.591	1290.922	4680.126	1291.129	4700.775	1291.099	4717.209	1290.954
4746.391	1291.066	4752.991	1291.232	4773.781	1291.357	4789.486	1291.089	4798.212	1290.924
4817.221	1290.696	4837.271	1290.492	4843.788	1290.454	4851.854	1291.227	4858.923	1289.876
4867.348	1289.479	4873.147	1289.125	4880.112	1288.072	4880.212	1288.054	4880.316	1288.076
4885.508	1289.077	4889.121	1289.709	4892.021	1289.586	4902.086	1289.272	4910.279	1290.172
4910.671	1290.202	4912.725	1290.162	4935.485	1289.539	4953.947	1289.247	4976.659	1289.9
4997.929	1288.737	5000.445	1287.734	5001.551	1287.207	5003.363	1287.597	5009.991	1288.874
5014.418	1286.834	5030.508	1288.565	5036.037	1287.904	5039.343	1287.516	5045.251	1287.948
5054.022	1288.855	5072.566	1288.803	5089.181	1288.862	5094.135	1288.988	5111.261	1289.656
5113.456	1289.671	5128.481	1289.535	5163.623	1289.191	5173.518	1289.161	5243.828	1289.162
5244.164	1289.162	5244.236	1289.161	5244.251	1289.161	5257.634	1288.891	5259.742	1288.962
5261.086	1288.971	5265.696	1289.065	5282.565	1288.956	5299.503	1289.289	5312.421	1289.176
5334.135	1289.779	5345.861	1290.118	5359.755	1290.017	5379.161	1289.975	5386.689	1289.56
5396.707	1289.558	5393.904	1289.116	5396.021	1288.499	5401.297	1287.619	5405.738	1288.373
5410.179	1289.036	5432.433	1289.525	5438.287	1289.644	5440.925	1289.765	5455.08	1290.44
5470.586	1290.665	5472.395	1290.737	5482.291	1290.836	5500.144	1291.155	5508.758	1290.738
5512.443	1290.737	5548.023	1291.332	5549.991	1291.086	5552.145	1291.034	5565.251	1290.852
5577.691	1290.861	5586.582	1290.582	5604.039	1289.814	5610.346	1288.865	5614.021	1288.146
5619.902	1289.047	5622.369	1289.465	5631.801	1289.749	5640.899	1289.793	5671.992	1289.959
5687.634	1290.176	5732.185	1290.27	5761.411	1290.295	5775.627	1289.956	5775.807	1289.956
5779.672	1290.057	5801.501	1290.647	5806.143	1290.627	5862.101	1290.344	5870.275	1290.472
5878.986	1290.614	5881.468	1290.163	5889.379	1289.499	5892.506	1289.829	5903.233	1290.326
5916.885	1290.352	5941.931	1290.746	5943.603	1290.779	5944.063	1290.776	5944.497	1290.743
5953.104	1289.885	5959.502	1290.432	5960.682	1290.572	5965.663	1290.608	5978	1290.716
5984.044	1289.301	5984.795	1289.177	5985.441	1289.247	6001.645	1290.464	6029.247	1290.778
6046.819	1291.003	6057.224	1290.889	6068.073	1290.636	6071.336	1290.277	6077.096	1289.839
6087.508	1290.165	6096.684	1290.705	6115.891	1290.952	6119.874	1291.204	6130.153	1291.109
6137.548	1291.102	6157.162	1290.965	6179.809	1290.796	6184.701	1289.533	6188.841	1288.591
6192.822	1289.834	6196.888	1290.841	6208.771	1290.684	6217.083	1290.473	6225.061	1290.647
6233.283	1290.915	6250.785	1290.984	6254.945	1291.018	6262.623	1291.235	6294.289	1292.018
6304.958	1292.272	6315.609	1292.316	6316.235	1292.313				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4130.883	.035	4976.659	.035	5014.418	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4976.659	5014.418		501559.1249	525	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1291.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1292.11	Reach Len. (ft)	559.12	559.12	559.12
Crit W.S. (ft)	1291.33	Flow Area (sq ft)	601.10	118.78	2119.66
E.G. Slope (ft/ft)	0.007821	Area (sq ft)	601.10	118.78	2119.66
Q Total (cfs)	13940.00	Flow (cfs)	2349.35	390.93	11199.72
Top Width (ft)	1920.38	Top Width (ft)	614.86	37.76	1267.76
Vel Total (ft/s)	4.91	Avg. Vel. (ft/s)	3.91	3.29	5.28
Max Chl Dpth (ft)	4.51	Hydr. Depth (ft)	0.98	3.15	1.67
Conv. Total (cfs)	157629.6	Conv. (cfs)	26565.8	4420.6	126643.3
Length Wtd. (ft)	559.12	Wetted Per. (ft)	615.56	38.23	1269.65
Min Ch El (ft)	1287.21	Shear (lb/sq ft)	0.48	1.52	0.82
Alpha	1.05	Stream Power (lb/ft s)	1.86	4.99	4.31
Frctn Loss (ft)	5.26	Cum Volume (acre-ft)	5.05	1.49	19.40
C & E Loss (ft)	0.03	Cum SA (acres)			

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 18.5237

INPUT
Description: 18.5237
Station Elevation Data num= 206

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4109.876	1286.881	4110.481	1286.874	4115.064	1286.906	4142.895	1286.953	4149.817	1286.358
4151.861	1286.404	4152.348	1286.375	4152.531	1286.362	4152.862	1286.37	4168.911	1286.738
4173.109	1286.005	4178.999	1284.966	4190.371	1286.781	4192.159	1287.14	4210.329	1286.852
4222.362	1286.712	4227.915	1286.503	4233.982	1286.241	4247.273	1285.662	4272.853	1287.66
4273.899	1287.731	4299.583	1288.024	4306.106	1288.157	4307.987	1288.196	4309.541	1288.221
4316.424	1288.046	4326.029	1287.772	4328.348	1287.743	4344.271	1287.376	4357.113	1287.12
4358.308	1287.071	4373.391	1287.096	4397.682	1287.178	4403.714	1287.074	4432.621	1286.696
4443.046	1286.116	4444.852	1285.884	4451.344	1286.128	4459.911	1286.457	4472.382	1286.593
4481.121	1286.667	4494.426	1287.776	4497.746	1288.022	4499.576	1287.987	4510.229	1287.716
4519.521	1287.614	4525.648	1287.135	4536.503	1286.264	4545.372	1286.139	4557.404	1285.804
4566.91	1286.235	4572.368	1286.369	4577.968	1286.123	4597.186	1285.404	4600.097	1285.246
4605.432	1284.913	4612.511	1283.883	4618.146	1284.221	4631.182	1285.179	4661.888	1285.475
4678.077	1285.587	4687.407	1285.602	4743.067	1286.014	769.058	1286.109	4796.611	1286.066
4848.125	1285.064	870.264	1284.586	4874.317	1284.246	4886.562	1283.624	897.566	1284.362
4900.885	1284.561	4906.096	1284.444	933.536	1284.154	4935.832	1284.189	4962.363	1284.719
4968.181	1284.646	4982.922	1284.362	4997.571	1282.271	4997.922	1282.224	4998.201	1282.262
5006.386	1283.353	5007.321	1283.255	5019.827	1283.585	5022.677	1283.756	5042.052	1283.948
5053.677	1284.087	5062.974	1284.162	5095.577	1284.789	5099.621	284.833	5105.943	1284.692
5139.024	1283.949	5162.672	1283.414	5171.221	1283.301	5192.102	1282.909	5195.051	1282.393
5198.754	1281.928	5201.527	1282.194	5209.563	1282.936	5212.705	1282.895	229.546	1282.665
5233.813	1283.132	5239.673	1283.668	5248.943	1283.845	5249.894	1283.841	5251.631	1283.809

5259.2621283.5885268.9071283.2535274.935 1283.055277.0341283.133 5282.48 1283.37
5291.2711283.5515297.1691283.0225300.0431283.0315305.1781283.2665340.2331285.052
5367.611286.115 5374.381286.152 5411.841286.235 5411.91286.2125421.1381286.047
5478.3811286.5265484.3371286.5765505.6431285.6955518.5171285.2975536.8171283.783
5542.5931283.0015543.3251283.0225546.4021282.8775552.711 1282.745554.7031282.746
5574.2291282.4455575.6221282.4135576.2121282.3185582.8591280.8455583.0391280.913
5587.718 1283.025592.5811283.7215623.9861283.4745657.4411283.6665689.4051284.324
5732.5091284.8365734.6641284.863 5796.421284.787 5796.51284.7875796.6481284.782
5818.9281283.9095828.4371284.6435829.1641284.7025844.4611284.2995846.9851284.245
5854.111284.1095884.4281283.7965904.4821284.9815905.2031285.0055915.6281283.293
5915.7731283.2585916.0131283.2815923.8251284.2485928.2851284.1975938.9151283.985
5943.1841284.4435945.1931284.611 5955.411284.7675961.1291285.4295970.5661286.573
5980.9891286.2585985.8691286.2425996.5221286.0916019.5831285.2366023.7081285.137
6026.7871285.1716037.7111284.0636041.7961283.544 6045.181284.237 6051.721285.153
6067.0631285.2036082.4611285.2076089.4781285.2286104.149 1285.326117.3341285.135
6125.9251285.2676139.2331285.3956172.2461285.5666179.3561285.6446182.2081285.662
6221.7061285 9366230.4481285.9936262.428 1286.36290.6481286.5826295.7771286.628
6301.5241286.6326342.9071286.707 6350.921286.782 6369.981286.9326373.3491286.958
6375.6661286.9616377.309 1286.82 6383.761286.1476388.7371286.502 6393.97 1286.86
6410.93 1287.26432.1571287.4616459.7191287.3636468.5411287.5656496.988 1288.27
6498.6791288.286

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
4109.875 .0354968.181 .0855062.974 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
4968.1815062.974 690726.5636 654 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1286.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1286.82	Reach Len. (ft)	690.00	726.56	654.00
Crit W.S. (ft)	1286.03	Flow Area (sq ft)	371.59	226.00	1806.77
E.G. Slope (ft/ft)	0.011408	Area (sq ft)	371.59	226.00	1806.77
Q Total (cfs)	15000.00	Flow (cfs)	1550.11	751.78	12698.11
Top Width (ft)	1589.96	Top Width (ft)	448.96	94.79	1046.21
Vel Total (ft/s)	6.24	Avg. Vel. (ft/s)	4.17	3.33	7.03
Max Chl Dpth (ft)	5.29	Hydr. Depth (ft)	0.83	2.38	1.73
Conv. Total (cfs)	140441.3	Conv. (cfs)	14513.3	7038.8	118889.2
Length Wtd. (ft)	660.57	Wetted Per. (ft)	449.45	95.04	1048.02
Min Ch El (ft)	1282.22	Shear (lb/sq ft)	0.59	1.69	1.23
Alpha	1.13	Stream Power (lb/ft s)	2.46	5.63	8.63
Frctn Loss (ft)	6.58	Cum Volume (acre-ft)	133.98	10.94	137.59
C & E Loss (ft)	0.06	Cum SA (acres)	79.91	4.16	89.54

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 18.3861

INPUT
Description: 18.3861
Station Elevation Data num= 183
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
4350.2541280.0754352.682 1280.334361.7681280.8174368.2751281.1864371.034 1281.23
4387.0041280.3284401.9871279.552 4411.8 1279.554432.2571279.5834440.7421279.668
4452.3651279.5264467.4261279.2824471.8661278.3684474.9411277.2944477.9251277.966
4485.4381278.9364486.5431278.9634488.4071278.9124495.3411278.881 4502.811277.443
4504.0951277.1424506.9121277.5054516.8141279.2254537.5291279.1034539.4111279.106
4540.931279.3524548.0791280.5934550.9631281.0484551.9521281.023 4565.47 1280.88
4578.881280.2754585.9571280.1054599.7711280.0394619.6841279.9474629.9641279.869
4639.4481279.7344666.2381278.1444675.9921277.7384699.184 1278.764712.2181279.317
4718.3311279.5324733.0591280.0894740.5651280.079 4757.181279.7854759.9661279.014
4760.141278.9584765.946 1277.294768.0141276.761 4778.931277.6494779.3721277.686
4838.3181278.6474829.793 1278.864842.1641278.6264885.3881277.7594905.2981278.542
4908.6941278.709 4932.351278.8124936.7281278.7974974.4041278.636 4985.74 1278.59
4987.1661278.5275001.3781277.5125002.1421277.5365010.1011277.8915029.5061278.257
5033.3561278.3665034.2821278.2245040.5281277.2375045.2821277.8825050.8951278.662
5082.51278.4025132.7751278.2065173.7311278.2195208.4461278.2055224.3551277.896
5225.7921277.8685228.751 1277.965248.2911278.6535260.2751278.5995266.2261278.552
5271.3261278.5185286.9231278.4965296.7921277.9125300.8371277.5955302.4091277.634
5303.6361277.5165312.0791276.957 5314.211276.9355321.465 1277.055328.225 1277.54
5331.2161277.6515353.0381279.2065354.1781279.2955356.2911279.3355360.7371279.372
5413.7081279.8075422.3591279.8365436.0321279.7425449.3961279.7335469.7841279.527
5495.3471279.2595511.4731279.6025513.6691279.6345526.8521279.9825561.0221279.317
5566.0291279.1965570.9841278.9825585.281 1278.25596.0121277.854 5600.061277.726
5616.368 1276.435617.2111276.357 5617.71276.3455634.6251276.4025637.8161275.909
5644.0081274.7915650.6881275.9555654.9311276.7075658.4531276.2785658.8821276.243
5660.6021276.2545674.2631276.9585676.4971277.1935714.7341277.4155722.3991277.614
5730.2811277.7365766.1041277.1355773.3591277.0125773.8891276.9065781.4541275.583
5782.448 1275.915788.0731276.8545791.4751276.885 5799.411276.993 5803.241276.215
5806.5531275.5385810.8551276.6725813.2221277.3465817.6671276.902 5818.071276.665
5819.9341276.4755827.6331275.7175836.0031276.4445839.316 1276.785843.9981277.011
5851.9351277.4135855.4421277.4215883.3331277.4125895.4351276.9595909.9851276.702
5912.5191276.8085916.6891276.9875935.9141277.7555942.9991277.7975946.1561277.786
5973.2161278.1036001.0341277.9646019.2831277.9916055.8911277.6116072.0421277.759
6100.1811278.2556125.608 1278.08 6138.41277.9746143.7491277.9586154.7051278.416
6157.4121278.4796169.5541278.4366191.8131278.1986207.9311278.0286226.6151278.019
6249.1361277.8846252.6511276.9886259.4171275.4476260.8061275.9276267.8341277.547
6300.8851278.1766325.2211278.6686340.4071278.9916415.6761279.4846515.0281280.163
6528.9711280.263 6536.591280.2356569.2911280.361

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
4350.254 .035 4985.74 .0855033.356 .035

```
Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4985.745033.356                520542.3258     497            .1          .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1279.70   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.48   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)            1280.18   Reach Len. (ft)            520.00     542.33     497.00
  Crit W.S. (ft)                      Flow Area (sq ft)          475.75      79.99    2218.27
  E.G. Slope (ft/ft)       0.008765   Area (sq ft)               475.75      79.99    2218.27
  Q Total (cfs)            15000.00   Flow (cfs)                2036.93     184.85   12778.22
  Top Width (ft)            1840.33   Top Width (ft)             454.97      47.62    1337.74
  Vel Total (ft/s)             5.41   Avg. Vel. (ft/s)             4.28       2.31       5.76
  Max Chl Dpth (ft)            4.91   Hydr. Depth (ft)             1.05       1.68       1.66
  Conv. Total (cfs)        160222.0   Conv. (cfs)               21757.4     1974.5   136490.2
  Length Wtd. (ft)           499.59   Wetted Per. (ft)           456.36      47.67    1340.02
  Min Ch El (ft)            1277.51   Shear (lb/sq ft)             0.57       0.92       0.91
  Alpha                        1.05   Stream Power (lb/ft s)       2.44       2.12       5.22
  Frctn Loss (ft)              5.23   Cum Volume (acre-ft)       127.27       8.39     107.37
  C & E Loss (ft)              0.01   Cum SA (acres)              72.75       2.98      71.64


Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
REACH: Lower Mid Reach     RS: 18.2834

INPUT
Description: 18.2834
Station Elevation Data     num=      223
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4323.4351277.8584324.2541277.8554340.0651277.7874347.1621277.5134350.5281277.459
4365.5881277.2054383.7091276.4954384.9171276.4264386.7711276.3524390.3121275.925
4392.2211275.713 4392.761275.6044395.0561275.3224404.2331274.0464406.9881273.655
4409.7421273.9554415.5281274.6224431.6381275.0714432.6291275.0954433.0491275.081
4432.8811275.0564456.3841274.3534465.0061272.2144465.3961272.1384465.6031272.168
4467.7011272.5734479.7761274.7784480.6011275.0174501.2361275.1144510.7781275.063
4532.4691274.6294541.5551274.4864556.0381274.4784563.496 1274.274580.6681274.302
4584.471     12744590.986 1273.094601.9391274.4064606.3561274.965 4609.66 1274.92
 4622.331274.8354632.3181274.9544662.5551274.7174664.9741274.6624705.011 1273.99
4721.8531273.6384733.5051273.5334744.3121273.4274760.4381273.4764783.1461273.683
 4788.591273.0944792.6021272.8294794.406 1272.95 4800.42 1273.424815.4731273.887
4821.0531273.9964825.1361273.0894829.2791272.2364832.0171272.3374835.6511272.868
4844.7761272.5554849.8071273.095 4856.511273.8674880.216 1273.954892.8521274.013
4897.5161274.0574941.1721274.2174955.246  1273.94964.7551273.7554973.7891273.668
4996.1421273.6254996.4721273.5794999.109 1272.755000.8421272.9545008.7271274.148
5016.7421274.0455017.2491274.0535018.5531274.0165027.7371273.7075043.4171273.193
5044.9291273.1525046.4071273.1945051.5151273.3635055.6921272.8465059.583 1272.22
5067.1831273.2085068.8451273.4155071.6841273.4315099.4781273.5625117.9581273.508
5142.3611273.0185145.3491272.9355150.3691273.2735153.9651273.1785158.8731273.299
 5161.711273.3285186.4811273.2895194.6871272.5125196.3381272.3855202.3621272.686
5221.977 1273.655250.7941273.4865291.2931273.1085305.9871273.1095318.5631273.076
5328.6961272.7725338.116 1273.235344.824 1273.38 5349.911272.7215352.6841272.208
5357.2611272.6945363.0811272.6185366.9581272.8995371.4791273.1725402.139 1274.03
5404.1571274.0695404.9021274.0715447.0621273.6155480.4131273.687 5486.881273.689
5519.7241273.2995523.813 1273.245524.2491273.2645526.5681273.3185534.054 1273.45
5542.4191273.2585555.0021273.0415555.8471272.9955563.8411272.615 5566.541272.552
5596.8861271.3475600.7641271.202 5602.041271.2695625.1541272.2365625.7141272.241
5644.9961272.2555649.4241271.096 5654.591269.8995660.507 1271.17 5665.18 1272.06
5669.2221271.9945687.2261271.6835708.4991271.7725712.5491271.8675718.1531272.452
5726.2191272.8885738.9111271.7685751.3181270.6125755.2321271.4245761.0881272.354
5796.6261272.1825811.6291272.1165831.6041272.6855843.8411272.9265856.1841272.898
 5904.911272.4595911.0581272.3295922.3691270.9355922.4241270.9285922.4631270.938
5929.2921272.1985940.9751272.4095945.9981272.5815984.2331272.8685991.9911272.905
6000.8641272.8366035.2151272.4046040.649 1272.356051.8531272.0896057.9781272.164
6096.7041272.6936217.154 1272.446127.6331272.4686152.5791272.357  6158.41270.948
6161.9551270.3426166.5291271.4526172.4831272.6076205.8371272.4136212.8361272.346
 6215.221272.413 6225.971272.7646240.0021272.9596272.0441273.0096320.0861273.101
6337.2911272.9666243.605 1272.08 6345.29 1271.886350.535 1272.246353.6881272.493
6355.7971272.4576357.0071272.2966362.4761272.1536371.6861272.1026387.0911273.315
6403.0071273.5416403.9941273.5566432.7121273.8386445.3051273.8146446.0181273.813
6447.2721273.831 6471.721274.1016476.0181274.1176509.4081274.2426522.3261274.246
6563.0611274.4336589.6451274.4586619.0781274.9076629.6041274.9896631.422 1274.63
6637.114 1273.816648.804 1274.516652.1231274.7166660.9581274.777 6665.961274.848
6690.5161274.8056726.7251275.1956728.3861275.2236734.2941276.048 6734.721276.048
6735.0361276.0576736.1481276.0746745.3651276.105

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
4323.435    .0354996.142    .0855008.727    .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4996.1425008.727               460463.5521     404            .1          .3
Left Levee       Station=4432.629       Elevation=1275.095
Right Levee      Station=6629.604       Elevation=1274.989

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1274.37   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.57   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)            1274.94   Reach Len. (ft)            460.00     463.55     404.00
  Crit W.S. (ft)            1274.30   Flow Area (sq ft)          248.73      12.54    2269.64
  E.G. Slope (ft/ft)       0.012714   Area (sq ft)               248.73      12.54    2269.64
  Q Total (cfs)            15000.00   Flow (cfs)                 923.92      24.35   14051.72
  Top Width (ft)            1930.88   Top Width (ft)             377.39      12.58    1540.91
  Vel Total (ft/s)             5.93   Avg. Vel. (ft/s)             3.71       1.94       6.19
  Max Chl Dpth (ft)            4.47   Hydr. Depth (ft)             0.66       1.00       1.47
  Conv. Total (cfs)        133031.6   Conv. (cfs)                8194.1      216.0   124621.6
  Length Wtd. (ft)           411.50   Wetted Per. (ft)           378.41      12.82    1543.10
```

Min Ch El (ft)	1272.75	Shear (lb/sq ft)	0.52	0.78	1.17
Alpha	1.05	Stream Power (lb/ft s)	1.94	1.51	7.23
Frctn Loss (ft)	4.01	Cum Volume (acre-ft)	122.95	7.82	81.77
C & E Loss (ft)	0.05	Cum SA (acres)	67.78	2.60	55.22

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 18.1956

INPUT
Description: 18.1956
Station Elevation Data num= 200

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
4450.5281271.9994459.1591271.5754481.4671271.7764489.3651271.6064498.5511271.285
4500.4351271.1634508.4121269.737 4514.471268.6284517.5791268.7034523.9781269.012
4533.1321269.0184537.8571268.3844547.3981267.1644552.0021268.7654552.1681268.744
 4558.371266.7114562.3661267.5684571.4791269.3934587.1811270.3344588.2161270.378
4593.5141270.6594605.4851270.5724631.4281270.3774636.0321270.4664638.1591270.516
4642.9221270.477 4645.721270.4694683.1761270.1664698.1411269.9684704.2581269.748
4714.4291269.532 4735.041268.9914748.9751269.4984769.111  1270.54779.6351270.619
  4789.51270.8574796.663 1270.614801.8791270.3864821.1411269.7424836.4331269.255
4845.4631267.7194853.2081266.4254866.9221267.963 4870.861268.6014875.7261268.601
4901.7941268.6024917.5911268.6164937.299 1268.35 4960.531268.2714963.8821267.804
4969.5751268.3844971.8331268.7454979.9661268.7444993.0281268.636 4994.581268.619
5000.0961267.1785001.7441267.0635003.6041267.8915010.9821268.9185011.7551269.064
5013.9351269.1485017.6131269.2225023.9641268.6895024.3481268.6675024.3961268.661
5025.2931268.6995031.3911269.0325034.1541268.982 5061.151268.4345062.7261268.493
5076.2221268.9395080.9791269.1265095.6461269.8035136.9451270.0965157.1881270.166
5170.2721269.6915184.2551269.0525188.8451268.1095191.717 1267.265197.0851268.372
5200.3521269.1515205.1911268.3155207.2831268.1385224.1121268.3655227.4991267.946
5233.2961267.5335237.3081267.8385241.3331268.548 5254.151268.6585261.3921268.544
5273.6671268.8895298.7331269.2425301.2631269.2885326.8971269.2065344.1131269.198
5358.4391269.2395373.8441269.1555407.3541269.2745416.333 1268.885419.141 1268.66
5422.3951268.9935429.0921269.2645445.1361269.2725461.823 1269.345492.894 1269.39
5501.8061269.4395540.4581270.0395567.6521270.5185579.3581270.597 5585.561270.614
5612.9421270.5825625.1741270.635 5640.871270.2585673.8461269.3745699.8431268.433
5710.6541267.9495722.3461268.2235734.7351268.5135744.073 1268.565754.0861268.469
5761.0421268.5045762.9351268.0995771.6061266.5385775.1221267.1425779.0791267.909
5792.8071267.8415801.0921267.7645810.9411267.077 5824.341266.2385827.7031267.191
  5831.31268.1025837.072 1267.765850.2021267.4825851.1841267.5995859.8021268.631
5886.8291268.7265961.0171269.1566013.3141268.1586016.7411268.086 6019.01 1268.07
 6026.761267.8346035.3331268.0926045.0351268.3056061.1841268.5316067.2531268.647
6075.5151268.4496098.4071267.6366104.9351267.2736107.6031267.0296115.2631267.781
6117.6581268.0516121.479 1268.046132.3881268.3246135.9781268.2426147.6511267.894
6156.4691267.6836159.4031267.1716163.5251266.4876169.1941267.2476173.7851267.916
6181.7491267.7336192.6691267.6236195.2191267.4416202.6771267.0426207.7851267.712
6208.7351267.9726210.4741267.9656216.8951267.9466247.0531268.3986264.9041269.012
6280.8271268.8426320.6741268.643 6330.161268.7196356.5661269.0256371.7951269.234
6394.8891269.4896403.8651269.5616428.6731269.956 6484.331270.043 6500.131269.987
6511.3241270.0226563.0461270.2156565.6741270.2856571.2691268.9116571.7371268.841
6572.0941268.9246580.4681270.3616591.7451270.3756616.5651270.6116618.2411270.627
6619.0291270.6376627.4251270.5616629.6821270.5456637.0811270.6996644.836 1270.91
6659.7811271.1896674.2011271.7016690.0961271.8646710.9751272.1536737.3111272.406
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4450.528	.035	4979.966	.085	5017.613	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan
4979.966	5017.613	511	563.677	427	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1270.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1270.88	Reach Len. (ft)	511.00	563.68	427.00
Crit W.S. (ft)		Flow Area (sq ft)	559.93	75.83	2360.32
E.G. Slope (ft/ft)	0.007722	Area (sq ft)	559.93	75.83	2360.32
Q Total (cfs)	15000.00	Flow (cfs)	2874.16	184.34	11941.50
Top Width (ft)	1967.82	Top Width (ft)	411.16	37.65	1519.02
Vel Total (ft/s)	5.01	Avg. Vel. (ft/s)	5.13	2.43	5.06
Max Chl Dpth (ft)	4.24	Hydr. Depth (ft)	1.36	2.01	1.55
Conv. Total (cfs)	170694.8	Conv. (cfs)	32706.9	2097.7	135890.2
Length Wtd. (ft)	454.52	Wetted Per. (ft)	412.89	38.10	1521.28
Min Ch El (ft)	1267.06	Shear (lb/sq ft)	0.65	0.96	0.75
Alpha	1.02	Stream Power (lb/ft s)	3.36	2.33	3.78
Frctn Loss (ft)	4.36	Cum Volume (acre-ft)	118.68	7.35	60.30
C & E Loss (ft)	0.01	Cum SA (acres)	63.62	2.33	41.03

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 18.0888

INPUT
Description: 18.0888
Station Elevation Data num= 216

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
3806.9931270.2883809.288 1270.293816.361 1270.163828.6291270.0233837.8211269.757
3845.1621269.6023854.8231269.3533862.675 1269.273877.6111269.022 3888.16 1268.97
3903.1141268.9553914.3821268.9533921.2981268.8623940.4611268.4993944.6471268.402
3945.7481268.3853970.9621268.1583987.148 1267.774002.6881267.6384014.1481267.538
4025.9191267.5744032.0811267.3844037.3941267.0074046.8291266.4054055.7351266.182
4057.3161266.0894061.8381265.8694066.3381265.9544086.0791266.3244095.2171266.078
```

```
4106.1661265.8744117.5571265.7324120.4451264.5914128.911 1261.444141.049 1263.35
4142.5631263.6034146.0881263.7174148.3261263.7644151.6251263.8144162.7731263.902
4166.7471263.9554170.6811262.4484173.9311261.075 4173.961261.0784176.2341261.679
4185.6971264.0174200.4421264.372 4201.29 1264.384204.2661264.258 4215.891263.708
4222.5881263.4394243.8921263.9494263.1471264.1244276.1971264.0084280.1711264.242
4299.9651264.4744299.9851264.4754299.9971264.4754300.1111264.4764336.0811264.877
4359.6011264.8684380.8831264.4244381.9611264.4024382.239  1264.44383.9051264.356
4406.4871263.7764408.6081263.858  4414.41264.1744423.4971264.6464427.2441264.826
4454.8051265.0954493.7551265.5324498.6821265.5814500.0241265.5994501.4991265.614
4567.9831265.2934592.2961265.0324621.5011264.9234634.9081264.9664647.1721265.155
4679.4871265.543 4686.611265.6154729.4961265.3534736.1461265.4864747.9671264.127
4748.8061264.0424749.0571264.0764762.293 1265.924769.6991265.8044788.9121265.479
4814.3641265.1954815.869 1265.174817.8591265.1484820.8891265.1344847.9751265.014
4875.7841265.0964884.5781265.0524887.2351264.7314894.8181263.7834897.9761264.079
4904.4021264.4984918.8821264.3374920.4871264.3154921.4631264.344 4942.281264.422
4943.2361264.2744945.1711263.8434949.5341262.7874956.5671263.8944958.8921264.277
4960.395 1264.274962.0271264.2594990.3141264.0824998.9411262.7694999.9631262.501
5001.9331262.7835007.504 1263.845021.4761263.378 5023.171263.3285036.3591263.568
5063.6921264.0585066.5441264.025 5090.971263.7455122.9151263.6095138.5041263.581
5147.1821264.0595159.4191264.907 5195.871265.2095209.2751265.2945218.0131265.188
5261.4971264.8185317.5581265.8135320.7611265.8635322.3581265.8045155.2761264.744
5357.3641264.6275368.3291264.0035379.8551264.6185387.9361265.1215411.9151265.835
5424.9461266.241 5450.68 1266.315458.1231266.3335461.984  1266.35505.0761266.106
5535.0751265.6765539.762 1265.615542.5081265.5525546.8631265.6975568.6891264.738
5574.9071264.4745578.7761263.6885583.8141262.7475587.2341263.7195589.7541264.419
5606.1891264.6865607.5851264.6955618.3431261.8635619.0141261.7025621.295 1262.24
5629.3121264.3445635.8891264.2125661.7011263.9815665.1921263.9825671.5821263.821
5683.9341263.6895705.2611263.5055712.861 1263.645717.3311263.7445745.8961264.307
5761.6161264.6175767.0281264.662 5772.221264.6995803.9591264.545 5831.691264.482
5838.6981264.4425850.2231261.9575850.9971261.8085861.9181262.8385865.0421264.565
5870.6441264.7465894.0821264.9645903.1541265.1415910.3121265.1375917.3341264.661
5932.3931263.7795942.6141264.3025945.0561264.4035947.0011264.5345970.7691264.921
5987.8291265.187 5989.911265.2075991.8321265.2135994.2431265.1796030.736 1264.91
6048.6731265.0126101.7511265.4886159.6161265.7786161.1021265.7716161.6151265.673
6168.4061264.5886172.5361265.0126182.3661266.2846193.5391266.345 6241.171266.184
6258.4511266.0966263.3381266.0996271.1871266.2856275.5181266.5316288.8691266.563
6365.0821266.7966412.6681267.3646427.9291267.4276467.1781267.5716473.3191267.613
6541.0331268.423
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
3806.993     .0354990.314     .0855007.504     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4990.3145007.504              557533.7156     426              .1        .3
Left Levee       Station=4086.079       Elevation=1266.324
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1266.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1266.50	Reach Len. (ft)	557.00	533.72	426.00
Crit W.S. (ft)	1265.86	Flow Area (sq ft)	1140.88	47.19	1459.58
E.G. Slope (ft/ft)	0.012456	Area (sq ft)	1140.88	47.19	1459.58
Q Total (cfs)	15000.00	Flow (cfs)	6363.20	178.74	8458.06
Top Width (ft)	1984.99	Top Width (ft)	890.74	17.19	1077.06
Vel Total (ft/s)	5.67	Avg. Vel. (ft/s)	5.58	3.79	5.79
Max Chl Dpth (ft)	4.92	Hydr. Depth (ft)	1.28	2.75	1.36
Conv. Total (cfs)	134399.8	Conv. (cfs)	57014.2	1601.5	75784.0
Length Wtd. (ft)	502.53	Wetted Per. (ft)	893.34	17.44	1079.19
Min Ch El (ft)	1262.50	Shear (lb/sq ft)	0.99	2.10	1.05
Alpha	1.01	Stream Power (lb/ft s)	5.54	7.97	6.09
Frctn Loss (ft)	4.35	Cum Volume (acre-ft)	108.70	6.55	41.58
C & E Loss (ft)	0.05	Cum SA (acres)	55.95	1.98	28.31

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). Between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest valid, water surface was used.

CROSS SECTION RIVER: Marquahala
REACH: Lower Mid Reach RS: 17.9877

INPUT
Description: 17.9877
Station Elevation Data num= 248

```
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 3611.911262.8963623.5131262.9173625.8021262.9233627.483 1262.913634.0151262.831
3657.8941262.3933671.2611262.4413672.1581262.4493689.3021262.2723699.1711262.227
3704.1111262.1873726.6521261.7163727.0061261.7083738.5251261.4523747.6681261.198
3753.0581260.9363768.6541260.2093771.4021260.1533782.1351259.6723785.2341259.572
3790.0191259.4843803.3651259.1563807.5491258.8973817.0111257.865  3818.11257.683
3821.7671258.3093824.1971258.7043825.7711258.6423840.7271258.2143852.6271258.673
3864.899 1259.073882.3261258.624 3894.051258.2553898.3371258.4723909.5881259.429
3925.3431259.706 3934.351259.8893968.9171259.6553976.045 1259.593978.7471258.731
3986.4471256.3333995.6451259.2163996.0781259.3333996.677 1259.324022.4241258.954
 4023.491259.0244025.2221258.9154031.9771258.758 4036.851258.3454040.4011258.024
4059.7751259.8934062.1541260.0764063.9081260.2714065.7261260.3184085.2051260.719
4090.4231260.2054094.9961259.8764107.8661259.7024112.4861259.6654117.8011259.792
4131.9271259.8614139.8551259.7854153.0181259.8124215.2231260.2234234.0921260.294
 4250.471260.3964272.7791260.5484305.8391260.8554308.4851260.8264314.0821260.784
 4373.621260.2864378.149 1260.054382.8791259.779 4394.611260.1374396.4241260.218
4401.4841260.4884418.9471260.5174420.9371260.4954424.6871260.3524437.8111259.983
4446.7611259.8264447.3351259.9424455.9731260.2164466.7381260.1254467.1421260.115
4472.1981260.1564509.7251260.4754514.3961260.4434525.9021260.4564569.6631260.623
4587.0711260.9324606.9441261.2164611.8041261.0724628.4221260.0714642.964 1260.17
4653.7471260.2984681.9351261.0034690.155 1261.14 4693.921261.0174700.3181260.648
```

4710.181260.5484718.0291260.3424730.554 1260.234771.8391260.1974790.9481260.219
4791.4221260.1544802.2741260.0414805.1471259.7674812.1031259.3224814.095 1259.41
4822.9091259.9714837.4671260.1854844.3971260.2524846.9831260.3554850.0311260.403
4860.1141260.6584868.0831260.5464869.6331260.5514880.366 1260.134896.8051259.568
4907.4731260.4074908.604 1260.574910.966 1260.524930.826 1260.374950.8011260.171
4965.364 1260.074971.2751259.0324972.3271258.8634975.7821258.9994991.9211259.787
4997.5151257.7375000.0321256.9185002.578 1257.455015.3381259.8915024.3111259.842
5036.7821259.847 5050.621259.9225064.5671260.0015089.5451260.0785093.813 1258.44
5097.3951256.8115104.5241258.5695106.8551259.1675110.1511259.1515120.3941259.364
5132.5951259.9755134.7361260.0855138.4091259.9775145.4831260.2065160.571 1261.2
5175.323 1261.45186.3221261.8725201.3871262.3995211.8121262.4255245.9831263.018
5279.081261.9955283.1561261.8285292.536 1261.395327.0271260.1935333.0061260.245
5350.4721260.336 5357.761260.5645372.304 1260.755388.484 1260.97 5394.51260.961
5406.2981260.8695426.3321261.0555435.2571261.1155475.3261260.7255481.9551260.686
5493.5141258.432 5494.361258.2285497.2531259.1275501.1121260.6755503.3051260.636
5506.011260.4535514.756 1259.775518.9731259.5345520.9461259.4145524.6661259.539
5529.3721259.4765532.8871259.3185540.9821258.6295543.1671258.3025552.3851260.036
5554.1561260.1885567.0571260.1665575.3331260.2555593.5021260.4095597.6921260.544
5604.7681259.7185605.5121259.657 5606.02 1259.675610.9631260.5055616.2441260.676
5619.0961260.7245624.2121260.6645634.643 1260.75658.4561260.8345667.7271260.905
5687.2341260.594 5727.981259.8825732.0591260.1045739.3561260.5645740.9911260.676
5747.2671260.8595763.1351261.3555775.6631261.4665783.9081261.4145789.9811261.398
5800.8691261.6015824.6251261.469 5815.731261.4635816.4581261.4215818.8161261.196
5824.5761260.5555825.9621260.3875831.326 1260.745840.093 1261.245864.6441261.147
5866.0771261.1455867.3071261.1455891.958 1261.145901.7461261.2035935.0381261.548
5936.141261.6865953.2771261.6865995.5981261.8636031.704 1262.146043.9141262.238
6098.4111262.6576122.8031262.8186129.2341262.8656148.0571262.7936165.8051262.786
6171.2221262.8186178.7781262.8986186.8091263.0236193.5791262.413 6196.831262.129
6208.3131262.8976209.1421263.0276210.614 1263.086220.841 1263.616268.569 1264.16
6270.9231264.1866272.1941264.2046272.3261264.204

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
3611.91	.035	4991.921	.035	5015.338	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4991.921	5015.338		523	584.0225 526	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1261.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1262.10	Reach Len. (ft)	523.00	584.02	526.00
Crit W.S. (ft)		Flow Area (sq ft)	2209.75	79.20	1009.93
E.G. Slope (ft/ft)	0.006350	Area (sq ft)	2209.75	79.20	1009.93
Q Total (cfs)	15000.00	Flow (cfs)	10816.48	243.20	3940.33
Top Width (ft)	2148.76	Top Width (ft)	1267.84	23.42	857.50
Vel Total (ft/s)	4.55	Avg. Vel. (ft/s)	4.89	3.07	3.90
Max Chl Dpth (ft)	5.44	Hydr. Depth (ft)	1.74	3.38	1.18
Conv. Total (cfs)	188219.8	Conv. (cfs)	135739.4	3052.0	49448.4
Length Wtd. (ft)	524.83	Wetted Per. (ft)	1269.67	24.20	859.69
Min Ch El (ft)	1256.92	Shear (lb/sq ft)	0.69	1.30	0.47
Alpha	1.04	Stream Power (lb/ft s)	3.38	3.98	1.82
Frctn Loss (ft)	4.83	Cum Volume (acre-ft)	87.28	5.78	29.50
C & E Loss (ft)	0.03	Cum SA (acres)	42.18	1.73	18.85

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 17.8771

INPUT
Description: 17.8771
Station Elevation Data num= 196

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3431.694	1258.417	3436.468	1258.448	3436.947	1258.459	3439.475	1258.367	3461.935	1257.619
3472.305	1256.797	3501.322	1254.837	3526.318	1253.729	3531.311	1253.493	532.756	1253.364
3535.501	1253.263	541.001	1253.577	3546.521	1253.962	3555.879	1254.369	3566.885	1254.63
3592.173	1254.434	3594.823	1254.422	3595.802	1254.378	3598.131	1254.243	611.875	1253.48
3613.161	1253.365	3621.702	1253.399	3625.917	1253.465	3635.176	1251.947	3638.211	1251.272
3645.466	1252.114	3650.492	1252.833	3653.868	1252.856	3660.828	1252.817	3670.719	1254.208
3673.623	1254.635	3677.368	1254.711	3685.193	1254.859	3724.227	1255.643	737.394	1255.575
3756.664	1255.663	3788.522	1255.689	3806.425	1255.677	3847.856	1255.547	3864.361	1255.229
3878.492	1254.952	3920.528	1255.411	3925.146	1255.501	3933.396	1255.539	3941.074	1255.984
3952.012	1255.906	4001.349	1255.578	4016.101	1255.415	4018.075	1255.339	4025.049	1254.736
4038.676	1254.645	4050.858	1254.562	4059.789	1254.578	4066.427	1254.664	4087.759	1254.905
4136.707	1255.467	4139.245	1255.398	4143.689	1254.887	4151.662	1255.09	4185.346	1255.044
4214.674	1255.032	4215.61	1254.861	4220.58	1254.273	4221.537	1253.921	4242.299	1254.94
4261.306	1255.942	94.071	1256.954	4306.736	1257.174	4339.328	1255.923	4384.281	1254.739
4402.763	1254.636	4405.636	1254.585	4408.824	1254.688	4421.028	1255.012	4443.316	1255.827
4461.432	1256.328	4476.16	1256.614	4502.089	1256.622	4513.055	1256.721	4520.411	1256.819
4553.814	1256.435	4558.771	1256.371	4573.879	1257.069	4591.865	1257.901	4626.233	1257.436
4650.059	1257.126	4657.513	1257.008	4671.54	1256.679	4697.166	1256.236	4714.437	1253.649
4715.799	1253.427	4722.069	1254.713	4726.132	1255.592	4727.167	1255.552	4736.408	1255.016
4750.774	1255.536	4771.891	1256.328	4795.806	1256.059	4814.776	1255.856	4819.855	1255.819
4837.191	1255.854	4855.453	1255.593	4859.047	1255.454	4886.168	1255.576	4917.707	1255.191
4935.344	1255.703	4956.375	1255.574	4973.046	1255.376	4991.574	1255.906	4994.095	1255.948
4994.668	1255.745	4996.105	1254.788	4996.297	1254.665	000.604	1252.575	5004.445	1253.012
5035.151	1256.114	5068.826	1256.844	5073.82	1256.946	5074.445	1256.977	5110.832	1256.601
5121.188	1256.341	5122.629	1256.093	5129.656	1255.085	5134.115	1255.888	5135.937	1256.041
5145.423	1255.995	5152.642	1255.851	5160.707	1254.771	5165.484	1253.944	5176.252	1255.756
5177.946	1256.134	5198.253	1256.104	5236.912	1255.995	5254.159	1256.063	5265.924	1256.078
5271.987	1256.086	5285.169	1256.013	5315.532	1255.773	5320.131	1255.518	5325.369	1255.058
5327.821	1255.129	5333.921	1255.533	5343.321	1255.152	5351.495	1254.984	5355.668	1255.416
5370.971	1256.451	5377.261	1256.026	5380.174	1255.915	5390.514	1256.154	5395.661	1256.444
5398.832	1255.627	5411.304	1254.526	5416.031	1254.954	5421.848	1255.461	5426.787	1254.65

```
5421.0081255.0785438.2511255.6748460.3241255.2735470.7711255.0885487.382 1255.45
5490.9361255.4885499.1721255.7265507.8011255.8975509.6461255.6485521.8031253.764
5522.1931253.8595523.4971254.0125532.8781255.5255559.1161255.614 5563.131255.603
5565.646  1255.65566.5961255.4635572.7431254.8075573.5421254.7535580.5441255.084
5592.9981255.3895607.3161255.7795618.7121256.1355631.4551256.4875640.6581256.609
5648.8831256.6355691.3671256.6335694.9521256.6565727.8831256.9585740.1321256.944
5768.9671256.8535796.0711256.8975842.7691257.4055842.7761257.4055842.8011257.406
5860.158 1257.025870.917 1257.765877.2041257.9295883.871 1257.995905.9721258.197
5913.0451258.214
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
3431.694    .0354994.095    .0855035.151    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4994.0955035.151               446560.1197     525          .1          .3
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1256.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1257.24	Reach Len. (ft)	446.00	560.12	525.00
Crit W.S. (ft)	1256.62	Flow Area (sq ft)	1849.60	94.41	537.62
E.G. Slope (ft/ft)	0.014330	Area (sq ft)	1849.60	94.41	537.62
Q Total (cfs)	15000.00	Flow (cfs)	12122.21	338.61	2539.18
Top Width (ft)	1993.48	Top Width (ft)	1342.42	41.06	610.00
Vel Total (ft/s)	6.04	Avg. Vel. (ft/s)	6.55	3.59	4.72
Max Chl Dpth (ft)	5.37	Hydr. Depth (ft)	1.38	2.30	0.88
Conv. Total (cfs)	125362.8	Conv. (cfs)	101263.0	2828.6	21211.1
Length Wtd. (ft)	463.15	Wetted Per. (ft)	1343.83	42.08	611.35
Min Ch El (ft)	1252.57	Shear (lb/sq ft)	1.23	2.01	0.79
Alpha	1.06	Stream Power (lb/ft s)	8.07	7.20	3.72
Frctn Loss (ft)	4.70	Cum Volume (acre-ft)	62.91	4.61	20.16
C & E Loss (ft)	0.09	Cum SA (acres)	26.51	1.30	9.99

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Mid Reach RS: 17.7710

INPUT
Description: 17.7710
Station Elevation Data num= 244

```
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
3015.9711254.2593035.3751254.1093048.9121253.8033055.6411253.6593069.2991252.978
3086.1441252.074 3088.361251.9713101.696 1251.363108.2411251.0343113.3841250.896
3115.3321250.5023134.1741249.2473139.1611247.8073140.526  1247.6 3141.341247.431
3142.9961247.8543150.6431248.8763152.4881248.8853162.1921248.8923177.1071249.081
3184.8921249.2063187.8741249.2673193.4061249.4693213.3511249.7743213.8921249.705
3217.0051249.348 3225.421248.3793226.943  1248.23232.6341248.784  3238.41249.326
3240.8491249.3533264.9781249.3433266.9811248.9823272.0921248.0093279.0121246.691
3287.1691248.9693294.9761250.6513309.8191250.645 3316.891250.7813330.229 1251.44
3336.139 1251.563352.414 1252.023355.0071252.0023385.296 1251.55 3394.151251.556
3404.9931251.455 3422.691251.4793452.8311251.0883455.2571251.0673457.0391250.994
3486.8132250.0153491.6623250.1813499.3651250.6353513.1511250.9963514.5241251.019
3520.7191250.9623532.6421250.8563534.3231250.8583563.8251250.7423565.2851250.735
 3578.671251.0053581.715 1250.923613.7761250.6813656.552  1251.23659.7491251.212
3673.0081251.3073693.1051251.3593710.6991251.3433748.0341251.225 3786.171251.838
3788.3431251.7993807.2961251.4653819.7321251.2313820.4861251.2223823.3551250.964
3837.4171249.773 3838.841249.8153845.9871249.9473849.9291250.022  3886.31250.532
3918.1921250.5793925.2351250.6123927.4311250.5933928.8921250.6143938.0591250.769
3945.4951250.7593952.706 1250.463960.6321250.7963967.1551250.9873982.1231250.897
4016.1751251.1974020.3371251.2474053.4011250.821 4056.071250.801 4079.841251.106
4080.7991251.1054098.4631251.2334102.1841251.2584102.4931251.2614103.0491251.255
4135.4791250.7254149.663 1249.254152.3131249.0694156.4121249.6934157.9961249.895
4158.2161249.9264158.6251249.9494160.1861249.9864170.6681250.1044174.3571250.347
4182.3271250.709 4188.441250.9674192.1121250.934 4208.281250.9394213.9321250.727
4223.3111250.3814229.5061250.4324234.6441250.4964243.9391250.4764257.9991250.511
4264.7941250.1014269.2021249.7444273.6221249.9734280.6871250.2274296.1031250.755
4300.9311250.9114307.9781250.9074329.2361251.0584350.3861250.6144354.8461250.535
4357.8581250.4124366.5651250.1064374.0981250.0734389.0731250.3084396.5531250.396
4402.4511250.515  4416.51250.7324428.9851250.7324450.8381250.8154463.6981250.831
4476.813 1250.664480.2061250.6144490.346 1250.734494.3251250.7924524.5431251.128
4562.9531251.1454573.322 1251.174574.3871251.1774580.9361251.1544607.3531251.004
4613.9731251.0284631.5221251.1754671.3841251.3794689.1451251.3624695.5191251.294
4712.5841251.353    4770.1251.4684792.5091251.4844802.0761249.7324805.097  1249.1
4806.1761249.1894831.154 1252.544841.2381251.0644848.1371249.7064854.2841251.007
4856.8811251.5474860.8411251.554 4888.251251.7594917.8171251.5184919.2491251.504
4920.3421251.4444932.3991250.772 4935.311250.9044945.5851251.2094956.1321251.436
4970.5751251.8764974.9281251.8264980.7511251.8094994.3751251.7344999.5791250.462
5002.3541249.9025007.6461250.564 5013.021251.4375020.0421251.1525028.9231250.726
5047.007 1250.535050.6771250.4695050.9981250.418  5053.91250.0845057.824 1249.53
5060.8151249.7255070.239 1250.575075.3111249.7815079.3481249.2175080.2361249.374
5088.977 1250.575109.5681250.7835133.8791250.8535175.4181250.6035210.717 1250.45
5286.6011250.9725287.1471250.9775287.2711250.9775287.9241250.9755332.9571250.949
5337.5561249.879 5341.111248.9985347.783 1250.415349.2971250.8135359.148 1250.29
5364.7421249.9385366.1171249.9765375.6021249.9535381.9461250.4675382.9371250.587
5383.9161250.6095392.1461250.9665405.8371250.735 5410.511250.7175428.2861251.058
 5429.521251.079 5430.971250.8575438.9341249.4735447.3791250.2115450.604 1250.61
5463.7781250.9985482.7971251.1965483.1761251.1965494.4521251.2545508.6191251.557
 5517.321251.7035529.5041251.6835554.269 1251.955585.2251252.2975621.9631252.413
5673.9131252.5075679.1511252.5085680.0821252.5255683.3111252.4875725.2181252.055
5731.3381252.454 5735.981252.6925746.4051252.8195762.6571253.148
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
3015.971    .0354980.751    .085 5013.02    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4980.751 5013.02               400532.6463     445            .1        .3
Right Levee     Station=5680.082       Elevation=1252.525

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1252.15   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.32   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)            1252.46   Reach Len. (ft)            400.00     532.65     445.00
  Crit W.S. (ft)            1251.81   Flow Area (sq ft)        2547.13      32.28     759.11
  E.G. Slope (ft/ft)       0.007501   Area (sq ft)             2547.13      32.28     759.11
  Q Total (cfs)            15000.00   Flow (cfs)              11531.54      48.56    3419.90
  Top Width (ft)            2481.29   Top Width (ft)           1890.31      32.27     558.71
  Vel Total (ft/s)             4.49   Avg. Vel. (ft/s)            4.53       1.50       4.51
  Max Chl Dpth (ft)            5.45   Hydr. Depth (ft)            1.35       1.00       1.36
  Conv. Total (cfs)        173190.3   Conv. (cfs)            133143.3      560.7    39486.3
  Length Wtd. (ft)           414.06   Wetted Per. (ft)         1892.98      32.59     559.74
  Min Ch El (ft)            1249.90   Shear (lb/sq ft)            0.63       0.46       0.64
  Alpha                        1.01   Stream Power (lb/ft s)      2.85       0.70       2.86
  Frctn Loss (ft)              3.77   Cum Volume (acre-ft)       40.40       3.80      12.34
  C & E Loss (ft)              0.01   Cum SA (acres)              9.96       0.83       2.94


Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Harquahala
REACH: Lower Mid Reach    RS: 17.6702

INPUT
Description: 17.6702
Station Elevation Data     num=      220
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
2986.4731249.1572989.3551249.2072994.3821249.2243029.9811248.4083036.1431248.043
3046.2741247.5383049.6961246.9083059.5911244.8193060.5491244.931 3068.911245.846
3076.5331246.672 3077.521246.7333078.1691246.8083083.2961247.2893094.3421248.225
3098.2541248.3053100.171 1248.233112.5411248.2343120.0911244.9933122.685 1243.91
3127.3811244.7333132.2761245.3823153.6631245.8243157.311 1245.773162.6161244.775
3165.4681244.4623170.013 1245.23 3171.081245.4053173.077 1245.423187.7261245.744
 3191.981245.8333192.4751245.8493192.758 1245.873203.4091246.7013208.0181246.883
3231.0051247.0573263.4171247.4743284.3821247.5183341.5031247.4243344.7291247.449
3366.9931247.5253396.938  1247.83402.6491247.8593403.282 1247.863404.0461247.866
3423.0341247.9693450.6541247.4293452.2131247.4013454.2471247.4133461.0841247.479
 3493.241247.8273503.9371247.8913588.848 1247.823635.3881247.9213642.2471247.887
3702.601 1247.553703.0981247.5513767.3641247.577  3781.61247.2473812.5321246.778
3815.6881246.5493824.3411245.8493832.9681246.6063835.5091246.776 3838.581246.858
 3860.011247.1733875.8551247.419  3895.51247.7283929.4191247.9873936.7471247.939
4018.1681247.8754023.0741247.8854068.5091247.8664070.6651247.857 4110.61 1247.82
4154.2521247.7514180.8661247.5884189.3041247.4824236.5931246.8684245.9251246.708
 4255.891246.4844260.3751245.4454264.8251244.6934267.4981245.3044273.6171246.264
4278.4861246.2214284.8181246.4294292.4511246.5164295.4821246.5414298.0111246.585
4302.1861246.6854313.1611247.0564323.8781246.9744350.5681246.647 4375.351246.581
4380.1481246.5944420.8691246.6894429.6671246.6734449.7511246.5284484.5271246.108
 4488.341246.538 4495.431247.0284505.442 1247.124518.8061247.3544524.7271247.234
4533.5741246.9414544.6021247.2434558.216 1247.354566.1041247.3454567.6761247.303
4571.2741247.2584581.8061247.1344591.1271247.3184594.8771247.2684595.5641247.292
4603.4321245.459 4608.741244.4234613.0111245.4864619.2691247.2064630.174 1247.11
4631.5411247.0624640.3941246.9494641.974 1247.01 4647.61 1246.964650.1441246.968
4651.6611246.9574657.7261246.7724662.3051247.1414662.6681247.1564663.252 1247.16
4683.0991247.2454702.9871247.4164704.4081247.4274705.7291247.446 4710.161247.467
4741.2291247.4854745.9421246.6774754.0031247.2454754.4151247.3614756.1931247.376
4793.5611247.8034798.3131247.659 4802.371247.6774805.5311247.9214807.8591247.862
4815.1641247.9564834.4221248.0064837.9791248.0244857.8481247.6724880.859  1246.9
4908.497 1246.89 4918.281246.9214929.0121245.9254929.7011245.8134931.6641246.062
4936.514 1246.894940.6671246.8744964.5411247.0244977.0511246.8624987.7711246.677
4994.9221245.2135000.3611243.9395003.8641244.987 5009.621246.7025013.2531246.291
5013.7251246.2635020.6821246.9255025.7591247.2815056.9721246.0235061.4741245.815
5067.3631246.499 5069.361246.7085071.6381246.7045097.1111247.0025097.9971246.807
5105.7341245.1065111.347 1245.845117.7921246.2285122.1281245.7275129.6231245.432
5130.6291245.7025135.6571246.5315164.7411246.3645173.0591246.3215174.8591246.298
5201.9881246.0465212.638 1246.48  5218.91246.6525285.6931246.8025291.8551246.767
5335.669 1246.34 5350.681246.2195351.7761245.9875358.2751244.9455363.1471246.036
5366.0531246.7345387.3691246.4545391.1231246.3815393.4121246.2355396.6581245.934
5403.7941246.2195422.279 1246.855441.8881247.4195445.8461247.5225463.7541247.409
5465.1131247.4015485.2431247.5425497.0651247.5235507.2151247.5835509.1081247.563
5517.3381247.5725541.3451247.5465558.7031247.6465605.475 1248.125633.7091248.223
5664.4851248.2565676.9311248.2425685.4241248.3665699.412 1248.525730.3151248.888

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
2986.473     .0354977.051     .085 5009.62     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4977.051 5009.62               558493.6868     475            .1        .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1248.30   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.39   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)            1248.68   Reach Len. (ft)            493.69     493.69     493.69
  Crit W.S. (ft)            1248.15   Flow Area (sq ft)        2061.93      81.06     905.69
  E.G. Slope (ft/ft)       0.011390   Area (sq ft)             2061.93      81.06     905.69
  Q Total (cfs)            15000.00   Flow (cfs)               9720.12     273.85    5006.04
  Top Width (ft)            2648.66   Top Width (ft)           1944.83      32.57     671.26
  Vel Total (ft/s)             4.92   Avg. Vel. (ft/s)            4.71       3.38       5.53
  Max Chl Dpth (ft)            4.39   Hydr. Depth (ft)            1.06       2.49       1.35
  Conv. Total (cfs)        140548.8   Conv. (cfs)             91076.7    2565.9    46906.2
  Length Wtd. (ft)           493.69   Wetted Per. (ft)         1948.02      33.27     672.19
  Min Ch El (ft)            1243.94   Shear (lb/sq ft)            0.75       1.73       0.96
  Alpha                        1.02   Stream Power (lb/ft s)      3.55       5.85       5.30
```

```
  Frctn Loss (ft)              4.59   Cum Volume (acre-ft)        26.94        2.17        8.40
  C & E Loss (ft)              0.04   Cum SA (acres)


Warning - Divided flow computed for this cross-section.
Warning - A flow split was encountered.  The program first calculated the momentum of both channels
                below the junction.  An energy balance was performed across the junction from the stream with
                the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Harquahala
REACH: Split2              RS: 17.5883

INPUT
Description: 17.5883
Station Elevation Data     num=       77
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4592.2911244.8214599.4491244.6984616.0151244.6784617.7621244.6844621.9291244.117
4630.5441242.9184635.8721243.6254638.4311244.0054661.6951243.5534667.2851243.464
4679.0351243.4814693.1551243.2214698.1711243.0854718.2351242.7254726.0451242.696
4744.716 1242.634748.6431242.6044752.7111242.6094760.3171242.5654774.323 1242.52
4802.8951242.2464805.4421242.2294808.0721242.2214843.3661242.0354869.9881241.939
4889.9311241.7464900.7641241.6924903.073 1241.764904.8141241.6914909.2481241.618
4915.544 1241.67 4925.181240.157 4926.441239.3414926.9591239.2744932.8641240.613
4940.3961242.0164957.2191242.0734964.9421242.1854969.3181242.2254985.2571242.359
4991.2951242.2434991.7681242.2464992.2751242.2354992.7381242.1025000.9521240.138
5009.4481241.8585011.5971242.2285017.7611242.2085026.8341243.1755029.2471243.534
5033.4621243.9395040.1351244.5485047.4561244.8775053.3181245.1935091.4471245.633
5093.4041245.6535098.3981245.5975122.3791245.3055135.8831244.6695139.8971244.463
 5143.791244.5075160.7441244.5985172.3771244.5575175.7941244.5475181.8321244.562
5190.365 1244.745214.4651244.7535217.9531244.7565220.1261244.7395256.6831244.581
5263.8741244.1855278.2271243.2155284.0631243.3615290.365 1243.645309.7911243.487
5332.0651243.3845336.9621243.281

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4592.291    .0354915.544    .0755017.761    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4915.5445017.761              439512.2301     523              .1        .3
Left Levee      Station=4638.431      Elevation=1244.005
Right Levee     Station=5093.404      Elevation=1245.653

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)            1243.93   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.17   Wt. n-Val.                   0.035      0.075      0.035
  E.G. Elev (ft)            1244.10   Reach Len. (ft)             439.00     512.23     523.00
  Crit W.S. (ft)            1243.13   Flow Area (sq ft)           385.80     234.57      13.50
  E.G. Slope (ft/ft)       0.004615   Area (sq ft)                385.80     234.57      13.50
  Q Total (cfs)             1980.00   Flow (cfs)                 1399.51     545.34      35.15
  Top Width (ft)             391.32   Top Width (ft)              273.46     102.22      15.65
  Vel Total (ft/s)             3.12   Avg. Vel. (ft/s)              3.63       2.32       2.60
  Max Chl Dpth (ft)            4.66   Hydr. Depth (ft)              1.41       2.29       0.86
  Conv. Total (cfs)         29147.5   Conv. (cfs)                20602.1     8027.9      517.4
  Length Wtd. (ft)           468.15   Wetted Per. (ft)            273.48     103.32      15.75
  Min Ch El (ft)            1239.27   Shear (lb/sq ft)              0.41       0.65       0.25
  Alpha                        1.12   Stream Power (lb/ft s)        1.47       1.52       0.64
  Frctn Loss (ft)              4.63   Cum Volume (acre-ft)        116.49       9.37      64.25
  C & E Loss (ft)              0.03   Cum SA (acres)               40.27       3.04      22.34


Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION           RIVER: Harquahala
REACH: Split2              RS: 17.4913

INPUT
Description: 17.4913
Station Elevation Data     num=       75
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
4635.5231240.3374640.3671240.404 4643.521240.1974645.1511240.1984648.1361240.122
4656.2521240.1684664.0281239.5644673.7271238.5474693.3081238.6594705.9871238.786
4723.4741238.9324727.4591238.5334735.0961237.822 4741.791238.2034744.6571238.333
4752.8981238.2834773.9761238.1084778.5691238.1014802.7321238.2514835.9691238.133
4852.6431238.096 4856.121237.8544859.6381237.8324866.1611238.0594887.3251237.995
4902.6311237.9514910.8761234.0864913.0281233.1824918.3781236.9434920.2561238.573
4934.559 1238.454954.5111238.272 4963.231238.3744965.4711238.4164977.9121238.433
4983.9191238.3174990.125 1238.34 4999.541235.3075000.5611234.9525001.4351235.126
5011.9481237.8455012.0051237.8455012.036 1237.825015.1681235.0215021.1231238.062
5021.5471238.2825022.4221238.2855029.9671238.3185063.6181238.4645069.7151238.508
5081.9171239.0615097.7871239.2175099.9251239.2615104.0861239.3315117.0051239.583
 5133.911239.5565134.4411239.5525147.3921239.4535148.9131239.4025150.454 1239.35
5161.608 1239.08 5164.881239.0845216.4071239.1595226.052  1239.25267.1231239.227
 5289.781239.0525301.3271238.9745326.5791239.109 5339.411239.1435347.1881239.069
5360.6671238.9035378.6821239.7295382.2831239.9295389.7111240.008    54211240.334

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
4635.523    .0354902.631    .0755021.547    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      4902.6315021.547              434 500.395     490              .1        .3
Right Levee     Station=5117.005      Elevation=1239.583

CROSS SECTION OUTPUT    Profile #PF#1
```

W.S. Elev (ft)	1238.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.	0.035	0.075	0.035
E.G. Elev (ft)	1239.44	Reach Len. (ft)	434.00	500.39	490.00
Crit W.S. (ft)	1238.97	Flow Area (sq ft)	162.86	175.52	30.42
E.G. Slope (ft/ft)	0.034544	Area (sq ft)	162.86	175.52	30.42
Q Total (cfs)	1980.00	Flow (cfs)	1012.06	812.51	155.44
Top Width (ft)	410.21	Top Width (ft)	232.94	118.92	58.36
Vel Total (ft/s)	5.37	Avg. Vel. (ft/s)	6.21	4.63	5.11
Max Chl Dpth (ft)	5.79	Hydr. Depth (ft)	0.70	1.48	0.52
Conv. Total (cfs)	10653.1	Conv. (cfs)	5445.2	4371.6	836.3
Length Wtd. (ft)	459.60	Wetted Per. (ft)	233.04	124.52	58.37
Min Ch El (ft)	1233.18	Shear (lb/sq ft)	1.51	3.04	1.12
Alpha	1.06	Stream Power (lb/ft s)	9.37	14.07	5.74
Frctn Loss (ft)	2.90	Cum Volume (acre-ft)	113.73	6.96	63.99
C & E Loss (ft)	0.10	Cum SA (acres)	37.72	1.74	21.89

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Split2 RS: 17.3965

INPUT
Description: 17.3965
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4704.153	1234.726	4714.441	1234.661	4733.241	1234.842	4754.407	1234.911	4765.241	1234.844
4771.711	1235.429	4773.615	1235.54	4779.361	1235.361	4787.659	1235.147	4791.289	1234.844
4799.198	1234.175	4811.339	1233.917	4828.011	1233.821	4833.931	1233.893	4853.781	1233.886
4862.932	1233.848	4892.086	1233.738	4905.157	1233.411	4913.672	1233.334	4920.905	1228.385
4923.227	1226.844	4933.573	1232.155	4937.652	1232.547	4941.717	1231.244	4944.734	1231.911
4950.561	1233	4952.233	1233.163	4964.721	1233.234	4965.737	1233.266	4966.651	1233.298
4980.537	1233.826	4983.628	1233.486	4986.906	1233.849	4999.874	1225.151	5007.28	1230.95
5012.822	1234.678	5029.784	1234.555	5046.628	1234.517	5050.411	1234.497	5053.782	1234.484
5070.705	1234.552	5123.339	1234.788	5123.224	1234.795	5148.841	1235.009	5174.561	1235.136
5192.221	1235.213	5228.739	1235.15	5252.349	1235.071	5270.913	1235.083	5278.841	1235.049
5383.813	1235.422	5386.196	1235.424	5389.477	1235.427	5391.051	1235.424	5448.827	1235.306
5464.461	1235.352	5524.782	1235.308	5529.689	1235.423	5529.751	1235.422	5531.278	1235.318
5538.479	1234.778	5540.528	1234.865	5550.005	1235.163	5552.434	1235.144	5554.256	1235.179
5615.382	1235.649	5634.826	1235.745	5648.624	1235.829				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4704.153	.035	4980.537	.075	5012.822	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4980.537	5012.822	993	1343.966	1000	.1	.3

Left Levee Station=4773.615 Elevation= 1235.54
Right Levee Station=5389.477 Elevation=1235.427

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1235.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.035	0.075	0.035
E.G. Elev (ft)	1235.47	Reach Len. (ft)	993.00	1343.97	1000.00
Crit W.S. (ft)	1234.04	Flow Area (sq ft)	404.76	169.91	125.61
E.G. Slope (ft/ft)	0.002556	Area (sq ft)	404.76	169.91	125.61
Q Total (cfs)	1980.00	Flow (cfs)	1375.22	466.38	138.40
Top Width (ft)	573.25	Top Width (ft)	199.48	32.28	341.48
Vel Total (ft/s)	2.83	Avg. Vel. (ft/s)	3.40	2.74	1.10
Max Chl Dpth (ft)	10.17	Hydr. Depth (ft)	2.03	5.26	0.37
Conv. Total (cfs)	39165.3	Conv. (cfs)	27202.4	9225.3	2737.6
Length Wtd. (ft)	1210.06	Wetted Per. (ft)	203.22	37.45	341.49
Min Ch El (ft)	1225.15	Shear (lb/sq ft)	0.32	0.72	0.06
Alpha	1.24	Stream Power (lb/ft s)	1.08	1.99	0.06
Frctn Loss (ft)	9.09	Cum Volume (acre-ft)	110.90	4.97	63.11
C & E Loss (ft)	0.02	Cum SA (acres)	35.56	0.87	19.64

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Split2 RS: 17.1420

INPUT
Description: 17.1420
Station Elevation Data num= 224

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3735.148	1231.859	3741.694	1231.82	3748.882	1231.701	3754.137	1231.297	3762.378	1230.478
3762.728	1230.443	3764.521	1230.399	3774.389	1230.502	3776.349	1230.522	3777.002	1230.514
3784.368	1230.568	3789.657	1230.549	3804.539	1230.344	3819.697	1230.278	3823.06	1230.258
3840.061	1230.049	3843.14	1229.994	3861.062	1229.959	3863.585	1229.947	3880.417	1229.722
3882.653	1229.685	3898.738	1229.626	3901.66	1229.616	3918.313	1229.495	3939.06	1229.326
3942.803	1229.307	3945.159	1229.278	3963.122	1229.199	3965.529	1229.216	3978.024	1229.311
3984.353	1229.147	3998.623	1228.957	4011.393	1228.888	4017.368	1228.842	4032.563	1228.889
4037.195	1228.878	4051.327	1228.674	4054.666	1228.681	4071.538	1228.743	4073.093	1228.797
4074.236	1228.796	4085.853	1228.941	4088.41	1228.899	4102.49	1228.814	4104.717	1228.805
4121.783	1229.444	4124.667	1229.597	4139.52	1229.25	4145.37	1229.171	4155.433	1228.981

```
4162.3841228.9424171.6621228.9844179.2851229.0024188.2061228.9174197.1651228.877
4205.1081228.9394218.0411228.8824229.4251228.839 4242.281228.7654254.6531228.585
 4265.261228.5084278.0141228.2734286.7521228.0234295.3621227.9074302.4431227.818
 4311.611227.8154312.7781227.7854314.4831227.7924324.5541227.748 4327.28  1227.4
4333.7421227.1784341.1941227.0564349.4441227.204 4351.311227.4474357.7681227.847
4362.4591227.9314363.9341227.9754365.4081227.9874374.7981228.1224376.9961228.021
 4387.471227.7944394.2891227.1544394.429 1227.154394.578 1227.144400.9141227.257
4409.4621227.358 4412.251227.4764423.758 1227.71 4430.331227.7744441.0681227.603
 4451.221227.4594452.7651227.4194463.4361227.4194464.1241227.4254465.3951227.415
 4471.261227.4544485.3291227.309 4504.361227.135 4506.541227.0924507.0421227.089
4514.3561227.1064527.8941227.0474530.9441227.0344550.1641226.3594571.0861226.452
4575.0111226.4224592.5821226.8434594.6051226.8524594.8941226.852 4596.371226.857
4613.9121226.4814617.4241226.4334640.4511225.9834661.3781226.1294667.8051226.094
4687.7411225.9554703.4641225.6854711.0181225.6674726.8731225.2564743.9321225.025
4760.0651225.0774769.3531225.0254784.1331225.0674802.2121225.1344810.9131225.271
4823.2321225.0194833.9491224.7974845.6421224.7874860.7791225.1424884.0621225.326
4889.6611225.412 4894.321225.3994922.5791225.5264926.7121225.5554953.578 1225.75
4961.0781225.8184961.8871225.814 4962.681225.8084973.8351225.5634974.5971225.578
4990.9161225.7174990.964 1225.724991.6541225.734 4998.971225.733 5001.521225.734
5009.2931225.2715024.6561225.4975028.3971225.2915029.6461225.2475043.0481224.997
 5045.341225.0685058.4321225.0275058.0831224.9855061.0971225.0075070.0441224.828
5074.121  1224.85088.109 1224.726094.4951224.6985103.8711224.6065108.6341224.576
5115.2171224.4065123.9131224.4135128.5851224.5535137.9031224.7995147.3161225.071
5153.0351225.1845158.3781225.3085168.2151225.2075178.2721225.1765186.1831225.293
5198.5291225.4965202.6951225.5265220.4361225.8955223.8771225.9935235.7061226.304
5237.8921226.3855252.0271226.9635253.4741226.9935265.3511227.4295266.286 1227.45
5281.8071227.8185281.8561227.8195281.9111227.8195285.3751227.8765296.7971228.007
5313.1141227.9975315.9321228.0165332.1761227.9395344.9391227.9475348.7651227.929
5362.6171227.8715373.8731227.8615376.8841227.8625392.8391227.9855398.085 1228.01
5412.5091228.1715421.8051228.3875433.0291228.5965439.7431228.6335452.751 1228.63
5466.7841228.7385467.8051228.7445485.5151228.6955503.854  1228.75505.815 1228.71
5528.5231228.8285529.3681228.8375547.2561225.015 5549.471229.0495569.6921229.196
5590.626  1229.2 5596.321229.231 5614.391229.2525619.402 1229.295645.0651229.915
5650.2461229.8175654.2081229.8425666.7781229.8215668.2191229.823 5671.561229.884
5683.788 1230.065689.5211230.2455692.152 1230.285692.363 1230.28

Manning's n Values          num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
1735.148     .0354374.798     .0755296.797     .035

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
     4374.7985296.797                490262.0117      645              .1          .3
Left Levee       Station=4661.378       Elevation=1226.129

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)          1225.98   Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.38   Wt. n-Val.                            0.075
  E.G. Elev (ft)          1226.36   Reach Len. (ft)              0.00      0.00       0.00
  Crit W.S. (ft)          1225.98   Flow Area (sq ft)                    401.53
  E.G. Slope (ft/ft)     0.091930   Area (sq ft)                         401.53
  Q Total (cfs)           1980.00   Flow (cfs)                          1980.00
  Top Width (ft)           539.79   Top Width (ft)                       539.79
  Vel Total (ft/s)           4.93   Avg. Vel. (ft/s)                       4.93
  Max Chl Dpth (ft)          1.58   Hydr. Depth (ft)                       0.74
  Conv. Total (cfs)        6530.3   Conv. (cfs)                         6530.3
  Length Wtd. (ft)           0.00   Wetted Per. (ft)                     539.87
  Min Ch El (ft)          1224.41   Shear (lb/sq ft)                       4.27
  Alpha                      1.00   Stream Power (lb/ft s)                21.05
  Frctn Loss (ft)            0.00   Cum Volume (acre-ft)
  C & E Loss (ft)            0.04   Cum SA (acres)


Warning - The energy equation could not be balanced within the specified number of iterations.  The
          program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
          than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
          section.  This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical
          depth, the calculated water surface came back below critical depth.  This indicates that there is
          not a valid subcritical answer.  The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth.  The program will try the
          cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water
          surface was used.

CROSS SECTION          RIVER: Harquahala
REACH: Lower Reach        RS: 17.5767

INPUT
Description: 17.5767
Station Elevation Data     num=      246
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
2853.9581244.0562860.3341244.1982883.4271243.3022896.3311242.9482912.8951241.557
2915.0181241.375 2916.241241.4212923.8821241.5592932.5451241.6522935.6871241.692
2946.7551242.1722954.1281242.4512965.4941242.818 2967.481242.8752969.6331242.894
2986.8471242.9772990.6451242.6843001.5561241.4683003.6851240.8813007.075 1240.42
 3012.361240.9793021.4371241.9253034.2531241.9913041.8781242.0453067.4261242.349
3135.2691242.9283135.5381242.9193139.9851242.7683210.1561243.4153240.9951243.574
3272.7531243.578 3289.871243.6483297.2541243.5733382.8161242.9133404.998 1242.82
3411.1481242.3933418.7861241.7873422.5051242.251  3429.1 1242.623439.1891242.736
3463.4341242.9723469.1911242.9433488.4791243.0153501.7861243.0633504.8631243.074
3543.0321243.2783545.7951243.2933546.1791243.2923546.248 1243.293546.4061243.286
3548.7521243.2293579.6351242.4473581.5761242.4423582.2821242.2863588.2271241.201
 3599.08 1241.873599.9041241.7883605.7021241.7353624.6361242.7273630.4621242.757
3639.9151242.8953647.2531242.8893656.9881242.8593661.0881242.7333694.0971243.001
3731.5141243.2073763.7031243.1583852.4621242.7233891.0161242.5773925.5261242.489
3981.7891242.4224001.2061242.4154012.3371242.3234033.2581242.3224026.5761242.422
4032.7581241.9834033.658 1241.864046.7281241.9134049.3321241.9764051.835 1241.36
4057.176 1240.134059.1951240.5554065.4781242.0434081.8511241.9994083.3781241.982
```

```
4084.8121242.001 4097.881242.362 4102.111242.3274106.9041242.4524116.6371242.483
4116.7451242.483 4117 131242.4954132.7151242.9434146.5831243.4294147.6351243.455
4148.0641243.3294157.2931241.0094164.1681243.2654168.1951242.6954190.3981242.727
4200.4421242.7744228.1881242 6684245.6881242.5354249.2421242.0284253.8611241.186
4261.5821242.5964261.8711242.6534262.8571242.6514277.1121242.6284307.5661242.725
4311.5241242.7354328.9751242.6784362.8391243.2484392.7171243.6144431.8291242.259
4436.8971242.1234439.6671242.104 4454.581242.5444474.7511241.7624507.1511241.685
4513.3821241.7184554.2981242.0364603.4491242.4114645.2921242.2524656.6681242.399
4663.8561242.3624671.1811242.4744675.3381242.3914676.0321242.3124678.1431242.308
4679.4321242.1664680.1081242.3054691.3141242.9974696.1491243.1684702.7721243.092
4715.7791242.8984721.4211242.8454754.2481242.5234772.0531242.4674790.363 1242.23
4796.0931242.1644798.3561242.6944799.9011242.1094815.8711242.252  4817.41242 043
4825.5381241.3624829.9611241.6594836.3311242.1874839.2431242.4134845.9741242 802
4849.6021242.8594858.2581242.9414867.9641242.8524879 8081242.7994888.0731242.737
4898.0351242.7264922.5641242.7784951.3441242.6554951 8241242.6554952.6671242.634
4990.8221242.0074993.8411241.4045000.5361239.5165004.5391240.6435013.2861241.943
5034.3211242.1115053.6241242.2645063.7271242.1465081.3941242.2025126.1141242.105
5141.188 1242.155145.1821241.9825153.3071241.6285153.5951241.5965160.6871240.808
5161.4891240.9145169.5931241.948 5185.311242.0685186.8641242.0795187.6671242.108
5194.2931242.4445199.0061242.7555203.378 1242.765210.4771242.3445215.9461241.856
5223.7451241.999 5235.771242.384 5247.131242.4365251.193 1242.145253.9161242.286
 5259.641242.2175262.2671242.2185263 4851242.2965276.0861242.3775288.5171242.522
5289.408 1242.245295.1041241.2655298.9841242.0565302.3921242.452 5304.031242.906
5306.2151242.788 5314.641242.5315327.8511242.568 5338.141242.4735340.5641242.383
5345.3251242.2725354.6621242.5255360.3561242.9035379.4471242.8145386.9791242.884
5391.2221242.7285393.904 1242.915417.1281243.211 5438.561243.2155453.6361243.267
5472.5931243.3885484.7881243.574 5496.761243.7865511.9381243.6975531.0031243.603
5532.9191243.6025533.4771243.5175538.8671242.0625539.7471242.2645539.8631242.234
5546.492 1243.875550.4391243.9995556.4071243.9935564.2461243.4515566.2161243.343
5570.2071243.4675584.7421243.7185596.6091244.0185597.1251243.8995598 7711243.864
5610.6091243.4645612.7181243.5935619.925 1244.02  5624.21244.2435625.1661244.445
5630.9461244.2745637.559 1244.345656.1911244.2355669.6041244.0855677.4771244.118
5678.8961244.126
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
2853.958     .0354990.822     .0855034 321     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4990.8225034.321              340545.0853     555            .1          .3
Right Levee      Station=5550.439       Elevation=1243.999
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1243.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1244.06	Reach Len. (ft)	340.00	545.09	555.00
Crit W.S. (ft)	1243.47	Flow Area (sq ft)	2481.63	100.67	620.20
E.G. Slope (ft/ft)	0.007546	Area (sq ft)	2481.63	100.67	620.20
Q Total (cfs)	13020.00	Flow (cfs)	10157.88	265.88	2596.24
Top Width (ft)	2675.62	Top Width (ft)	2120.23	43.50	511.89
Vel Total (ft/s)	4.07	Avg. Vel. (ft/s)	4.09	2.64	4.19
Max Chl Dpth (ft)	3.88	Hydr. Depth (ft)	1.17	2.31	1.21
Conv. Total (cfs)	149885.1	Conv. (cfs)	116936.6	3060.8	29887.7
Length Wtd. (ft)	409.82	Wetted Per. (ft)	2122.30	43.88	512.85
Min Ch El (ft)	1239.92	Shear (lb/sq ft)	0.55	1.08	0.57
Alpha	1.01	Stream Power (lb/ft s)	2.25	2.85	2.38
Frctn Loss (ft)	3.43	Cum Volume (acre-ft)	194.75	7.74	125.73
C & E Loss (ft)	0.01	Cum SA (acres)	106.16	2.69	57.41

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

```
CROSS SECTION          RIVER: Harquahala
REACH: Lower Reach        RS: 17.4734

INPUT
Description: 17.4734
Station Elevation Data     num=     262
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
2914.0071240.4782971.1181240.0732987.5011239.9743008.6071239.9173082.9291239.813
 3126.671239.5933131.9621239.5783167.1221239 7463180 3071239.5443213.959  1239.2
3225.8961239.0923268.0311238.9713270.7051238.9533272 3021238.9543282.3331238 708
3286.2341238.0853288.3271237.8373296.5061238.4413303.6071238.9813321.9731238.798
3339.6211238.684 3349.73 1238.683360.725 1238.77 3365.181237.8323366.8941237.357
3373.2781238.1333376.7681238.4273380.7921238.5343385.3981238.6233390.5551238.727
3396.4541238.9193410.8081238.937 3441.611238.9583447.5061238.9023458.8721238.848
3504.2711238.6973504.4451238.6963504.6111238.6953519.4931239.0563531.4651239.572
3534.6151238.7433542.2491237.3913545.1441238.0773555.5361239.2413563.0711239.351
3575.3761239.5823577.4321239.6523580.6881239.6993602.5541239.6973603.708 1239.68
3605.5391239.381 3608.751238.8463611.9421239.242 3613.921239.5933619.2871239.638
3620.0381239.6293620.8181239.5713626.1231239.0543630.6651239.3733636.3731239.879
3648.112 1239.843665.1031239.8623670.8311239.7963672.8091239.7473677.286 1239.76
3691.4091239.756 3696.141239.3543697.4471239.2213701.826 1239.813702.9151239.922
3708.0941240.0073724.8981240.2033729.9491239.8263730.8991239.7783731.607 1239.83
3741.1311240.1253765.8831239.9683776.9211239.8333787 3231239.7763792.1311239.784
 3817.991239.8533864.5751239.6433868.8431239.8313892.306 1239.763901.7541239.714
3908.7751239.6943914.8661237.7853915.186 1237.683915.5341237.7673924.0421239.648
3972.1381239.652 3979.391239.6533984.1241239.6693986.5151239.6824017.7471239.745
4027.9381239.2284030.5471239.1184040.3461238.7054040.5031238.703 4048.991239.501
4050.8011239.6514061.0291239.8234089.4681240.0834139.849 1239 464150 9281239.247
4157.7961239.2124165.161 1239.114181.8951239.1354241.9581239.2744252.092  1239.1
4273.9051238.6154287.4041238.7954291.5171238.8074294.445 1238 314298.0741237.667
4300.5151238.0084306.9781239.1364328.9091239.087 4340.231239.0264359.292 1239.16
4369.183 1239.264376.672 1239.134417.3731238.2574423.8991239.151 4426.061239.329
 4467.411239.577 4481.11 1239.594496.7081239.2234513.529 1238.934532.7081239.032
4545.2271239.1814549.4141238.5394551.1681238.1474556.2071238.4044562.9711238.873
4568.3891238.8764586.9661238.8454588.1821238.9954590.1171239.0874600.6271239.523
4606.8041239.7144612.7721239.8344615.8041239.9874619.4071240.2314631.9061240.347
4652.7341240.2524672.7341240.1224700.2161239.539 4704.021239.5444718.1691240.316
```

```
 4726.781240.7424731.0251240.8794743.563  1241.14749.5181240.9894755.9221240.647
4769.8371239.9214772.6351239.8854794.0241239.3494798.0291239.0214810.2021238.762
4817.4071238.5474829.1141238.7854849.1241239.1214889.6631239.0284904.7491239.077
4913.534 1239.074922.4241239.0464923.626 1238.964931.295 1238.664935.5881239.054
 4940.381239.4784961.4921239.1424964.7751239.0864965.9391239.0814967.4881239.083
4990.8981238.9024995.2461237.9574999.5421236.3745008.4431238.0255010.0811238.403
5012.035 1238.355019.9351238.2685025.178  1238.45034.7371238.3515038.0511238.321
5042.6151238.0725045.7591238.0185056.1861238.1075057.3751238.0755063.9661236.655
5085.5291236.3585067.5171236.667 5077.531237.8485085.2911238.0575099.625 1238.18
5102.3721238.2315103.9281238.2625105.3821238.3295110.353 1238.29 5124.461238.392
5132.3531238.599 5138.891238.6695145.9941239.1845171.4651238.6855175.9091238.636
 5177.141238.5865182.3721239.2485184.5181238.3195194.702 1239.085206.7871238.743
5215.3981238.5925221.3311237.8915227.5121236.897 5231.571237.854 5235.27 1238.61
5252.6391238.7935280.747  1238.95295.1721238.7695309.9061238.5055312.4051238.171
5315.9591237.6285320.3781238.374 5323.43 1238.865330.0751238.6845337.0271238.551
5345.3731238.4955348.4181238.4865350.5571238.1255358.6321236.9965362.0971237.636
5367.9111238.6285373.3531238.771 5394.49 1238.995403.1661238.9045407.8691238.861
5417.1671239.0585424.6711239.0915440.2271239.1435448.6571239.3565461.7871238.219
5463.1081238.0875465.024 1238.295470.7161238.9515473.5931239.3755493.8541239.439
5507.8821239.4595541.6091239.4045547.2031239.4115549.6881239.4165551.8011239.387
 5581.611239.1975587.2161238.4855590.8341238.0075595.8091238.6635598.8811239.218
5619.5291239.266 5623.511239.2935642.9781239.5385661.0681239.7445695.7151240.517
  5702.61240.4715722.035 1240.33
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
2914.007	.035	4967.488	.085	5025.178	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4967.488	5025.178	491	598.031	608	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1240.30	Element			
Vel Head (ft)	0.33	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1240.63	Reach Len. (ft)	491.00	598.03	608.00
Crit W.S. (ft)		Flow Area (sq ft)	1853.60	114.81	990.59
E.G. Slope (ft/ft)	0.009341	Area (sq ft)	1853.60	114.81	990.59
Q Total (cfs)	13020.00	Flow (cfs)	7399.02	304.95	5316.03
Top Width (ft)	2687.62	Top Width (ft)	1969.06	57.69	660.86
Vel Total (ft/s)	4.40	Avg. Vel. (ft/s)	3.99	2.66	5.37
Max Chl Dpth (ft)	3.94	Hydr. Depth (ft)	0.94	1.99	1.50
Conv. Total (cfs)	134712.8	Conv. (cfs)	76554.7	3155.1	55002.9
Length Wtd. (ft)	538.26	Wetted Per. (ft)	1971.27	58.25	662.28
Min Ch El (ft)	1236.37	Shear (lb/sq ft)	0.55	1.15	0.87
Alpha	1.08	Stream Power (lb/ft s)	2.19	3.05	4.68
Frctn Loss (ft)	3.95	Cum Volume (acre-ft)	177.83	6.39	115.47
C & E Loss (ft)	0.03	Cum SA (acres)	90.20	2.05	49.93

Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 17.3602

INPUT
Description: 17.3602
Station Elevation Data num= 272

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 2828.161236.5632830.8451236.5252836.3861236.4312886.1491235.6672898.3031235.601
2908.0471235.5532957.7921235.4742966.0791235.1922974.7181234.855 2979.271234.902
2988.7151235.661  2989.41235.6732991.0861235.6823010.667 1235.783022.4411235.698
3036.0191235.3653052.8441235.0813060.6551234.3583061.314 1234.293062.4181234.271
3081.2711233.8813082.924  1233.93089.1761234.0213111.2761234.5283119.7171234.637
3140.3911234.9343142.0221234.9753152.1781235.2083173.4491235.1823174.761 1235.17
3180.0861235.2813210.5281235.925 3215.58 1235.773221.6831235.5943240.2231235.019
3245.1351233.2033246.0311232.8263248.1551233.458    32531235.0353257.6111234.902
3268.3511234.6443286.9691234.837 3303.511235.0533315.4371235.1413352.3781235.231
3385.6131235.1373421.7281235.114 3425.321235.1483433.4451235.1123440.2061235.127
  3441.41235.2163443.3141235.208  3449.41235.1523456.6561235.2433463.029 1235.26
3464.7181235.2453483.2441235.1353497.5511235.0593499.5191235.0663501.0711234.773
3504.4881234.339 3506.031234.5893512.5891235.3673522.1351235.7333526.6121235.908
3531.4431233.7053533.088 1233.053533.8751233.2513542.7281235.5943551.0631235.529
3561.7871235.5013568.0461235.5443581.5141235.7073592.9721235.8213616.6171235.853
 3625.841235.805 3647.68 1235.853658.0851235.8193670.8721235.7843715.498 1235.76
3754.3711235.6243756.7011235.6173758.6721235.5923810.6971234.8773811.1571234.814
3817.088 1234.113819.2191234.3443827.5371234.8643829.9341234.8853848.5491235.137
3864.8981235.4073896.1271234.704 3898.211234.6973898.981 1234.663931.9071234.682
3940.2771234.785 3956.511234.8093960.745  1234.33962.7281233.9753966.788 1234.34
3974.6561234.7654007.152 1234.87 4024.171235.0354051.3891235.0044075.0141234.928
4088.4581234.8474100.8261234.8564111.0421234.845 4119.971234.6994122.4131234.704
4124.8581234.1144128.813 1233.314135.0931234.4754139.4411235.1824157.2481235.065
4174.0231234.9644182.7481234.9184191.3621235.4744198.7921235.8744223.1321236.026
4230.1491236.0254231.5361236.0574232.584 1236.064251.8231235.9924280.3731235.917
4303.3541235.764  4318.6 1235.654319.9881235.558  4328.91234.8064329.4261234.835
4337.1951235.2134341.8921235.4764355.3951235.3714356.2261235.2684362.2591235.064
4374.7031235.1574380.7911235.2224399.2861235.4784413.3991235.6574417.318  1235.7
4430.7611235.772 4479.791236.1674500.4161236.1534516.8091236.1534551.9821236.034
4575.2271236.1654590.0191236.2674667.2051236.1994679.0251236.1594705.5681236.401
4716.536 1236.464724.619  1236.24765.5471234.7554780.6181234.783 4785.131234.769
4800.0771235.0564813.783 1235.534826.7031235.6254850.4881235.739 4854.971235.707
4878.1621235.364  4882.81234.751 4889.451233.6244896.6181234.1874905.2521234.565
4918.4061234.5914921.7541234.6054930.8911234.1624947.3731234.4724957.5721234.362
4965.8111234.5474979.0121234.7894980.4221234.8274991.9191234.6324993.2111234.611
4993.3641234.6134993.8111234.5275000.9981233.2655001.9731233.4255008.0491234.647
5011.9381233.9075013.8041233.4975016.6241234.3835019.2241234.9925025.9881234.969
5029.3041234.926 5031.651234.636 5037.791234.0725042.5971234.6265044.8391234.881
5048.1981234.7695052.5561233.9675061.8831234.8565063.4261234.8845063.9741234.893
5065.8831234.7795075.8041234.4155078.7261234.4615085.253 1235.125095.3871234.915
```

```
5095.6671234.9085095.8131234.9045102.9131234.652 5104.481234.3155108.3811233.071
5110.4411233.4315113.4721233.519 5125.921233.832  5126.81233.6745127.9471233.834
5135.6381234.8775150.947 1234.675166.0451234.5225168.1861234.4385172.9711234.328
5186.6161234.0825196.1691235.0455201.6021235.6415207.6991235.8275218.2991236.004
5226.3591235.8595235.4871236.0055245.7911235.482 5263.061234.761 5275.671234.894
 5296.261234.9345330.8051234.4695363.215 1234.185376.6011234.5995376.7881234.602
5396.4921234.5895425.5111234.7975438.5011234.6415454.9491234.6595462.4451234.684
5474.9081234.6465485.9011234.4345503.4751234.6985531.8181234.873 5548.821234.944
5562.6391234.9955575.7111234.681 5591.02 1234.545594.6071234.2295597.5981233.896
5603.2861234.4325608.3631234.7755624.3581235.1885641.1991235.5485657.7261235.646
5708.8211235.9145721.5331235.9875731.6821236.0915740.7461236.1545769.1641236.504
 5779.821236.576 5783.951236.5695832.3641236.4425854.3481236.6145883.4661236.695
5915.8571236.9255920.5081236.9315920.655 1236.925971.5471236.9285949.9341236.995
5960.2431237.0755987.9311237.4286011.0741237.6376053.1261237.8936062.7681237.988
6066.8751238.0636073.7851238.148

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
 2828.16    .0354980.422    .0855019.224    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4980.4225019.224              401480.8423     450              .1        .3
Left Levee       Station= 2828.16       Elevation=1236.563

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1236.43   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.22   Wt. n-Val.                  0.035      0.085      0.035
  E.G. Elev (ft)            1236.65   Reach Len. (ft)            401.00     480.84     450.00
  Crit W.S. (ft)            1236.03   Flow Area (sq ft)        2323.43      83.66    1112.53
  E.G. Slope (ft/ft)       0.005936   Area (sq ft)             2323.43      83.66    1112.53
  Q Total (cfs)            13020.00   Flow (cfs)               8077.57     186.22    4756.21
  Top Width (ft)            2919.11   Top Width (ft)           2136.62      38.80     743.69
  Vel Total (ft/s)             3.70   Avg. Vel. (ft/s)            3.48       2.23       4.28
  Max Chl Dpth (ft)            3.60   Hydr. Depth (ft)            1.09       2.16       1.50
  Conv  Total (cfs)        168995.4   Conv. (cfs)            104844.2     2417.1    61734.1
  Length Wtd. (ft)           418.62   Wetted Per. (ft)         2139.40      39.38     744.53
  Min Ch El (ft)            1233.27   Shear (lb/sq ft)            0.40       0.79       0.55
  Alpha                        1.04   Stream Power (lb/ft s)      1.40       1.75       2.37
  Frctn Loss (ft)              3.39   Cum Volume (acre-ft)      154.29       5.03     100.79
  C & E Loss (ft)              0.01   Cum SA (acres)             67.06       1.39      40.13


Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
REACH: Lower Reach          RS: 17.2691

INPUT
Description: 17.2691
Station Elevation Data     num=      284
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
2916.3661234.3552917.8141234.4642921.0241234.4572924.278 1234.472938.0711234.273
 2955.451234.0332968.9521233.9282973.3691233.7332979.823  1233.13001.8631233.014
3029.1521233.0063061.4691232.6893062.8571232.6723064.8641232.6593130.5511232.028
3160.3061231.8423163.3371231.8293205.4971231.8073216.3441231.774 3221.871229.342
3223.0861228.8853227.8881230.4883229.9711231.1053230.2891231.2253252.5831231.408
3273.4231231.5583313.9291231.7343315.1011231.7433315.527 1231.69 3320.691231.054
3346.753 1231.873350.051 1231.973351.766 1231.953366.7431231.7323378.9791231.779
3397.3821231.5023403.5431231.3243410.1341230.1593410.1991230.1543410.2861230.166
3421.3011231.6013427.3261231.7343437.6511231.9363439.5091232.0263442.7251232.057
3461.619 1232.043490.6051231.9533493.7941231.8633501.4781231.6753523.8681231.852
3550.8261232.0793561.2431232.0153572.594 1231.963573.0841231.9543589.6811231.831
3635.9071231.7943671.4891232.0383687.9071232.1813695.1811232.2493735.0341232.149
3785.8751232.0063793.5841231.9863797.006 1231.993818.7871231.9673855.3211231.969
3883.911 1231.763892.4211231.6823914.5191231.5943917.7011231.5723920.2291231.584
3921.434 1231.593957.6581231.6853979.7781231.4073990.7061231.3673997.7111231.123
4002.4691230.9164007.1871231.2814010.8741231.5024013.8091231.5274057.3861231.571
4098.9781231.5694103.412 1231.594111.8251231.628 4130.531231.7064131.9311231.435
4139.0361230.7294143.0831231.3184146.3081231.7494170.4681231.8674182.7531231.873
 4184.691231.5854192.5461230.7744201.8831231.4094206.487 1231.724227.9921231.482
  4240.11231.4724252.1791231.4484282.1331231.6624283.1961231.4444287.7491230.682
 4295.341231.6884296.0021231.7664296.5761231.7164301.2551231.4094313.6111231.852
4313.8621231.8674346.9551232.1324363.5551232.1994430.5241232.1954459.1541232.441
4461.6851232.5234503.4161232.7314520.491 1232.73 4531.511232.6614565.5531232.868
4568.0161232.9314600.3461233.0724605.6461233.0944619.0341232.9994641.8021233.439
4664.8611232.7754670.5411232.3924674.1411232.2564682.8551232.2064711.4551231.929
 4714.591231.8624725.0381231.6574747.7141231.5954747.7921231.5954747.9321231.601
4770.1291232.8844788.6871232.5594792.3351232.4914801.6311232.1674810.5631231.838
 4813.941231.8314815.5591231.8264816.5761231.8234842.0181231.7624842.2451231.761
4842.2731231.7624842.3031231.7624858.854 1232.19 4882.771232.3624891.8091232.405
4896.6941232.4174900.6081232.2534928.6681231.2944930.7781231.3874942.5451231.735
4953.517 1231.694967.0921231.5094971.8081230.5054975.8791229.6724981.3241231.157
4985.4111231.9844989.9031231.854 4994.571231.6684998.609 1230.444999.211 1230.19
4999.968 1230.355007.8951231.848  5012.71232.0585016.6161231.6365022.8351231.542
5028.187 1231.985035.5151232.4285042.6411232.3365046.0181232.2325048.9831231.425
5054.6771229.5955058.8211230.5465065.5721232.1665083.2381232.1645098.6131232.121
5107.2841232.0935124.861  1232.15129.8251231.4415132.0441230.9595138.3151231.609
5141.5711231.9355144.5061231.9645147.3431231.8395147.5921232.1725168.0691232.389
5168.746 1232.375169.2151232.3785171.209 1232.355185.5351232.1785189.2241232.085
 5196.441230.4165196.7471230.3585204.7081231.1255206.9711231.6375213.9831231.063
 5216.911230.8335223.905  1231.7    5225 1231.875225.4911231.9495225.9311231.955
5239.6691232.4415249.942 1232.235260.0241232.1025265.6971231.1265266.2081231.071
5270.5431231.1615275.3591231.5345276.3581231.1265280.7961230.3165285.0771230.814
 5292.451231.9315298.6471232.0565299.8291232.0485319.6441231.9245321.0721231.929
 5322.561231.7275330.8691230.6415333.8811231.1975335.553 1231.695348.8321231.551
5351.5711231.5785359.9811231.5245371.1691231.4675374.1841230.9595379.2631230.115
5387.5681231.0135388.2491231.0965388.9281231.1035429.1171231.5775456.9881231.384
5460.6521231.3975479.2521231.4955482.7631231.4485489.4431231.4855506.562 1231.57
```

```
5511.2991231.0085513.0081230.766 5516.081231.2615520.4911231.878 5525.081231.969
5527.0021232.0245533.0781230.9655533.5471230.8695534.5641230.937 5541.3081231.467
5551.2681231.482 5576.591231.655 5581.771231.7545589.077 1231.895594.7381231.918
5604.9471231.9555617.1791231.8825640.9671231.8655646.0081231.895 5679.551232.364
5708.776 1232.56 5753.921232.8455761.2181232.8675763.3611232.886 5796.71 1233.04
5804.6531233.2395805.9551233.1525826.2371233.3915839.4371233.5425869.2661233.733
5873.7651233.729 5874.691233.7375881.1571233.6935887.703 1233.925903.0661234.331
5912.9651234.4525918.2091234.4165921.5971234.4315935.7171234.4815947.4141234.466
5952.5651234.4025957.3631233.9955960.8511233.7765973.5921232.4875978.354 1232.85
5987.8961233.8996000.2171234.0876022.3041234.2586024.5031234.272
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
2916.366    .0354985.411    .085  5012.7    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
      4985.411  5012.7              423503.3689     495            .1          .3
Right Levee      Station=5935.717      Elevation=1234.481
```

CROSS SECTION OUTPUT Profile #PP#1

W.S. Elev (ft)	1232.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1233.25	Reach Len. (ft)	423.00	503.37	495.00
Crit W.S. (ft)	1232.74	Flow Area (sq ft)	1897.44	39.75	845.49
E.G. Slope (ft/ft)	0.011516	Area (sq ft)	1897.44	39.75	845.49
Q Total (cfs)	13020.00	Flow (cfs)	8781.14	94.88	4143.98
Top Width (ft)	2635.51	Top Width (ft)	1852.99	27.29	755.23
Vel Total (ft/s)	4.68	Avg. Vel. (ft/s)	4.63	2.39	4.90
Max Chl Dpth (ft)	4.02	Hydr. Depth (ft)	1.02	1.46	1.12
Conv. Total (cfs)	121327.5	Conv. (cfs)	81827.5	884.2	38615.8
Length Wtd. (ft)	450.33	Wetted Per. (ft)	1855.26	27.69	757.73
Min Ch El (ft)	1230.19	Shear (lb/sq ft)	0.74	1.03	0.80
Alpha	1.01	Stream Power (lb/ft s)	3.40	2.46	3.93
Frctn Loss (ft)	3.12	Cum Volume (acre-ft)	134.86	4.35	90.67
C & E Loss (ft)	0.05	Cum SA (acres)	48.69	1.03	32.39

```
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
                section.  This may indicate the need for additional cross sections.
```

```
CROSS SECTION          RIVER: Harquahala
REACH: Lower Reach        RS: 17.1738
```

```
INPUT
Description: 17.1738
Station Elevation Data     num=      283
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
3036.5241230.613 3069.991230.5853075.7921230.5573076.8061230.5543077.8031230.546
3086.0321230.5183136.4561230.297 3147.961230.1953172.0371230.0573192.9221230.079
3210.7971229.5683226.4551229.135 3235.091229.3563252.1691229.4173276.9311228.912
3292.0521228.837 3293.741228.8393298.7971228.2933308.6671227.2563311.6411227.594
3317.986 1228.67 3320.051228.6533355.2561229.1343357.5351229.1363357.8131229.145
3358.0071229.1493358.1461229.1543358.3491229.1513359.7921229.1263382.8541228.711
3388.8111228.6063390.8981228.2173395.2461227.2683399.8651228.0243403.3741228.383
3409.7371228.3383427.4611228.3393430.0771227.4373432.9151226.8823438.3541227.695
3442.6691228.3023444.764 1228.363454.2921228.8083478.2041228.8023485.0071228.761
3489.4341228.7413496.698 1228.723512.3881228.7283545.8161228.8953568.125 1228.85
3580.3361228.8383597.2911228.6173613.824 1228.493618.4511228.4673621.1811227.923
3626.4231226.8873629.8911227.5793634.1351228.7053642.3321228.7443693.1961229.002
  3727.31228.8413764.5551228.6923794.5261228.6043836.4241228.5813853.7711228.598
3865.3231228.6493942.8571228.6973946.394 1228.684017.7031228.4564027.5861228.482
4058.471 1228.564070.7181228.4864098.7871228.1454126.775 1228.15  4144.31228.188
4159.1111228.0234168.8821227.9394193.1531227.0614197.5041227.2864200.4571227.567
4207.8381228.436 4216.931228.7134223.2381228.8924238.6961229.0314241.8661229.093
4244.0211228.868 4253.471227.866 4263.231227.8674272.8921227.8144278.6031227.047
4279.1021226.9864280.3061227.1414285.962 1227.744313.8681227.882 4325.041227.993
4338.5631228.1084374.473 1228.22 4395.021228.368  4404.61228.3274423.6721228.386
 4426.53 1228.364428.3251228.3814442.6791228.282 4464.081228.1494466.6191228.154
4470.4321227.8614478.156 1227.274483.5091227.6814485.8731227.8594488.0731228.038
4521.7261228.7614528.3651228.9834554.5381229.4914589.0991229.4944597.8731229.372
4610.4891229.2724623.0611229.3064658.9521229.4294663.3591229.4434695.0411229.505
4719.1461229.5164728.6931229.5314776.5011229.5124803.4751229.5244809.2991229.493
4812.2711229.2584819.7291228.3144835.7871228.5134841.0681228.6224845.6521228.629
4847.9651228.5744863.4121228.3194869.2221228.8924870.6731229.0024882.1121228.792
4883.5691228.8094883.5881228.8024886.4481228.8054915.617 1228.834929.2211228.376
4957.3371227.4864962.5021227.8074965.4451228.1474967.9431227.9714976.711 1228.31
4980.5351228.5754988.5231228.5734998.9321226.1644999.433 1226.044999.8541226.119
5001.9831226.482 5011.551228.2835013.406 1228.325019.0231228.6555023.7081227.957
5026.3721227.5765029.0331227.7275034.4831227.9175041.3721227.9735056.6881227.987
5062.2411227.6835071.8661227.6885078.6571227.5385079.4641227.499 5080.571227.664
5090.9631229.0215106.5511228.4785113.5141228.4335120.6961228.4315144.1911228.478
5163.3431228.564 5174.07 1228.125175.6311228.012 5181.731228.6225185.3441228.898
5208.3041228.6575222.9741228.4815238.2881228.5915245.1651228.6085246.5021228.606
5272.6751228.5795275.9651228.226 5283.21  1227.55288.4511227.6595292.6331228.037
5313.5321227.9035316.0611227.8575317.5621227.9165329.0971228.0335337.1711227.782
5338.9261227.8635341.1781227.573 5343.971227.4165350.1471228.6045351.094 1228.83
5378.3931228.4945380.3151228.4795381.3291228.4525385.3091228.4655407.6071228.422
 5409.87 1228.32 5410.881228.3475416.6361227.5695418.1321227.357 5421.641227.624
 5426.43 1227.98 5432.391228.0575437.4911228.2225445.8931227.9765452.9791228.007
5455.7751227.7835457.8891227.811 5461.791227.7735469.3531228.4025469.6431228.422
5472.5871228.1825474.0761228.2745476.7961228.0415481.6451227.6185486.1831228.154
 5487.951228.3255489.2461228.3455500.6241228.3115518.4341227.9635527.2621227.664
5535.4021227.7465550.7211227.7645553.7571227.6265556.7061227.4385557.6491227.515
5567.1551228.1715575.473 1228.265575.6831228.261    55871228.3055590.451 1228.37
5593.928 1228.325610.0391228.2155612.5771228.1995618.077 1228.185622.5561228.212
5633.5661228.2235645.241 1228.245648.0781228.0515655.5931227.5615658.9761227.889
5673.4661227.8445678.4481227.8195686.5571228.0485701.9631228.1365705.2581228.136
```

5705.8691228.1545708.4041228.1035717.1161227.9955724.4331228.1435729.8981228.303
5746.6461228.5495751.448 1228.615757.4961228.6485760.9171228.7765798.6271228.869
5807.4071228.8975832.139 1229.07 5839.9812229.0445866.0141228.9935871.6511228.971
5877.1881229.0415889.1091228.3965889.6681228.3115901.2211228.1025901.4821229.143
5903.029 1229.345913.2331229.3095924.2731229.1285935.466 1228.915940.9421228.817
5960.1381229.1915979.3151229.6055981.9911229.6175985.9361229.6636012.9261229.985
6021.3421230.0696034.664 1230.056070.6711230.146

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
3036.524	.035	4980.535	.085	5019.023	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4980.535	5019.023		380	501.3424	530	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1229.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1230.09	Reach Len. (ft)	380.00	501.34	530.00
Crit W.S. (ft)		Flow Area (sq ft)	2228.00	83.02	1462.42
E.G. Slope (ft/ft)	0.004560	Area (sq ft)	2228.00	83.02	1462.42
Q Total (cfs)	13020.00	Flow (cfs)	7410.58	162.19	5447.23
Top Width (ft)	2806.36	Top Width (ft)	1781.28	38.49	986.60
Vel Total (ft/s)	3.45	Avg. Vel. (ft/s)	3.33	1.95	3.72
Max Chl Dpth (ft)	3.86	Hydr. Depth (ft)	1.25	2.16	1.48
Conv. Total (cfs)	192806.1	Conv. (cfs)	109739.2	2401.8	80665.1
Length Wtd. (ft)	438.44	Wetted Per. (ft)	1782.94	38.99	987.51
Min Ch El (ft)	1226.04	Shear (lb/sq ft)	0.36	0.61	0.42
Alpha	1.02	Stream Power (lb/ft s)	1.18	1.18	1.57
Frctn Loss (ft)	3.37	Cum Volume (acre-ft)	114.83	3.64	77.56
C & E Loss (ft)	0.03	Cum SA (acres)	31.05	0.65	22.49

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 17.0788

INPUT
Description: 17.0788
Station Elevation Data num= 288

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2943.718	1226.997	2967.042	1227.127	3005.787	1227.292	3010.431	1227.338	3014.382	1227.378
3019.563	1227.422	3024.568	1227.405	3037.367	1227.284	3104.191	1226.756	3135.764	1226.457
3157.781	1226.299	3164.156	1226.249	3178.208	1226.441	3184.972	1226.536	3198.463	1226.385
3202.148	1226.283	3205.773	1225.943	3211.131	1225.475	3214.445	1225.829	3220.295	1226.361
3223.048	1226.284	3241.591	1226.475	3246.892	1226.631	3267.808	1226.733	3276.811	1226.653
3277.741	1226.688	3320.988	1226.038	3328.366	1225.901	3331.432	1226.038	3333.563	1226.035
3336.283	1225.951	3339.909	1225.821	3344.065	1225.143	3346.898	1224.551	3351.7	1225.033
3358.765	1225.956	3374.093	1226.054	3387.723	1226.089	3397.713	1226.231	3415.133	1226.673
3424.061	1226.711	3430.735	1225.395	3432.863	1224.855	3436.158	1225.395	3441.32	1226.441
3456.697	1226.449	3457.148	1226.452	3457.306	1226.453	3457.398	1226.456	3492.338	1226.539
3492.764	1226.538	3493.027	1226.538	3500.467	1226.505	3549.989	1226.663	3569.345	1226.8
3579.076	1226.777	3609.95	1226.724	3621.006	1226.667	3642.644	1226.127	3684.089	1224.716
3684.384	1224.711	3725.858	1224.567	3727.84	1224.554	3730.629	1224.685	3738.555	1225.118
3760.609	1226.326	3764.41	1225.183	3770.263	1222.941	3776.213	1223.785	3779.546	1224.322
3789.215	1224.385	3792.305	1224.383	3797.359	1224.373	3799.836	1224.263	3816.793	1224.072
3832.57	1224.288	3850.741	1224.417	3866.329	1224.449	3889.524	1224.453	3903.588	1224.912
3924.38	1225.46	3929.698	1225.532	3931.979	1225.537	3962.631	1224.638	3973.624	1224.608
4005.40	1224.59	4024.436	1225.32	4029.78	1225.418	4039.743	1225.204	4070.381	1224.539
4124.536	1224.873	4151.159	1225.117	4157.263	1225.101	4159.749	1224.829	4167.175	1224.409
4183.094	1223.793	4188.621	1223.24	4196.17	1222.891	4201.223	1223.136	4209.826	1223.292
4214.395	1223.236	4221.064	1223.551	4222.937	1223.641	4229.764	1223.963	4254.195	1224.886
4254.899	1224.775	4259.92	1223.95	4261.35	1224.07	4266.916	1224.854	4273.45	1224.168
4273.69	1224.15	4273.787	1224.154	4283.131	1224.721	4284.608	1224.693	4298.572	1224.467
4302.229	1224.241	4308.007	1223.95	4310.38	1224.369	4313.683	1224.906	4322.068	1224.628
4332.886	1224.362	4341.483	1224.203	4341.496	1224.203	4341.499	1224.203	4341.64	1224.19
4350.104	1223.468	4360.364	1223.446	4360.139	1224.804	4360.478	1224.86	4363.98	1224.905
4403.69	1225.45	4416.912	1225.47	4435.15	1225.58	4449.441	1225.944	4458.785	1226.113
4488.925	1226.111	4509.133	1226.111	4532.524	1225.129	4533.533	1225.097	4535.077	1225.106
4538.076	1225.14	4585.75	1225.731	4599.307	1225.474	4613.094	1225.033	4647.349	1224.961
4648.852	1224.954	4650.805	1225.02	4671.7	1225.718	4694.94	1225.98	4715.46	1226.21
4731.997	1226.035	4740.796	1225.808	4754.636	1225.514	4779.686	1225.772	4780.109	1225.773
4781.232	1225.769	4801.759	1225.709	4807.329	1225.806	4814.072	1225.951	4838.10	1226.3
4856.809	1226.456	4868.90	1226.24	4888.745	1225.758	4901.988	1225.687	4910.294	1225.683
4913.777	1225.445	4919.043	1225.132	4925.894	1225.595	4929.396	1225.871	4935.693	1225.775
4956.3	1225.83	4959.975	1225.789	4968.875	1225.684	4986.72	1226.3	4988.362	1226.328
4989.179	1226.12	4999.55	1223.688	5007.011	1224.734	5009.73	1225.078	5014.247	1225.085
5031.004	1225.12	5042.51	1224.955	5055.169	1224.865	5072.804	1225.061	5074.761	1225.098
5079.833	1225.038	5104.013	1224.675	5107.424	1224.422	5112.974	1224.177	5116.249	1224.704
5118.951	1224.997	5129.203	1224.666	5130.245	1224.634	5130.416	1224.621	5130.597	1224.635
5131.969	1224.702	5137.827	1225.064	5139.749	1224.799	5145.811	1224.055	5147.472	1224.385
5151.946	1225.173	5176.621	1224.835	5182.956	1224.785	5186.178	1224.833	5200.278	1225.273
5211.149	1225.199	5224.058	1225.092	5227.365	1225.121	5246.303	1225.053	5264.141	1225.093
5282.281	1225.198	5302.25	1225.082	5327.498	1224.923	5345.543	1225.011	5358.596	1224.998
5374.101	1224.871	5383.56	7 1224.75	5389.249	1224.669	5397.658	1224.642	5402.11	1224.48
5407.957	1224.797	5412.553	1224.873	5419.131	1224.076	5428.518	1224.447	5432.483	1224.578
5435.295	1224.567	5439.358	1224.768	5443.58	1224.765	5450.348	1225.268	5456.255	1223.663
5458.102	1223.357	5462.045	1223.902	5469.624	1224.776	5476.299	1225.569	5478.956	1225.471
5487.346	1225.364	5493.322	1224.911	5508.416	1224.94	5511.03	1225.012	5519.061	1225.412
5524.716	1225.752	5536.963	1225.523	5543.49	1225.175	5549.55	1224.745	5554.30	1224.39
5559.81	1225.063	5564.016	1225.59	5587.89	1225.081	5588.87	1225.065	5589.041	1225.062
5597.81	1224.993	5599.655	1224.979	5599.77	1224.995	5614.421	1226.224	5621.263	1226.161
5629.967	1226.123	5641.649	1225.473	5842.686	1225.407	5648.689	1225.409	5667.943	1225.462
5688.139	1225.42	5709.96	1225.567	5720.329	1225.756	5734.82	1225.77	5738.571	1225.857
5747.041	1225.952	5781.254	1226.668	5784.284	1226.742	5784.708	1226.743	5785.165	1226.747
5786.794	1226.747	5834.121	1226.69	5855.27	1226.94	5863.09	1227.007	5863.543	1227.011

5884.0381227.223 5896.79 1227.295898.3691227.2935902.3651227.3295920.794 1227.29
5924.8211227.1825928.4371227.1065932.5771227.088 5943.631227.3095944.8381227.335
5945.2581227.3445972.0361227.7266011.4321227.687

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
2943.718	.035	4988.362	.085	5014.247	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4988.3625014.247		348487.5188		495	.1	.3

Left Levee Station=3267.808 Elevation= 1226.73

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1226.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.52	Wt. n-Vel.	0.035	0.085	0.035
E.G. Elev (ft)	1226.68	Reach Len. (ft)	348.00	487.52	495.00
Crit W.S. (ft)	1226.16	Flow Area (sq ft)	1440.07	35.90	783.00
E.G. Slope (ft/ft)	0.015612	Area (sq ft)	1440.07	35.90	783.00
Q Total (cfs)	13020.00	Flow (cfs)	8435.14	98.23	4486.63
Top Width (ft)	2139.84	Top Width (ft)	1379.16	25.23	735.46
Vel Total (ft/s)	5.76	Avg. Vel. (ft/s)	5.86	2.74	5.73
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)	1.04	1.42	1.06
Conv. Total (cfs)	104203.8	Conv. (cfs)	67509.5	786.2	35908.1
Length Wtd. (ft)	398.95	Wetted Per. (ft)	1381.10	25.61	736.44
Min Ch El (ft)	1223.69	Shear (lb/sq ft)	1.02	1.37	1.04
Alpha	1.01	Stream Power (lb/ft s)	5.95	3.74	5.94
Frctn Loss (ft)	0.68	Cum Volume (acre-ft)	98.83	2.95	63.90
C & E Loss (ft)	0.14	Cum SA (acres)	17.26	0.28	12.02

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Harquahala
REACH: Lower Reach RS: 16.9865

INPUT
Description: 16.9865
Station Elevation Data num= 338

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2236.4721226.4762242.7341226.5782259.1481226.1312265.2471225.891								2268.6	1225.83
2276.945	1225.62283.529	1225.622286.3821225.6132310.402					1225.372314.742		1225.37
2319.8441225.4152349.6151225.4142351.8041225.4022407.531							1225.42412.615		1225.28
2425.2151225.0882445.4671224.7462454.1361224.5212465.9931224.0852470.1441224.174									
2478.6881224.3662485.3331224.4272485.8781224.4312493.7191224.5712503.5041224.761									
2514.5011225.2532521.4241225.3492533.3711225.2572541.9011225.2082545.8181225.175									
2563.0711225.0442584.6751225.0452589.1721225.1142619.7311224.9212630.673									1224.86
2661.661225.2832677.2011225.4962686.8921225.053 2691.47							1224.892694.2931224.634		
2696.842 1224.482698.1431224.3852732.5391224.8982757.6011225.0532766.3751225.031									
2801.951225.0922817.1411225.1212855.092 1225.01 2902.091224.7862930.5691224.632									
2938.1681224.2542939.224 1224.212951.5751224.5012968.211							1224.92978.1171225.195		
2997.4721224.4743009.8861223.9863013.1171223.9843045.6981224.4013087.0971224.835									
3092.3561224.8723099.5181224.8833176.6751224.5963199.7811224.3633223.0021224.307									
3227.7991224.3633232.8841224.1063240.1691223.9173248.6911224.1443256.9371224.265									
3257.3791224.2833259.7411224.2743273.3651224.3733278.212 1222.94 3278.951222.778									
3279.3351222.8373288.8461224.2363337.3491224.4873352.1081224.5843353.8021224.589									
3355.941224.5973405.019 1224.713442.8921224.961 3444.311224.9683444.6641224.966									
3469.3921224.8263474.6241224.8093510.4621224.5433516.0921224.5513546.3231224.563									
3567.3641224.2133568.059 1224.23568.3911224.139 3575.671222.9633582.076 1224.57									
3582.7581224.7183596.6891224.6573646.4361224.3583658.9141224.2973671.5291224.325									
3684.1061224.0633736.8451222.9623759.9251223.1243773.4361223.1383786.6561223.064									
3809.3971223.0133820.1911222.7893833.0731222.3933838.4631222.3763853.5091222.212									
3862.1911222.5113868.1981222.5123870.4351222.4323876.5621222.4823886.2431222.448									
3889.7511222.0263893.6071221.5843896.2881221.8853903.2041222.4473905.3971222.409									
3914.991 1222.413920.8391222.911 3926.371223.0233930.4821223.0463941.6341223.208									
3954.1631223.0153957.9331222.8083973.7311222.1443987.0811222.1044015.5461222.055									
4026.7911222.2694029.9571222.2754058.764 1222.464067.9331222.5434083.4651222.606									
4084.0351222.6084084.1851222.6074085.2931222.5994129.8071222.1864144.3111222.359									
4153.7161222.4444163.9321222.4274205.7351221.9464238.484 1221.734238.7911221.726									
4240.6141221.7054270.2091221.3724275.4921221.4454285.9381221.5644294.7231221.169									
4296.8981221.0894298.1251220.9134303.205 1219.97 4307.31 1220.774310.3991221.439									
4314.308 1221.184319.8691220.9674321.7721220.5384324.5221220.2894332.3961221.361									
4336.2151222.1854338.2471222.5914356.0271222.7434359.1571222.7584369.0591222.529									
4386.5241222.1234393.4771222.0634421.1191221.8924426.143 1221.244432.9741220.631									
4435.531220.8244441.952 1221.254445.4581221.2344458.1791221.6754461.2831221.342									
4465.1231220.9954474.3281221.2894475.5481221.3494502.1371221.7964511.9441221.997									
4515.0011222.0114515.2821222.0244539.9791222.4534550.2491222.6494557.3491222.788									
4560.9931222.7444586.0881222.3484610.9911222.1354616.7321222.0934620.7081221.507									
4623.9141221.0954626.566 1220.564626.6321220.5494626.6861220.5564635.5391221.273									
4640.7511221.8474678.3361221.7434681.572 1221.754683.0391221.7554718.0591222.132									
4723.5651222.1584781.3291222.4844830.6731222.7354849.6591222.6274897.8921222.259									
4907.1471222.1994910.7151222.162 4930.4 1222.184935.8941222.238 4938.341222.164									
4938.9711221.9344954.0371221.6124954.0891221.6114954.1831221.6154960.2081222.019									
4961.9071222.0254968.5161222.0184979.1021222.0254981.694 12224987.5531221.953									
4990.8661221.9355003.6451220.6835007.8011220.2845008.6691220.4975009.3131220.583									
5014.6221220.8115018.9331221.1335019.9251221.2375026.6151221.6115028.9871221.617									
5040.9441221.7085048.7131221.6955056.7051221.6975062.1021221.6255073.0631221.599									
5076.1921221.1335078.7461220.8415082.1671221.1975086.0591221.6455103.0921221.893									
5107.2891221.9675109.1071221.6435114.4811220.4495116.0361220.7955120.9231221.877									
5124.896 1221.895126.8771221.869 5132.011220.6145136.5881219.3995141.0821220.311									

```
5146.6211221.116 5151.011221.8655184.9951222.1325185.2081222.1315185.3521222.133
5186.9551222.1285211 4451222.057 5216.891222.0935246.6051222.2255260.2791222.316
5292.2511222.4335294.6811222.4455295.5541222.4455296.2711222.449 5326.631222.632
5363.4771222.6265376.5181222.5895382.8471222.4245389.8151221.9875403.6191221.171
5409.6961221.6655415.2711222.1085420.7431222.386 5421.071222.4215425.1781222.041
5425.2891222.0325425.4311222.024 5433.971220.8125437.287  1221.35441.4441222.178
5447.3141221.8455452.9391221.7225467.6691221.7035475.1721221.7195489.1541222.334
5489.1991222.3375489.2641222.3395508.9281222.6445515.9191222.8245521.6041222.917
5523.1411222.806  5528.21222.5925530.0291222.6895544.308 1223.115559.7951223.202
5574.951 1223.315590.2561223.4945603.236 1223.245606.5751223.2335635.1351223.404
5648.8391223.4885652.3331223.2545658.3631222.8185669.5281223.349    56761223.741
5688.8051224.0255711.2841224.4065722.4231224.4085733.2891224.3055734.1291224.349
5736.2971224.4775736.974 1224.555743.5541225.0895750.667 1225.075754.5711225.014
5758.0721224.9275762.0881224.7455767.137 1224.585786.8491224.4685826.8461224.529
5850.2031224.535 5908.141224.6335919.4981224.6845924.3511224.6395977.8711224.574
6006.5611224.5256013.9571224.576 6017.24 1224.976028.8461226.1226055.6531226.244
6077.4821226.1176100.7981226.1176101.5291226.1176102.7351226.1236102.8851226.122
6125.1491226.0986129.1221226.1116134.647 1226.05

Manning's n Values          num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
2236.472     .0354979.102     .0855040.944     .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4979.1025040.944              281508.1319      548              .1        .3
Left Levee       Station=2677.201       Elevation=1225.496

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1225.41   Element                    Left OB     Channel    Right OB
  Vel Head (ft)                0.05   Wt. n-Val.                   0.035       0.085       0.035
  E.G. Elev (ft)            1225.46   Reach Len. (ft)             508.13      508.13      508.13
  Crit W.S. (ft)            1223.30   Flow Area (sq ft)          4909.67      249.73     2273.08
  E.G. Slope (ft/ft)       0.000614   Area (sq ft)               4909.67      249.73     2273.08
  Q Total (cfs)            13020.00   Flow (cfs)                 8560.81      273.98     4185.21
  Top Width (ft)            3342.66   Top Width (ft)             2300.06       61.84      980.75
  Vel Total (ft/s)             1.75   Avg. Vel. (ft/s)              1.74        1.10        1.84
  Max Chl Dpth (ft)            6.01   Hydr. Depth (ft)              2.13        4.04        2.32
  Conv. Total (cfs)        525266.6   Conv. (cfs)              345369.3    11053.0    168844.3
  Length Wtd. (ft)          508.13   Wetted Per  (ft)           2301.95       61.99      982.20
  Min Ch El (ft)            1220.28   Shear (lb/sq ft)              0.08        0.15        0.09
  Alpha                        1.01   Stream Power (lb/ft s)        0.14        0.17        0.16
  Frctn Loss (ft)              0.10   Cum Volume (acre-ft)         55.83        1.90       28.93
  C & E Loss (ft)              0.01   Cum SA (acres)

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections

CROSS SECTION            RIVER: Harquahala
REACH: I-10 Reach           RS: 16.8902

INPUT
Description: 16.8902
Station Elevation Data     num=      365
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1882.3181226.014 1896.221225.9861927.9451225.7671949.7911225.574    19511225.257
1954.2441224.7081959.7541225.4151961.507 1225.641965.1641225.6171988.8911225.566
1997.7081225.596 2010.141225.513 2014.991225.1312017.212 1225.02 2030.891225.301
2033.2321225.3542034.4361225.3572059.3881225.5112068.2961225.2062069.1521225.176
 2071.821225.1692154.0241224.8882157.617 1225.092159.541 1225.12 2164.031224.542
2168.319    12242169.7181224.1612177.3721224.769 2186.911224.711 2190.171224.687
2192.6641224.4562195.5911224.2492198.1981224.409 2202.611224.6042204.944 1224.76
2209.6481224.7052225.366 1224.49 2230.251223.9892231.1281223.8912232.393 1223.99
2240.0721224.6782263.7651224.3852270.2861224.3112272.7941224.1232280.693 1223.76
 2281.08  1223.82288.189 1224.512290.1381224.5492297.2281224.5372313.6441223.981
2316.4571223.8442317.525 1223.822359.2421224.1292399.8291224.562 2403.041224.499
2415.1121224.1322431.1351224.1642453.9911224.2252461.7611224.2322465.5191224.281
2512.4881223.7892518.6641223.7222526.8641222.5852530.661 1222.18 2540.881222.972
 2543.971223.2712558.4681223.4022571.1831223.678 2572.661223.7032578.5991223.591
2578.7041223.5922604.7331224.0512611.755 1224.172628.8221224.2232630.7961224.212
2631.9751224.2062670.2711223.9142674.9941223.9062676.6961223.8742690.0191223.392
2706.224 1222.792722.3081223.0322736.0421223.204 2763.671223.2322778.3381223.264
2783.9191223.3782821.4281223.6662828.2311223.7452831.4751223.7642840.7321223.851
2841.9471223.8432844.5121223.7872857.2541223.5792876.3361223.4732898.4551223.379
2899.2371223.3792899.7851223.3772935.6121223.3382939.4151223.315  2980.61223.635
 2987.621223.7352997.2721223.8483011.9151223.5773050.6151223.0243062.2811222.471
3062.6961222.4533063.4521222.4563116.3491222.5793119.4641222.7063124.6151222.819
3150.2341223.2453155.389 1223.213178.0031223.0973192.3741223.0173195.202 1223.03
3208.4281222.9813228.7741222.9573232.0181223.0063243.2721223.1581258.027  1223.2
3265.1431223.3383268.1261222.6663271.0711221.804 3280.011223.081 3281.031223.279
3286.8791223.2523322.3961223.0383325.2171223.0423346.1721223.064 3418.54 1223.18
 3450.391223.1513484.0381223.1613510.298 1222.993575.4121222.6043596.9691222.543
3633.4541222.4313643.2111222.3873644.8071222.3733645.828 1222.063651.1691220.742
3658.5791222.1053659.3311222.2443672.8831222.2393731.8111222.2293743.7241222.231
3815.494 1221.633825.5351221.5513832.7321221.5193881.9791221.3633904.4421221.234
 3925.951221.0113930.4441221.2163938.8581221.5823953.5781221.7353966.1251221.942
3968.4641221.9753969.5281221.9573976.6191221.2653977.7711221.1963981.7621221.065
3993.128 1221.11 4020.321220.9974036.0341220.8034047.774 1220.674051.5061220.284
4057.3891219.9114064.6891220.483 4067.99 1220.774069.4131220.6774075.8841220.422
4083.254 1220.23 4086.911220.0894098.6361219.669 4106.551220 1794106.8651220.196
4107.359  1220.24143.7651220.5074173.2321220.7224216.9741220.806 4245.271220.357
4259.0181220.3354267.9511220.4914288.9631220.3954306.684  1220.34328.3551220.369
4357.0251219.9064364.2971219.8274367.1671219.792 4378.071219.7634382.3321219.219
4386.5261218.7384391.8861219.4274395.6831219.9144405.5171219.8494407.8051219.841
4413.3451219.8764422.5931219.8634432.919 1219.344436.638 1219.164438.2371219.318
4445.2431220.063 4455.251220.1234459.3711220.1684464.1671219.6054467.8131219.063
4478.742 1219.464479.8131219.5174480.143  1219.54495.3021219.4224497.6251219.171
4502.424 1218.53 4505.881218.9924514.0121220.5264517.781 1220.434532.125 1219.92
4541.9051220.1264553.013 1220.374558.9631219.2284560.138 1219.024566.1521219.663
4569.3261220.0154571.5721219.9864580.2981219.8934584.7441219.8094590.2761219.639
```

```
4606.1631219.4444618.2871219.2654633.6741219.3564642.5731219.4314652.7461218.683
4654.1431218.5394655.7781218.7264662.9931219.4914675.7161219.4244678.3391219.431
4697.6051219.6384699.472 1219.664699.6651219.6574699.835 1219.664699.9641219.664
4703.0621219.6824761.3641220.638 4774.191220.0984769.1781220.1474813.6461220.182
4826.8221220.1184829.5991220.0894832.7411220.1334838.3681220.1394866.0061220.191
4893.4821220.1474909.3171220.1284911.8791219.8284919.5921219.128 4923.111219.342
4930.0491219.9814936.2421219.9274944.0751219.7764945.8571219.739 4948.381219.799
4958.3111219.8344961.1661219.8024964.5251219.4724969.0961218.908 4971.011219.191
4975.4541219.899 4985.221219.7054952.5861219.5514994.9851219.0284999.6991217.581
5001.8131218.0035009.406 1220.335013.0291220.0945013.5631220.0755013.8891220.074
5023.5221218.0735025.8471217.4695028.2651218.074 5034.731219.9225040.0211219.665
5040.9731219.6465043.9921219.6315047.3631219.6395060.0471219.766 5069.141219.872
5073.0081218.9685076.343 1218.465080.1451218.9495087.7921219.7935152.0841220.738
5153.2441220.762 5153.711220.7625192.1011220.4955226.622 1220.875229.1711220.898
5246.015 1221.035262.3981221.1515266.6061220.8925269.4711220.7445275.2671220.723
5314.4951220.578 5318.731220.6475328.2971220.7945331.1711220.8195347.5471221.068
5358.0461220.8825362.2271220.7525367.823 1219.795369.7181219.3215373.8241220.162
5376.6851220.9785395.7231220.9095411.1961221.017    5426.1221.0695435.4831220.847
 5454.771221.0585498.9681221.3795512.625  1221.35512.9451221.2995524.2671221.343
5560.0831221.5425598.3821221.7645609.1991221.7295626.4171221.7085677.6861221.898
5685.5351221.9335687.7931221.9445695.6991221.9645752.6621221.0995759.064    1222
5771.7291222.1425787.3531221.9085788.717 1221.885802.5531221.8615810.6111221.805
 5815.841221.5225818.3951221.3225826.0991221.4435829.0021221.5025829.8671221.506
 5847.621221.6855857.8841221.5675876.4381221.4695903.915 1221.565940.8231221.595
5972.4491221.7765982.8411221.8796013.9541220.822 6015.221220.8566027.6191221.372
 6035.36 1221.786063.8311222.0376075.5331222.0486079.5811222.0236095.9571221.989
6126.4981222.0796170.8631222.1656217.1271221.9346220.6111221.9496249.3891221.974
6282.0691222.391 6293.681222.5566314.9051222.7026367.2741222.8826379.271 1223.19

Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
1882.318     .035 4985.22     .0855009.406     .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
       4985.225009.406                356537.2477     602              .1        .3
Left Levee       Station=2059.388       Elevation=1225.511

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1225.33   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.02   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)            1225.35   Reach Len. (ft)             356.00     537.25     602.00
  Crit W.S. (ft)            1221.71   Flow Area (sq ft)          9324.74     152.36    5372.65
  E.G. Slope (ft/ft)       0.000110   Area (sq ft)               9324.74     152.36    5372.65
  Q Total (cfs)            15000.00   Flow (cfs)                 8979.19      93.38    5927.43
  Top Width (ft)            4314.61   Top Width (ft)             2920.56      24.19    1369.87
  Vel Total (ft/s)             1.01   Avg. Vel. (ft/s)              0.96       0.61       1.10
  Max Chl Dpth (ft)            7.86   Hydr. Depth (ft)              3.19       6.30       3.92
  Conv. Total (cfs)        1433165.8   Conv. (cfs)               857911.4     8921.7   566332.7
  Length Wtd. (ft)           450.53   Wetted Per. (ft)           2922.93      24.85    1373.26
  Min Ch El (ft)            1217.58   Shear (lb/sq ft)              0.02       0.04       0.03
  Alpha                        1.02   Stream Power (lb/ft s)        0.02       0.03       0.03
  Frctn Loss (ft)              0.02   Cum Volume (acre-ft)        321.31      45.42     202.34
  C & E Loss (ft)              0.00   Cum SA (acres)               69.13       7.43      42.41


Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
REACH: T-10 Reach           RS: 16.7885

INPUT
Description: 16.7885
Station Elevation Data     num=      381
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1543.0751225.1781557.2341225.1911636.9581225.2861729.6781225.3731762.0821225.281
 1762.661225.2671773.0081225.0331777.4961225.3081786.2841226.568 1792.261226.583
 1792.971226.5871793.8791226.3591799.2441224.9871807.3081224.8421818.8841224.782
1824.4071224.8721841.3281224.852 1855.08 1224.981869.1071224.9451876.7251224.947
 1882.131223.721 1885.051223.3241891.2791224.2841894.9361224.846 1900.861224.815
1907.3111224.7481915.7591224.721 1940.991224.5121944.6781224.5161947.3911224.498
1973.7081224.4471990.0931224.1531997.2881223.994 2003.041223.9842009.0731224.232
2019.6961224.452 2045.781223.8962046.3281223.8892046.9721223.853 2058.261223.297
2059.9341223.2992111.1461223.4922137.2121223.4012182.4011223.2482217.669 1223.13
2236.2441223.0782290.2521222.9532324.1181222.7582331.2751222.7652334.3711222.887
2335.0931222.9142343.8191224.6212344.5071224.7292346.7061224.4492361.0041222.488
2385.5581222.5712403.0351222.6092430.6781222.556 2463.851222.3842468.4991222.366
2491.0881222.0682499.8091221.9762511.9721221.8652534.5291221.6172537.7571221.463
2543.6981221.1632547.5231221.4082550.409 1221.652559.6971221.702 2581.751221.802
2592.2371221.7452597.3651221.7162614.7651221.5442644.2481221.4982648.3851221.458
2652.8881221.5222667.9831221.4532681.5481220.8032686.9611220.5632699.3331220.756
2719.0361221.2072725.0571221.3072727.8891221.3642732.6881221.3552764.4421220.925
2788.5311220.8182790.0891220.8162801.6531220.5512809.4611220.3522810.5411220.385
2812.156 1220.422836.9481220.8442845.2921220.9932862.4411221.2292872.133 1221.13
2879.3581221.1992892.4831221.2482902.4781221.3182916.5581221.4372919.1551221.483
2920.3251221.4852936.9021221.1242937.667 1221.122945.0541221.3342949.8671221.463
2981.8421221.0892987.2141221.0182990.0561221.1272990.1621221.1292994.5981221.202
2998.8391220.9043032.4851221.182 3037.071221.2283039.095 1221.233054.7191221.191
 3062.621221.1543069.5881220.9383074.4981220.6953087.3971222.2083087.8661222.262
3088.1321222.2633097.6941222.366 3101.791221.8663109.0761221.0513116.6411221.305
3130.0881221.4583150.556 1221.353160.3881221.3073186.5761221.4713248.8031221.314
3258.7681221.3373274.2411221.2753282.734 1221.263285.7791220.7283290.3341219.692
3292.1421220.1423297.2961221.0553318.2521221.2233326.6581221.2173368.583 1220.84
3393.7441220.7683463.304 1220.363482.0131220.2253491.2691219.4353493.8131219.352
3501.711 1219.853512.7321219.6753516.2381219.6533536.7491219.987 3543.161220.063
3546.212 1219.96 3547.43 1219.98 3585.951219.8293613.1551219.7253618.5481219.696
 3630.731219.6383654.9121219.6063710.2911219.4943728.6181219.2863734.0121218.365
 3738.311217.6723743.3851218.5643747.333 1219.383759.8371219.3763772.3761219.296
3785.5061219.2983819.3231219.1383872.5931219.0393874.3451219.0323876.4721219.025
```

```
3883.6111219.0293930.1941219.0053941.7961219.0053949.3511218.895 3982.171218.761
4013.0961218.6394028.9951219.6364034.8871218.6874041.8281218.7554077.1791218.628
4083.0741218.6334084.7581218.6024090.5241218.5254112.2431218.2614116.0681217.844
4121.6671217.431 4128.711217.8094133.3651218.019 4158.791218.2514161.3871218.291
4163.8921218.2694180.6421218.0994187.182 1217.244188.3181217.104 4191.611217.787
4193.8631218.1074194.808 1218.274236.7361218.2014240.5961218.2214266.3891218.337
4266.7931218.3174268.1291218.3184326.9251218.3314349.9321218.322 4359.061218.326
4365.2651218.2994370.3141218.2464411.1991217.6734414.3131217.635 4415.911217.494
4425.8671216.607 4434.381217.0074437.043  1217.24462.9411217.4114467.542 1217.44
4472.3861217.3834487.2311217.2714493.8141217.337 4508.381217.3244510.5171217.305
4519.7671217.0064525.1091217.1174528.4561217.2154528.7771217.1994540.6491216.715
4544.9121216.4664553.0441217.4454553.7881217.6244555.6391217.6984562.0281217.888
4564.3711217.0224566.1851216.383 4570.291216.8664575.211 1217.364577.1821217.401
4578.6911217.4364581.1231217.2224591.7241216.723 4596.88 1217.164600.1471217.295
4612.9561217.3484615.9071217.3544618.2571217.3414620.6341217.0454625.187 1216.49
4628.3011216.6934640.1571217.3194660.1431217.7014672.7651217.8494687.3881217.707
 4692.71 1217.71 4703.65 1217.834706.5191217.9064710.2361217.6284716.0411216.851
4725.6131217.5344728.1381217.6494733.4271217.7614740.2261217.8394742.9781217.862
4750.4381217.9534753.9261217.4674757.4791216.6334759.6371216.8224766.8631217.647
4767.4871217.6494773.9931217.6174776.2731217.6144777.164  1217.64784.6781217.414
4791.0921217.6324803.138 1218.124811.6091218.1934819.216 1218.414829.291 1218.47
4837.8271218.2354842.1851218.2614844.0941218.1854848.0731216.9844850.3631216.303
 4853.521217.4264859.2721218.4284859.5971218.503 4859.751218.5014859.957 1218.49
4864.2021218.1764869.854 1217.264872.2921216.9014875.5331217.534 4883.051216.675
4886.565 1216.574889.0081216.8074903.4671218.5264920.0071218.939 4927.411219.101
4932.1551219.0034938.8231218.844 4968.461217.9684974.5631218.163 4978.061218.479
4981.376 1218.364987.4611217.6194999.6791216.3485005.0881216.1375011.5961215.859
 5018.491216.6155025.7381217.6285030.1621217.5565038.6341218.0725039.7721218.139
5040.3291218.1575047.5031218.103 5073.631218.3015094.532 1218.495102.6941218.492
5127.8971218.5365168.6721218.636 5217.491218.6465248.6021218.6625263.7141218.863
5305.4231219.0545306.497 1219.045318.5821219.006 5320.82    12195359.9991219.048
5389.6581218.9885407.9551219.1195427.0141219.2785451.1491219.4775498.5731219.637
5538.8671220.0335609.7611220.285 5652.021220.1815685.9191220.1165716.8281220.297
5733.8251220.341 5766.591219.8585789.6961219.6735795.8871219.727 5803.561219.274
5808.953 1219.045823.0861219.134 5842.571219.1695855.5541219.1875871.1991219.389
 5911.88  1219.35918.8861219.3235921.2191219.284 5923.591219.3225941.1951219.428
5962.3761219.2975998.029  1219.16015.7431218.9946018.4671218.8776022.9411218.727
6034.2081218.2916040.0681218.7876044.6911219.0776047.1251218.9516066.271 1218.48
6085.2651218.6586106.4221218.7196130.7141218.8756146.625 1218.916158.458 1218.88
6184.5541218.8966204.0951218.8856214.7081218.9636241.594 1219.046266.9811219.051
6280.8411219.0266300.3871218.8276301.7321218.931 6310.651219.8736342.1721222.276
6357.1361223.5616362.8751224.0616383.5021225.8876399.8161226.2716427.6751226.964
6448.2551225.891
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
1541.075    .035 4978.06    .0855040.339    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       4978.065040.329               361339.3988     273          .1          .3
Left Levee      Station= 1792.97      Elevation=1226.587
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1225.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.035	0.085	0.035
E.G. Elev (ft)	1225.32	Reach Len. (ft)	361.00	339.40	273.00
Crit W.S. (ft)	1219.62	Flow Area (sq ft)	15680.54	510.99	7936.88
E.G. Slope (ft/ft)	0.000024	Area (sq ft)	15680.54	510.99	7936.88
Q Total (cfs)	15000.00	Flow (cfs)	9421.82	177.21	5400.98
Top Width (ft)	4579.12	Top Width (ft)	3180.11	62.27	1336.74
Vel Total (ft/s)	0.62	Avg. Vel. (ft/s)	0.60	0.35	0.68
Max Chl Dpth (ft)	9.46	Hydr. Depth (ft)	4.93	8.21	5.94
Conv. Total (cfs)	3067969.3	Conv. (cfs)	1927056.5	36244.1	1104668.8
Length Wtd. (ft)	331.53	Wetted Per. (ft)	3183.84	62.52	1337.11
Min Ch El (ft)	1215.86	Shear (lb/sq ft)	0.01	0.01	0.01
Alpha	1.02	Stream Power (lb/ft s)	0.00	0.00	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	219.13	41.33	110.37
C & E Loss (ft)	0.00	Cum SA (acres)	44.20	6.90	23.71

```
CROSS SECTION          RIVER: Harquahala
REACH: I-10 Reach         RS: 16.7242

INPUT
Description: 16.7242
Station Elevation Data     num=      191
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
1660.358 1222.581665.8391222.5821671.2721222.6021707.4961222.4851713.535  1222.5
1721.671  1222.51746.885 1222.581759.3911222.5381782.5321222.3811791.4881222.343
 1811.251222.3071821.1891222.2961843.9051222.1181853.4221222.447 1857.921222.423
1874.9271222.5491875.3431222.5481886.6251222.5691894.2081222.577 1894.841222.605
1898.6341222.5071910.6681222.2941911.0341222.2921925.7421221.9981927.3941222.024
1929.3571222.0021946.5711221.7491957.239 1226.371957.975 1226.621959.0121226.621
1969.267 1226.551970.2811226.2261982.3321221.774 1986.17 1221.771987.838 1221.75
 1997.671221.5852002.452 1221.562017.5661221.6192034.6621221.5852041.5741221.581
2065.2551221.6982071.7671221.7272080.1761221.9982100.6561222.2742111.9541222.409
 2122.341222.3782155.9851222.5062162.8841222.5872167.7611222.6232174.9241222.605
2208.5081222.3832214.0261222.2682220.8231222.177 2247.641222.0532254.9221222.035
2262.7081222.0542282.1191221.8592289.378 1221.852305.3011221.8912330.8581221.715
2341.9971221.7722360.6691221.6482373.9811221.6172389.6251221.616 2402.871221.557
2418.5791221.4742433.102 1221.372441.9091221.6262448.8251221.2352456.9821221.147
2474.7871220.879 2480.411220.9772486.911 1220.952500.7021220.9442506.4251220.629
2507.5361220.8572508.3771221.0652517.3551224.1342524.0591224.219 2529.941224.238
2533.873 1222.162537.3851220.367 2550.64 1220.262558.1561220.2332564.8321220.201
2589.4781219.9972598.404 1219.982614.3571220.0632624.567 1220.032631.5391220.016
2660.8691219.959 2675.491219.9572702.9611219.8282721.9391219.6192739.0871219.472
2762.099 1219.312777.8731219.3812798.6271219.1972816.171 1218.942837.243 1218.88
 2853.191218.8872868.9151218.8022894.3611218.6582914.1181218.5892928.6741218.511
2945.1431218.5122956.9171218.424 2968.821218.331 2979.811218.2672989.9751218.291
2993.2651218.3733009.3411218.6113010.3281218.6583012.5681218.5823021.7921218.468
```

```
3023.1171218.4893030.1221216.7843043.0871218.6113047.0071218.5593050.4871218.628
3063.2931218.523 3066.131218.4873078.6471222.2073078.8151222.2523079.2771222.252
3090.217 1222.233091.8411222.1413100.1141219.6653103.6771218.5033125.9021218.557
 3128.33 1218.633128.809 1218.623134.5751218.589 3154.591218.669 3155.171218.677
3177.9371218.6453178.9681218.6383202.2061218.8273203.264 1218.82 3224.341218.865
3225.4651218.8623249.0661219.0283249.8661219.0283250.7231219.0233268.4171218.777
3268.8691218.7793283.915 1218.883300.3061218.8613315.3181218.7853337.7751218.833
3348.8561218.7723374.6921218.7663394.0271218.833 3404.251218.875 3421.421218.812
3435.2221218.7063453.2321218.7023466.7991218.8123475.3331218.9413499.7861218.813
3507.035 1218.783522.5941218.4983527.7581218.8583536.2981218.6983542.7971218.715
3559.1111218.485 3564.451218.1213570.8811218.8083571.673 1218.82 3573.491218.824
3577.7831218.738 3579.611218.7643606.5171219.6523606.833 1218.653606.869 1218.65
3607.7461218.6583634.289 1218.883635.012 1218.873656.5981218.5753671.1151217.863
3671.1161217.8633685.9671217.9743687.159 1217.963704.232  1217.83706.3621217.776
3719.1211217.737 3721.761217.6643737.1391217.5593741.4281217.5653752.7151217.187
3762.6561217.0783765.205 1217.083776.1721217.6413777.1491217.6263788.9471217.668
3790.7681217.6683790.9151217.6693812.2571217.6973819.2991217 6683842.1071217.668
3853.985 1217 313875.5641217.3363884.4821217.2073906.3631217.1133919.4861217.072
3930.3871217 0613956.0141216.9783966.0881217.0583988.6191216.8294001.1181216.766
4014.1861216.6794029.8271216.6884040.2861216.5584047.5061216.495 4050.021216.976
4060.3991217.137  4078.61216.8784085.6431216.9084088.0241216.9934106.4731217.136
4108.0641217.1764121 0411217.5114132.5731217.524  4150.4 1217.824163.6261217.226
4171.0711217.1084190.8331216.5144196.3681216.3264205.0561216.5514208 2281216.589
4211.2491216.6274229.3391216.9994248.5011217.1584262.799 1217.244286.5651217.272
4311.9341217.5184316.1961217.513 4347.821217.3144376.3261217.3544381.1321217.289
4399.7931216.8424408.5771216.5954409.5631216.5724429.2751215.5954439.8291215.724
4462.3151216.2184469.5821216.2274499.607 1215.934502.752 1215.874514.4521215.588
4521.0891215.4564521.5451215.4884546.8831216.3184548.3831216.0884555.0761215.028
4564.6111216.0044568.1761216.4244570.7511216.4694587.1321216.493  4589.91216.403
4606.0651216.2054608.1591216.0384614.108    12164618.5521216.6044624.4621216.378
4628.021 1216.114628.8011216.0264633.6891215.2494637.9761214.4274641.4581214.461
4648.5071214.5934666.3631214.9394676.1341215.0934704.7061215.2714713.6971215.592
4723.4191215.7684727.0771215.8114744.6911216.0684760.4091216.3444760.5191216.404
 4762.631216.3784765.9021216.2984785.628  1216.34819.1221216.3624855.2981216.753
4886.5631217.0994905.4931217.217 4922.411217.4334923.1631217.4744925.1731217.366
4934.9831216.9184948.7691216.631 4957.251216.1634961.6461215.8814977.0721215.039
 4981.051214.5754991.4711214.6544999.8521214.6485002.2941214.7395007.4791215.853
5012.849 1216.485013.687 1216.525014.6361216.7035018.7441216.9795037.6441217.418
5049.6611217.4525071.6191217.1095090.9051217.0745108.3091217.1325122.9611217.294
5148.1041217.4585169.912 1217.37 5205.531217.422 5228.221217.4165261.9431217.493
5278.5161217.602 5285.751217.4385305.4541217.3455314.3991217.3785338.3821217.285
5359.6671217.3125370.2511217.2915370.8291217.2725382.8321216.2335382.5151216.227
5397.835 1216.485411.7161216.3665422.1521216.5035434.1741216.5565451.9341216.735
5466.7131216.7075481.8571216.7165488.6621216.7425491.6521216.6955497.1241216.694
5504.2381216.5585511.5011216.4845524.7531216.3885538.6491216.324  5545.5 1216.59
 5562.911216.3595569.9111216.5015571.7521216.5395572.5711216.4185590.6461216.968
5610.2851217.013  5613.51216.995 5639.781217.176 5648.63 1217.165674.7991217.643
5677.0741217.6675681.5741217.6275700.5751217.9265716.8411217.9545728.7911218.133
5741.3081217.9575750.2261217.942 5765.361217.4925776.6541217.7465814.5731218.253
5820.1411218.2795823.6051218.2785850.8891218.5575865.2821218.9845866.869 1218.98
5885.1481219.0615910.196  1218.95932.0311218.7425958.4411218.8245958.8081218.822
5985.889 1219.97 6010.841221.2766029.9381221.7526038.0871221.9536067.7981222.748
6099.2741223.615 6123.331224.538  6135.41224.2626159.8681223.2316164.5281223.026
 6166.541222.9536200.6761220.6446215.6161219.8516248.126 1217.786250.9841217.825
6251.217 1217.836254.2771217.8996275.8981218.5786295.7821218.9036302.3311219.001
6306.2931219.039

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
1660.358    .0354923.183    .0855037.644    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4923.1835037.644                70 81.5688      71              .1        .3
Left Levee       Station=1959.012       Elevation=1226.621

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1225.31   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.00   Wt. n-Val.                   0.035      0.085      0.035
  E.G. Elev (ft)            1225.32   Reach Len. (ft)              70.00      81.57      71.00
  Crit W.S. (ft)            1218.03   Flow Area (sq ft)         19738.12    1055.55    8678.45
  E.G. Slope (ft/ft)       0.000012   Area (sq ft)              19738.12    1055.55    8678.45
  Q Total (cfs)            15000.00   Flow (cfs)                10187.76     277.67    4534.57
  Top Width (ft)            4333.54   Top Width (ft)             2950.43     114.46    1268.65
  Vel Total (ft/s)             0.51   Avg. Vel. (ft/s)              0.52       0.26       0.52
  Max Chl Dpth (ft)           10.89   Hydr. Depth (ft)              6.69       9.22       6.84
  Conv. Total (cfs)        4376544.5  Conv. (cfs)             2972480.3    81015.6  1323048.8
  Length Wtd. (ft)            72.62   Wetted Per. (ft)           2954.45     114.74    1275.36
  Min Ch El (ft)            1214.57   Shear (lb/sq ft)              0.00       0.01       0.00
  Alpha                        1.02   Stream Power (lb/ft s)        0.00       0.00       0.00
  Frctn Loss (ft)              0.00   Cum Volume (acre-ft)         72.36      35.22      58.31
  C & E Loss (ft)              0.00   Cum SA (acres)               18.80       6.21      15.54

Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
REACH: I-10 Reach          RS: 16.7087

INPUT
Description: 16.7087
Station Elevation Data     num=      224
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1728.3581226.306 1772.321226.2341811.5171226.1581843.7011226.292 1871.551226.345
1886.8691226.4221941.2351226.4491951.1311226.5051965.4941226.6861970.2771226.318
 1974.521226.3051981.6191226.1561989.5961226.0772056.1461225.835 2064.581225.819
2070.8191225.7512078.8431225.6952088.2011225.6382163.7521225.3172176.1911225.237
2189.2011225.2872268.8291225.2342280.8241225.1542291.7161225.1232359.0771224.952
2368.6821225.0162374.2821225.0762381.6391225.0992388.5891225.0672479.7881225.465
```

```
2480.4521225.4632480.7531225.4452481.0391225.4842481.4441225.5362483.0991225.538
2489.0781225.5782530.9891225.596 2553.841225.6622575.7861224.8042602.0341224.641
2648.193 1224.3926070.6041224.3092722.2451224.1832765.4051224.1592806.733 1224.09
2849.2821224.0562886.7811224.0242910.7271224.1872962.5761224.0712988.8631224.052
3008.5751224.3153014.1481224.5263068.1821224.5143078.6081224.5133082.069 1224.58
3088.5471224.0033092.1231223.9943098.3251223.8363104.5351223.7513201.388 1223.37
3212.7851223.362 3224.371223.2693234.6361223.2083329.9471222.8073350.625 1222.79
 3364.081222.7523449.1411222.5813465.788 1222.55 3475.921222.5143486.6011222.538
3597.0821222.3043608.0921222.3373618.3871222.2563629.8121222.2683721.5191222.172
3733.1831222.1553745.6961222.0373756.7241221.9763861.1721221.5013872.6851221.486
3884.3621221.4433983.9161221.1513997.5651221.1254010.3961221.1224020.2191221.141
4087.625 1220.94 4097.031220.8554099.2511221.0694123.867 1221.084134.6481221.114
4138.7281221.8664142.6871221.9744150.6451222.0344152.042 1222.034198.0391222.206
4207.1711222.2544232.2651222.5234234.7431222.5144297.7471221.8834304.9821221.822
4319.3571221.6864373.216  1221.8 4382.551221.616 4383.131221.463 4385.231221.522
4388.878 1215.24 4390.26  1214.34402.892  1214.34422.369  1214.34423.335  1214.3
4424.217  1214.34425.1541214.8094431.0421221.587 4431.671221.6564440.0671221.878
4513.9431221.9674537.3181221.9674562.8341221.8314631.7921221.8414656.6761221.568
 4667.291221.6784668.1171221.479 4670.221215.3294670.4151214.9064670.804  1214.3
4672.466  1214.3 4674.65  1214.34683.769  1214.34689.745  1214.34695.307  1214.3
4706.465  1214.34707.4021214.9434714.505 1221.534720.493 1221.344726.1391221.681
4736.5741221.8364804.6291221.7994822.9081221.8524835.0721221.8664907.0331221.821
4920.3261221.6534946.7541222.142  4950.91221.7224951.2821221.7674953.1261215.773
4954.645  1214.34968.879  1214.34972.058  1214.34974.395  1214.34988.979  1214.3
4993.946  1214.3 4995.081221.1654996.8981221.9165029.7541221.6945032.4631221.551
5035.2961221.3815051.9761221.563 5057.291221.6845073.9951221.6065094.9061221.707
5113.714 1221.825153.5741221.882 5181.991222.0085228.1541222.3225253.3561222.495
5295.332 1222.895320.5541222.8785335.7921222.8975402.8181223.1495438.8861223.029
5476.024 1223.055529.1171223.0435582.7821223.0445611.3831223.0065656.7591223.072
5671.7191223.0185739.8921223.3015745.1611223.2785792.5791223.4445793.3041223.462
5798.7051223.4615802.5191223.4695813.7691223.4835816.2991223.4715836.7411223.271
5853.5921223.2995879.652  1223.15898.6881223.1345913.9971222.9845940.5121222.517
5970.5091222.5125998.2461222.517  6021.41222.6426036.6061222.6816053.3891222.563
6094.0391222.6616117.7261222.5766135.0671222.3196143.879 1222.096150.7881222.109
6218.6251222.2886229.0261222.2616238.9431222.3966246.8331222.5166255.8731222.511
6332.6461222.8096337.6821222.9386349.0051222.7716358.8881222.6586365.4421222.577
6441.9881222.7926456.6741223.0276473.6291222.9516487.1411222.9426578.8371223.226
 6588.86 1223.266601.1391223.2546612.975 1223.21 6676.041223.1946686.7091223.362
6694.4431223.2686705.127 1223.196796.565 1223.316808.0631223.365
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1728.358	.035	4373.216	.035	4996.898	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4373.216	4996.898	62	73.6675	62	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1225.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.035	0.030	0.035
E.G. Elev (ft)	1225.31	Reach Len. (ft)	62.00	73.67	62.00
Crit W.S. (ft)	1222.77	Flow Area (sq ft)	4518.94	3088.33	4537.60
E.G. Slope (ft/ft)	0.000175	Area (sq ft)	4518.94	3088.33	4537.60
Q Total (cfs)	15000.00	Flow (cfs)	4587.58	5717.60	4694.83
Top Width (ft)	4522.47	Top Width (ft)	2087.63	623.68	1811.17
Vel Total (ft/s)	1.24	Avg. Vel. (ft/s)	1.02	1.85	1.03
Max Chl Dpth (ft)	10.98	Hydr. Depth (ft)	2.16	4.95	2.51
Conv. Total (cfs)	1134549.3	Conv. (cfs)	346988.9	432459.6	355100.8
Length Wtd. (ft)	73.67	Wetted Per. (ft)	2087.76	649.69	1813.13
Min Ch El (ft)	1214.30	Shear (lb/sq ft)	0.02	0.05	0.03
Alpha	1.28	Stream Power (lb/ft s)	0.02	0.10	0.03
Frctn Loss (ft)		Cum Volume (acre-ft)	52.87	31.34	47.54
C & E Loss (ft)		Cum SA (acres)	14.75	5.52	13.03

CULVERT RIVER: Harquahala
REACH: I-10 Reach RS: 16.7017

INPUT
Description:
Distance from Upstream XS = 15
Deck/Roadway Width = 38
Weir Coefficient = 2.6
Bridge Deck/Roadway Skew =
Upstream Deck/Roadway Coordinates
num= 89

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
1296.2971229.196	1221.31301.0551229.178	1221.31375.8531228.884	1221.3					
1486.4111228.427	1221.31493.0631228.381	1221.31499.8021228.351	1221.3					
1683.0631227.887	1221.31690.1151227.878	1221.31697.1471227.852	1221.3					
1921.169 1227.19	1221.31926.6191227.182	1221.31930.6091227.169	1221.3					
2195.184 1226.76	1221.32202.5841226.755	1221.3 2209.961226.743	1221.3					
2408.1081226.396	1221.3 2414.441226.392	1221.32419.9961226.375	1221.3					
2599.61226.154	1221.32600.6031226.151	1221.32640.2251226.115	1221.3					
2644.6191226.106	1221.32835.4651225.701	1221.32837.083 1225.7	1221.3					
2839.1981225.696	1221.33037.3541225.397	1221.33037.8681225.396	1221.3					
3038.2961225.396	1221.33247.5831224.877	1221.33250.2451224.868	1221.3					
3252.9481224.861	1221.33431.3741224.376	1221.33434.1931224.368	1221.3					
3437.3991224.361	1221.33591.7571223.908	1221.33594.3261223.898	1221.3					
3690.8971223.721	1221.33805.6051223.497	1221.33807.7251223.494	1221.3					
3810.0351223.484	1221.33964.4411222.907	1221.3 4327.121223.633	1221.3					
4425.8281223.565	1221.34431.9281223.569	1221.34483.966 1223.69	1221.3					
4621.5191223.671	1221.34628.2541223.674	1221.34708.7291223.514	1221.3					
4750.1521223.765	1221.34756.1881223.761	1221.34872.1221223.663	1221.3					
4876.7131223.662	1221.34987.1691223.408	1221.34991.5461223.704	1221.3					
4993.5811223.705	1221.35111.7041223.639	1221.35113.1931223.639	1221.3					
5195.4431223.617	1221.35238.4791223.694	1221.35293.181 1223.75	1221.3					
5354.7731223.836	1221.35418.0011223.919	1221.35484.0761223.925	1221.3					
5536.4951223.956	1221.35577.4211223.956	1221.35647.2511224.009	1221.3					
5669.8361224.074	1221.35681.1211224.177	1221.35733.6941224.243	1221.3					

```
5799.2961224.281  1221 35800.6181224.278  1221.35866.9161224.396  1221.3
5922.1341224.479  1221 3  5980.11224.587  1221.36038.044  1224.6  1221.3
6095.7721224.566  1221.36153.4011224.671  1221.36208.7421224.756  1221.3
6280.5451224.911  1221.36333.0521224.997  1221.36408.7171224.918  1221.3
6463.1991225.078  1221.36540.9331225.331  1221.36597.8121225.401  1221.3
6660.9261225.418  1221.36699.9061225.316  1221.36761.007 1225.29  1221.3
6813.4791225.379  1221.36831.0191225.414  1221.3

Upstream Bridge Cross Section Data
Station Elevation Data     num=      224
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1728.3581226.306 1772.321226.2341811.5171226.1581843.7011226.292 1871.551226.345
1886.8691226.4221941.2251226.4491951.1311226.5051965.4941226.6861970.2771226.318
 1974.521226.3051981.6191226.1561989.5961226.0772056.1461225.835 2064.581225.819
2070.8191225.7512078.8431225.6952088.2011225.6382163.7521225.3172176.1911225.237
2189.2011225.2872268.8291225.2342280.8241225.1542291.7161225.1232359.0771224.952
2368.6821225.0162374.2821225.0762381.6391225.0992388.5891225.0672479.7881225.465
2480.4521225.4632480.7531225.4452481.0391225.4842481.6441225.5362483.0991225.536
2489.0781225.5782536.9891225.596 2553.841225.0662575.7861224.8042602.0341224.641
2648.193 1224.392670.6041224.3092723.2451224.1832765.4051224.1592806.733 1224.09
2849.2821224.0562886.7811224.0242910.7271224.1872962.5761224.0712988.8631224.052
3008.5751224.3153014.1481224.5263068.1821224.5143078.6081224.5133082.069 1224.58
3088.5471224.0033092.1231223.9943098.3251223.8363104.5351223.7513201.388 1223.37
3212.7851223.362 3224.371223.2693234.6361223.2083329.9471222.8073350.625 1222.79
 3364.081222.7523449.1411222.5813465.788 1222.55 3475.921222.5143486.6011222.538
3597.0821222.3043608.0921222.3373618.3871222.2563629.8121222.2683721.5191222.172
3733.2831222.1553745.6961222.0373756.7241221.9763861.1721221.5013872.6851221.486
3884.3621221.4433983.9161221.1513997.5651221.1254010.3961221.1224020.2191221.141
4087.625 1220.94 4097.031220.8554099.2511221.0694123.867 1221.084134.6481221.114
4138.7281221.8664142.6871221.9744150.6451222.0344152.042 1222.034198.0391222.206
4207.1711222.2344232.2651222.5234234.7431222.5144297.7471221.8834304.9821221.822
4319.3571221.6884373.216  1221.8 4382.551221.616 4383.131221.463 4385.231221.522
4388.878 1215.24 4390.26  1214.34402.892  1214.34422.369  1214.34423.335  1214.3
4424.217  1214.34425.1541214.8094431.0421221.587 4431.671221.6564440.0671221.878
4513.9431221.9674537.3181221.9674562.8341221.8314631.7921221.8414656.6761221.568
 4667.291221.6784668.1171221.479 4670.221215.3294670.4151214.9064670.804  1214.3
4672.466  1214.3 4674.65  1214.34683.769  1214.34689.745  1214.34695.307  1214.3
4706.465  1214.34707.4021214.9434714.505 1221.534720.493 1221.344726.1391221.681
4736.5741221.8364804.6391221.7994822.9081221.8524839.0721221.8664907.0331221.821
4920.3261221.6534946.7541222.142  4950.91221.7224951.2821221.7674953.1281215.773
4954.645  1214.34966.879  1214.34972.058  1214.34974.295  1214.34988.979  1214.3
4993.946  1214.3 4995.081221.1654996.8981221.9165029.7541221.6945032.4631221.551
5035.2961221.3815051.9761221.563 5057.291221.8845073.9951221.6065094.9061221.707
5213.734 1221.825157.5741221.882 5181.991222.0085228.1541222.3225253.3561222.495
5295.332 1222.895320.5541222.9765335.7921222.8975402.8181223.1495438.8861223.029
5476.024 1223.055529.1171223.0425582.7821223.0445611.3831223.0065656.7591223.072
5671.7191223.0185739.8921223.3015745.1611223.2785792.5791223.4445793.3041223.462
5798.7051223.4615802.5191223.4695813.7691223.4835816.2991223.4715836.7411223.271
5853.5921223.2995879.652  1223.15898.6881223.1345913.9971222.9845940.5121222.517
5970.5091222.5125998.2461222.517  6021.41222.6426036.6061222.6816053.3891222.563
6094.0391222.6616117.7261222.5766135.0671222.3196143.879 1222.096150.7881222.109
6218.6251222.2886219.0261222.2616238.9431222.1966246.8331222.5166255.8731222.511
6332.6461222.8096337.6821222.9386349.0051222.7716358.8881222.6586365.4421222.577
6441.9881222.7926456.6741223.0276473.6291222.9516487.1411222.9426578.8371223.226
 6588.86 1223.266601.1391223.2546612.975 1223.21 6676.041223.1946686.7091223.362
6694.4431223.2686705.127 1223.196796.565 1223.316808.0631223.365

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
1728.358     .0354373.216     .034996.898     .035

Bank Sta: Left   Right    Coeff Contr.    Expan.
      4373.2164996.898              .1        .3

Downstream  Deck/Roadway Coordinates
    num=       89
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
1296.2971229.196 1221.071301.0551229.178 1221.071375.8531228.884 1221.07
1486.4111228.427 1221.071493.0631228.381 1221.071499.8021228.351 1221.07
1683.0631227.887 1221.071690.1151227.878 1221.071697.1471227.852 1221.07
1921.169 1227.19 1221.071926.6191227.182 1221.071930.6091227.169 1221.07
2195.184 1226.76 1221.072202.5841226.755 1221.07 2209.961226.743 1221.07
2408.1081226.396 1221.07 2414.441226.392 1221.072419.9961226.375 1221.07
  2599.61226.154 1221.072680.6031226.151 1221.072640.2251226.115 1221.07
2644.6191226.106 1221.072835.4651225.701 1221.072837.083  1225.7 1221.07
2839.1981225.696 1221.073037.3541225.397 1221.073037.8681225.396 1221.07
3038.2961225.396 1221.073247.5831224.877 1221.073250.2451224.868 1221.07
3252.9481224.861 1221.073431.3741224.376 1221.073434.1931224.368 1221.07
3437.3991224.361 1221.073591.7571223.908 1221.073594.3261223.898 1221.07
3690.8971223.722 1221.073805.6051223.497 1221.073807.7251223.494 1221.07
3810.0351223.484 1221.073964.4411222.907 1221.07 4327.121223.633 1221.07
4425.8281223.565 1221.074431.9281223.569 1221.074483.966 1223.69 1221.07
4621.5191223.671 1221.074628.2541223.674 1221.074708.7291223.514 1221.07
4750.3521223.765 1221.074756.1881223.761 1221.074802.1221223.663 1221.07
4876.7131223.662 1221.074987.1691223.408 1221.074991.5461223.704 1221.07
4993.5811223.705 1221.075113.7041223.639 1221.075113.1931223.639 1221.07
5195.4431223.617 1221.075208.4791223.694 1221.075293.181 1223.75 1221.07
5354.7731223.836 1221.075418.0011223.919 1221.075484.0761223.925 1221.07
5536.4951223.956 1221.075577.4211223.956 1221.075647.2511224.009 1221.07
5669.8381224.074 1221.075681.1211224.177 1221.075733.6941224.243 1221.07
5799.2961224.281 1221.075800.6181224.278 1221.075866.9161224.396 1221.07
5922.1341224.479 1221.07  5980.11224.587 1221.076038.044  1224.6 1221.07
6095.7721224.566 1221.076153.4011224.671 1221.076208.7421224.756 1221.07
6280.5451224.911 1221.076333.0521224.997 1221.076408.7171224.918 1221.07
6463.1991225.078 1221.076540.9331225.331 1221.076597.8121225.401 1221.07
6660.9261225.418 1221.076699.9061225.316 1221.076761.007 1225.29 1221.07
6813.4791225.379 1221.076831.0191225.414 1221.07

Downstream Bridge Cross Section Data
Station Elevation Data     num=      213
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
```

```
1734.5761226.1421774.4281225.9121791.2031225.8531831.5041225.9481864.4451226.167
1896.2871226.1521917.6321226.2821941.7821226.3041964.5091226.3541967.8851226.363
1991.0461226.5131993.0831226.5051993.5751226.4522014.637 1226.132016.6011226.001
2018.2381225.9842031.6471225.9112031.8661225.9192032.1961225.9172050.6571226.168
2063.3081225.6982074.4121225.6922111.1931225.3092147.3541225.3132189.018  1225.1
 2243.871225.0812275.5171224.9842335.884 1224.972367.0381224.9712409.0541224.836
 2437.81 1225.182466.7271225.4952484.7051225.4392508.5381225.494 2516.251225.627
2558.3991225.8072563.784 1225.792603.9791225.5862642.6451224.9112677.4311224.865
2700.508 1224.832700.633 1224.832700.7981224.8282731.1621224.0462752.676 1224.13
2796.8821224.1072817.0931224.0412841.1791223.9392898.3431223.7892925.4051223.789
2948.6261223.7682967.7771224.0913023.4291223.9983041.9151224.1633059.7111224.352
3066.7941224.5283071.0511224.7143111.1871224.7183128.3391224.6873145.1151224.256
3152.9231223.9153164.5961223.611 3200.011223.4763221.4441223.2323237.5371223.157
3262.2641223.1333317.4941222.967 3338.941222.7883348.5861222.8583358.673 1222.91
 3366.031222.9013437.257 1222.653446.4011222.5673453.624 1222.663460.6971222.689
3466.993 1222.61 3547.681222.4613555.0611222.5363563.0381222.3043570.2371222.206
3577.819 1222.253682.0181221.9473691.1981221.8653700.7811221.816 3709.811221.875
3717.4751221.9213725.0051221.8823832.5191221.6373842.6371221.5553853.7381221.518
3862.9571221.4653926.8371221.342 3935.051221.4443943.8431221.4023951.8621221.359
4014.428 1221.114023.5831221.122 4031.891221.0854040.656 1221.074117.6241221.148
4128.4241221.1974139.2531221.1484178.9041221.0844190.7931221.4844196.8831221.768
4259.546 1221.914266.8531221.9074273.538 1221.954326.213 1222.064350.5831221.662
4390.6671221.8114393.5141221.8224398.8261219.5994401.256 1214.074405.641 1214.07
4414.999 1214.074436.656 1214.074438.9351215.469 4441.891221.441 4443.331221.703
4491.8341221.6834524.502 1221.914541.4451221.9834607.6211221.9974621.2821221.854
4634.6871221.3424644.6841220.5494677.2551220.7224678.5361220.6014681.1541215.917
 4684.27 1214.074690.676 1214.074698.358 1214.074721.182 1214.074722.7171215.649
4724.9911221.389 4725.981221.7084727.059 1221.894728.7441221.9374805.3581221.957
4810.7441221.9844816.073 1222.074895.305 1222.134901.1061222.2044903.8441222.137
4907.146 1221.854918.8521221.5344961.4311221.6454963.248 1221.434968.951 1214.07
 4969.98 1214.074974.042 1214.07  5004.3 1214.075006.0571214.7815010.9361222.052
5016.2531222.0515020.7791222.0755023.4951221.9855045.3261222.441 5064.041221.955
5071.2921222.1715085.6091222.1625136.4081222.1165199.3131222.1665218.102 1222.19
5291.262 1222.415339.6971222.6445366.168 1222.695417.8041222.4535479.854 1222.69
5489.1851222.6925558.9831222.7055588.3631222.746 5625.571222.7875626.1241222.792
5652.7551222.8375692.2361222.8935710.2441222.9295732.477 1222.965733.7891222.929
5741.894 1222.925764.9931222.7985765.1051222.7995848.0991222.9925864.7071223.034
5940.5391223.1696021.9821223.2256026.9391223.2366124.5511223.3756138.3711223.388
6211.4581223.3186222.4941223.2996222.7891223.2966223.1071223.2966317.5911223.195
6318.8111223.1956319.215  1223.26320.0071223.1956410.1931223.2296411.854 1223.24
6413.3821223.2616478.567 1223.486519.1311223.6036526.9671223.616 6592.311223.838
6649.5141223.684 6661.041223.7016678.3751223.659 6737.691224.1656763.0591224.122
6777.3791224.0956809.1021224.1716859.3461224.218

Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
1734.576    .0354393.514      .035010.936    .035

Bank Sta: Left   Right     Coeff Contr.   Expan.
      4393.5145010.936              .1        .3

Upstream Embankment side slope                =       0 horiz. to 1.0 vertical
Downstream Embankment side slope              =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =      .95
Elevation at which weir flow begins           =
Energy head used in spillway design           =
Spillway height used in design                =
Weir crest shape                              = Broad Crested

Number of Culverts =  1

Culvert Name      Shape       Rise     Span
Culvert #1            Box        7       10
FHWA Chart # 58- Rectangular concrete
FHWA Scale # 2 - Side tapered; More favorable edges
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                  7       62       .014                   .3                1
Number of Barrels =  9
Upstream   Elevation =  1214.3
Centerline Stations
    Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.
    4396     4407     4418     4678     4689     4700     4964     4975     4986
Downstream Elevation =  1214.07
Centerlane Stations
    Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.     Sta.
    4406     4417     4428     4691     4702     4713   4975.5   4986.5   4997.5

CROSS SECTION            RIVER: Harquahala
REACH: I-10 Reach          RS: 16.6948

INPUT
Description: 16.6948
Station Elevation Data     num=      213
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1734.5761226.1421774.4281225.9121791.2031225.8531831.5041225.9481864.4451226.167
1896.2871226.1521917.6321226.2821941.7821226.3041964.5091226.3541967.8851226.363
1991.0461226.5131993.0831226.5051993.5751226.4522014.637 1226.132016.6011226.001
2018.2381225.9842031.6471225.9112031.8661225.9192032.1961225.9172050.6571226.168
2063.3081225.6982074.4121225.6922111.1931225.3092147.3541225.3132189.018  1225.1
 2243.871225.0812275.5171224.9842335.884 1224.972367.0381224.9712409.0541224.836
 2437.81 1225.182466.7271225.4952484.7051225.4392508.5381225.494 2516.251225.627
2558.3991225.8072563.784 1225.792603.9791225.5862642.6451224.9112677.4311224.865
2700.508 1224.832700.633 1224.832700.7981224.8282731.1621224.0462752.676 1224.13
2796.8821224.1072817.0931224.0412841.1791223.9392898.3431223.7892925.4051223.789
2948.6261223.7682967.7771224.0913023.4291223.9983041.9151224.1633059.7111224.352
3066.7941224.5283071.0511224.7143111.1871224.7183128.3391224.6873145.1151224.256
3152.9231223.9153164.5961223.611 3200.011223.4763221.4441223.2323237.5371223.157
3262.2641223.1333317.4941222.967 3338.941222.7883348.5861222.8583358.673 1222.91
 3366.031222.9013437.257 1222.653446.4011222.5673453.624 1222.663460.6971222.689
3466.993 1222.61 3547.681222.4613555.0611222.5363563.0381222.3043570.2371222.206
```

```
3577.819 1222.253682.0181221.9473891.1981221.8653700.7811221.816 3709.811221.875
3717.4751221.9213725.0051221.8823932.5191221.6373842.6371221.5553853.7381221.518
3862.9571221.4653926.8371222.342 3925.051221.4443943.8431222 4023951.8621221.359
4014.428 1221.114023.5831221.124 4031.891221.0854040.656 1221.074127.6241221.148
4128.4241221.1974139.2531221.1484176.9041221.0844190.7931221 4844196.8831221.765
4259.546 1221.914266.8531221.9074273.538 1221.954326.213 1222.064356.5831221.662
4390.6671221.8114393.5141221.8224398.8261219.5994401.256 1214.074405.641 1214.07
4434.999 1214.074436.656 1214.074438.9351215.469 4441.891221.441 4443.331221.703
4491.8341221.6834524.502 1221.914541.4451221.9834607.6211221.9974621.2821221.854
4634.6871221.3424644.6841220.5494677.2551220.7224678.5561220.6014681.1541215.917
 4684.27 1214.074690.676 1214.074696.258 1214.074721.182 1214.074722.7171215.649
4724.9911221.389 4725.981221.7084727.099 1221.894728.7441221.9374805.3581221.957
4810.7441221.9844816.073 1222.074895.305 1222.134901 1061222.2044903.8441222.137
4907.146 1221.854918.8521221.5344961.4311221.6454963.248 1221.434968.951 1214.07
 4969.98 1214.074974.042 1214.07  5004.3 1214.075006.0571214.7815010.9361222.052
5016.2531222.0515020.7791222.0755023.4951221.9855045.3261222.441 5064.041221.955
5071.2921222.1715085.6091222.1625136.4081222.1165199.3131222.1665218.102 1222.19
5291.262 1222.415339.6971222.6445366.168 1222.695417.8041222.4535479.854 1222.69
5489.1851222.6925558.9831222.7055588.3631222.746 5625.5771222.7875626.1241222.792
5652.7551222.8375692.2361222.8925710.2441222.9295732.477 1222.965733.7891222.929
5741.894 1222.925764.9931222.7985765.1051222.7995848.0951222.9925864.7071223.034
5940.5391223.1656021.9821223.2256026.9391223.2366124.5511223.3756138.3711223.388
6211.4581223.3186222.4941223.2996222.7891223.2966223.1071223.2966317.5911223.195
6318.8111223.1956319.215  1223.26320.0071223.1956410.1931223.2296411.854 1223.24
6413.3821223.2616478.567 1223.486519.1311223.6036526.5671223.616 6592.311223.838
6649.5141223.684 6661.041223.7016678.3751223.659 6737.691224.1656763.0591224.122
6777.3791224.0956809.1021224.1716859.3461224.218

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
1734.576     .0354393.514      .035010.936     .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      4393.5145010.936                 88101.2588      86              .1        .3

CROSS SECTION OUTPUT     Profile #PF#1

  W.S. Elev (ft)            1225.15   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.04   Wt. n-Val.                   0.035      0.030      0.035
  E.G. Elev (ft)            1225.19   Reach Len. (ft)              88.00     101.26      86.00
  Crit W.S. (ft)                      Flow Area (sq ft)          4360.72    3056.50    3863.58
  E.G. Slope (ft/ft)       0.000212   Area (sq ft)               4360.72    3056.50    3863.58
  Q Total (cfs)            15000.00   Flow (cfs)                 4858.83    6240.20    3900.97
  Top Width (ft)            4487.37   Top Width (ft)             2021.53     617.42    1848.41
  Vel Total (ft/s)             1.33   Avg. Vel. (ft/s)              1.11       2.04       1.01
  Max Chl Dpth (ft)           11.08   Hydr. Depth (ft)              2.16       4.95       2.09
  Conv. Total (cfs)        1030735.6  Conv. (cfs)              333877.9   428799.6   268058.1
  Length Wtd. (ft)            91.37   Wetted Per. (ft)           2021.61     641.20    1849.37
  Min Ch El (ft)            1214.07   Shear (lb/sq ft)              0.03       0.06       0.03
  Alpha                        1.36   Stream Power (lb/ft s)        0.03       0.13       0.03
  Frctn Loss (ft)              0.00   Cum Volume (acre-ft)         46.55      26.15      41.56
  C & E Loss (ft)              0.01   Cum SA (acres)               11.83       4.47      10.43


Warning - Divided flow computed for this cross-section.
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
                 than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION            RIVER: Harquahala
REACH: I-10 Reach           RS: 16.6789

INPUT
Description: 16.6789
Station Elevation Data     num=      409
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1791.0911220.7651793.2651220.7771795.2761220.7731850.0521220.6611852.4831220.682
1894.9681220.991 1897.721221.0081899.9161221.0121902.6281220.9771950.4011221.063
1954.0171221.0041958.6171220.9911961.8381220.9652000.8231220.8782005.5421220.836
2009.262 1220.772009.9321220.5842011.924  1219.82019.138  1219.82044.695  1219.8
2052.5671220.8332055.511  1221.12078.525 1221.772084.3781224.4862084.8481224.517
  2092.81224.8182094.5251224.7762104.8341224.4462112.3781223.3722115.1561223.033
2128.5271221.8132145.2191220.2692148.5381220.2382160.9961220.2882174.5831220.304
2179.2181220.2992182.6361220.3262234.7371220.6282238.5761220.6282240.777  1220.6
2243.9661220.6292287.0381220.6022292.4651220.6022297.0791220.6252345.4271220.621
2349.0671220.5892352.203 1220.552387.2791220.1372390.6171220.1112393.5211220.106
2395.5831220.1052432.5061219.9442436.8261219.9032458.9761219.8282465.0451219.796
2473.5741219.7772498.3161219.7022505.9471219.7322530.6321220.0312535.8691219.988
2538.5371220.059 2563.93 1220.242564.0571220.2382568.3831219.8962570.6031219.891
2602.4991219.9732607.7081219.9832608.0141219.9822608.1431219.9982635.8341223.476
2642.4561223.6212646.8961223.7062650.6671223.581  2660.11223.3682678.6371221.745
2691.4031220.5912703.1011220.4712705.9551220.4172719.0631219.7122722.2121219.609
 2755.241219.4512756.691 1219.44 2758.611219.418 2799.961219.2672803.3761219.252
2840.3921218.7572843.8041218.7312881.5681218.475 2885.261218.4352890.7271218.412
 2929.191218.1032934.6771218.0752973.7791218.0762979.0161218.0463016.1541217.915
3020.0451217.9093023.3741217.9063049.1351217.6853052.3281217.6553077.3291217.422
3079.1591217.418 3081.13  1217.43106.6651217.3583108.1111217.3853110.1631217.345
3121.0391217.1983140.9491217.2213163.7851217.303 3167.671217.7263175.5521218.834
3177.5651219.1273178.4881219.2783192.6491221.7483202.929 1222.01 3204.961222.054
3207.3071222.1273209.8121222.0023222.6331221.4983240.993 1218.483245.1431217.695
3259.5281217.5733270.7091217.4563274.614 1217.44 3316.871217.2773322.9961217.301
3346.8281217.3253352.7031217.365 3376.241217.2143383.1391217.206 3389.261217.168
3417.6561217.4063423.9851217.412 3463.421217.2023471.9971217.2023512.1751217.176
 3518.261217.1943526.4251217.1643560.0441217.1913566.123 1217.153603.4961217.059
3608.5341217.0213612.5521217.0393654.8541216.8393658.5721216.824 3693.371216.923
3697.9831216.9383719.6861216.6933726.0081216.6533765.5321216.5863770.9551216.587
3818.623 1216.373823.9211216.3443828.6731216.3253872.2381216.0073876.2631215.987
3903.3561215.8413906.5161215.8683954.842 1215.983958.375 1215.983964.5291215.888
4020.1241215.7144024.2861215.7144028.742 1215.714088.309 1215.654092.264 1215.64
4129.8541215.5274134.0441215.536 4182.451215.5374185.7411215.5354187.5951215.525
4227.9671215.5434228.6691215.6014237.668 1216.174239.5691216.1714258.1041216.053
```

4259.5511216.0644283.8631216.0644284.4071216.082 4296.551216.4074302.8161216.606
4317.8361216.7294318.2841216.7344321.3541216.7434336.3061216.942 4339.811217.081
4346.4051217.6694359.1261218.9244374.8721219.2374380.9631219.4044383.0311219.437
4392.211216.9294400.0121213.7314428.7361214.336 4433.451214.3774444.9091216.538
4445.531216.7014447.4061216.6684472.2711216.1294486.6531215.9984511.7341215.846
4593.1581215.4354594.155 1215.444594.7291215.4374595.0921215.4364602.2551215.453
4665.2871215.6264667.805 1215.64670.9471215.559 4674.91215.3744687.4751214.606
4691.3871214.3684699.0731214.3034718.3921214.3134722.8261214.7824728.984 1215.45
4735.1611215.4254739.7331215.4094799.5961215.565 4804.841215.5784809.7971215.597
4859.1351215.7914880.9851215.8694882.8361215.8744885.3991215.883 4945.961215.967
4951.2641215.9684954.9841215.9684958.283 1215.514966.6561214.2564970.341 1214.23
5001.779 1214.285013.1551218.3365022.4141221.6085043.4231221.3755048.0971221.252
5065.0751219.5385097.8671216.4255099.0361216.4895111.5711216.6625119.372 1216.62
5134.1661216.6615148.1851216.7635177.4041216.2235181.5741216.2815186.8381216.376
5203.0211216.1865209.0111216.1195247.7551216.3495248.9191216.3385249.2921216.334
5277.7151216.437 5302.561216.5455303.3071216.536 5312.861216.5595362.1331216.828
5372.4481216.9845390.1461216.9485415.546 1216.855416.2281216.8515417.3931216.984
5418.2811216.8535420.456 1216.885452.0421216.6925453.651 1216.725457.3751216.575
5458.7391216.6245461.6431216.6045465.1291215.9165468.333 1215.545470.7931215.691
5477.9951216.3595480.9791216.194 5480.991216.1965481.5031216.1985503.9271215.978
5508.5041215.8385525.8791215.652 5529.971215.7325537.0831216.1535539.3121216.052
5548.1161216.1945553.9071216.1255559.1551215.6225564.7341215.5855575.0351215.185
5578.9821215.3325579.9771215.288 5590.59 1215.05 5591.081215.0275594.1111215.055
5597.0621215.4045601.4081215.7655602.7841215.6235608.6211215.7115622.3861216.057
5627.491216.0275629.2381215.9835635.3781216.5435638.1041216.4225640.2531216.695
5644.0021216.8025651.1251216.7445661.1181216.7545677.0331216.6025679.2271216.607
5682.1271216.5825686.5071216.4515689.1041216.4195690.8291216.3795697.6591216.219
5713.2971216.2835715.2281216.2675736.8341216.3965739.3371216.4195739.7441216.427
5752.9931216.5225762.2111216.6675774.7161216.9175788.0881217.4395794.614 1217.48
5811.5921217.6295820.6581217.5545838.9311217.6795845.4891217.6425849.3951217.626
5865.831217.6285875.4251217.548 5889.73 1217.515906.7581217.5955917.8491217.742
5935.281217.7325953.6331217.779 5962.451217.8675964.6921217.877 5982.771218.085
5993.611218.2416004.6791218.2256016.0211218.1716047.388 1218.22 6058.551218.347
6071.1321218.5086086.5591218.5336107.7081218.5736113.533 1218.43 6126.031218.114
6127.2161218.0876130.647 1218.016138.1591217.7936139.4911217.7656149.4871217.448
6156.291217.241 6160.11217.2846174.6721217.4446179.7241217.2796181.0351217.268
6181.2361217.2466198.4551216.6326208.1221216.1876211.7271216.1426215.2581216.061
6231.2111216.4116236.8621216.4626268.2121216.3056281.605 1216.266304.9171216.634
6339.6891216.7796342.7981217.0336357.0211217.2866361.8511217.5216376.2681217.853
6377.4171217.8496377.7721217.8486388.9961217.8026391.8831217.7346415.1071217.785
6421.951217.6766425.3391217.6996444.6471217.9896447.1481218.0256449.3521218.071
6467.8531218.3896486.8341218.2996491.9631218.2736522.4021218.027 6527.541217.987
6568.0841218.0356579.3751218.0976611.0291218.1916622.7251218.182 6638.071218.218
6657.2831218.285 6658.251218.2456659.5361218.2136670.7731217.9776681.0941217.575
6688.631217.7556698.5611218.114 6708.111218.2146713.8261218.2826752.6261219.039
6755.1671219.094 6756.361219.1196757.6371219.1376789.2321219.3556799.5791219.442
6838.1191219.4656855.2791219.4756892.7461219.6166939.4131219.674

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1791.091	.035	4383.031	.035	5022.414	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4383.031	5022.414	67	77.7151	68	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1225.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.035	0.035	0.035
E.G. Elev (ft)	1225.18	Reach Len. (ft)	67.00	77.72	68.00
Crit W.S. (ft)		Flow Area (sq ft)	17265.85	6150.73	14722.70
E.G. Slope (ft/ft)	0.000006	Area (sq ft)	17265.85	6150.73	14722.70
Q Total (cfs)	15000.00	Flow (cfs)	6271.75	2851.14	5877.11
Top Width (ft)	5148.32	Top Width (ft)	2591.94	639.38	1917.00
Vel Total (ft/s)	0.39	Avg. Vel. (ft/s)	0.36	0.46	0.40
Max Chl Dpth (ft)	11.44	Hydr. Depth (ft)	6.66	9.62	7.68
Conv. Total (cfs)	6196606.0	Conv. (cfs)	2590903.8	1177826.8	2427875.8
Length Wtd. (ft)	70.37	Wetted Per. (ft)	2598.27	642.07	1923.18
Min Ch El (ft)	1213.73	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	1.02	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	24.71	15.45	23.21
C & E Loss (ft)	0.00	Cum SA (acres)	7.17	3.01	6.71

Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Harquahala
REACH: I-10 Reach RS: 16.6642

INPUT
Description: 16.6642
Station Elevation Data num= 206

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1758.569	1225.445	1814.828	1225.357	1840.739	1225.437	1867.282	1225.699	1922.442	1225.593
1932.181	1225.575	1978.282	1225.377	2010.024	1225.541	2044.108	1225.427	2065.928	1225.474
2080.797	1225.521	2092.115	1225.492	2111.517	1225.406	2125.092	1225.321	2141.224	1224.87
2180.009	1224.783	2209.336	1224.606	2240.508	1224.334	2271.153	1224.308	2309.594	1224.25
2343.641	1224.193	2374.518	1224.408	2405.944	1224.453	2436.513	1224.336	2469.566	1224.366
2506.613	1224.291	2531.277	1224.561	2550.047	1224.647	2560.418	1224.785	2600.923	1224.608
2605.436	1224.712	2615.09	1224.862	2621.785	1224.963	2642.223	1224.926	51.104	1224.73
2671.748	1224.587	2697.103	1224.593	2717.15	1224.136	2737.912	1223.727	79.046	1223.708
2810.97	1223.608	2860.868	1223.504	2902.407	1223.38	2970.591	1223.183	3015.564	1223.358
3066.42	1223.303	3096.022	1223.495	3111.566	1223.501	3125.69	1223.657	3134.989	1223.823
3138.574	1223.995	3184.266	1223.888	3208.845	1223.863	3213.514	1223.799	3223.904	1223.583
3227.877	1223.592	3245.593	1223.235	3269.979	1222.957	3294.256	1222.883	3333.125	1222.392
3362.18	1222.283	3395.956	1222.173	3446.949	1222.006	3472.036	1221.583	3481.419	1221.604
3492.626	1221.583	3502.478	1221.569	3609.938	1221.362	3622.61	1221.333	3631.719	1221.296
3639.647	1221.184	3646.151	1221.213	3724.974	1221.104	3734.812	1221.138	3742.101	1221.147
3752.885	1221.062	3764.459	1220.962	3859.664	1220.644	3875.431	1220.641	3887.849	1220.636

3892.8151220.5461976.647 1220.423985.3991220.5063992.4611220.4974004.8721220.316
4075.069 1219.86 4090.6 1219.924102.6041219.9464111.9771219.935 4168.041219.794
4179.6331219.6754194.5581219.7154256.3991219.5574268.3791220.2794270.3461220.301
4275.4221220.827 4308.891220.7764354.6421220.841 4382.431221.433 4392.471220.895
4394.359 1220.954395.7361219.1354399.761 1213.24416.896 1213.24422.955 1213.2
4431.597 1213.24435.434 1213.24436.5621217.5294440.7571220.5614442.2961220.561
4473.2121220.3874521.4741220.8754584.8251220.8424625.8631220.6224658.0561220.582
4675.5971220.867 4678.541220.8874678.6491220.2914680.245 1213.24682.761 1213.2
4709.335 1213.24712.382 1213.24718.512 1213.2 4718.64 1213.24721.3731217.663
4725.1741220.4544727.0541220.2514754.3411220.2754767.3631219.9494776.5771220.439
4787.1821220.6544802.6471220.622 4873.181220.4384890.4241220.4134905.4671220.537
4954.1381220.4724960.177 1220.654960.5981220.7964963.3561217.2884966.083 1213.2
4968.543 1213.25000.868 1213.25003.189 1213.25007.079 1213.25013.9211221.432
5016.7611221.5545024.6591221.592 5035.291221.7155042.4931221.6215050.4971221.337
5080.5331221.4335098.4261221.4625141.0171221.3935163.7191221.4785213.5481221.475
5224.9571221.4175276.3861221.1985281.4391221.1675281.7081221.1675281.9931221.163
5304.4651221.2575362.3341221.4755367.0911221.4695427.1641221.5095501.745 1221.44
5502.227 1221.44 5571.481221.642 5581.761221.6535629.5941221.8615643.1221221.874
5699.3341221.9755747.7311222.0895766.0511222.0985815.7031221.8125830.0581221.703
5837.5521221.7225924.2891221.9525924.7351221.9535924.8451221.9535924.8961221.954
5924.9741221.9535934.6621221.9395994.4791221.8246001.8961221.8436073.9861221.887
6085.7561221.9036149.4241221.9926223.0081221.9656235.4451221.9566301.6071222.128
6318.351222.1766387.0351222.2926405.9721222.2736488.8661222.2656511.173 1222.35
6571.7061222.6226595.6321222.5756654.7681222.5546715.7031222.7386743.3961222.833
6810.5261222.8636818.9661222.8756879.1791223.0766893.1631223.076 6952.061223.836
6999.421222.672

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1758.569	.035	4382.43	.035	13.921	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4382.43	5013.921	76	90.3017	79	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1225.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.035	0.030	0.035
E.G. Elev (ft)	1225.18	Reach Len. (ft)	76.00	90.30	79.00
Crit W.S. (ft)	1221.57	Flow Area (sq ft)	5949.82	3844.56	6222.38
E.G. Slope (ft/ft)	0.000081	Area (sq ft)	5949.82	3844.56	6222.38
Q Total (cfs)	15000.00	Flow (cfs)	4347.97	5561.54	5090.48
Top Width (ft)	4868.48	Top Width (ft)	2251.49	631.49	1985.50
Vel Total (ft/s)	0.94	Avg. Vel. (ft/s)	0.73	1.45	0.82
Max Chl Dpth (ft)	*11.96*	*Hydr. Depth (ft)*	2.64	*6.09*	*3.13*
Conv. Total (cfs)	1665621.5	Conv. (cfs)	482805.3	617561.6	565254.6
Length Wtd. (ft)	90.30	Wetted Per. (ft)	2251.60	658.27	1988.00
Min Ch El (ft)	1213.20	Shear (lb/sq ft)	0.01	0.03	0.02
Alpha	1.32	Stream Power (lb/ft s)	0.01	0.04	0.01
Frctn Loss (ft)		Cum Volume (acre-ft)	6.85	6.53	6.86
C & E Loss (ft)		Cum SA (acres)	3.44	1.88	3.67

CULVERT RIVER: Harquahala
REACH: I-10 Reach RS: 16.6556

INPUT
Description:
Distance from Upstream XS = 15
Deck/Roadway Width = 38
Weir Coefficient = 2.6
Bridge Deck/Roadway Skew =
Upstream Deck/Roadway Coordinates
num= 97

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
1816.139	1226.294	1220.2	1927.866	1226.11	1220.2	1971.514	1225.991	1220.2
2039.327	1225.901	1220.2	2096.98	1225.792	1220.2	2187.166	1225.656	1220.2
2252.675	1225.541	1220.2	2310.94	1225.464	1220.2	2432.595	1225.355	1220.2
2514.048	1225.272	1220.2	2566.939	1225.155	1220.2	2623.969	1225.155	1220.2
2751.147	1224.887	1220.2	2795.31	1224.76	1220.2	2854.45	1224.661	1220.2
2965.197	1224.436	1220.2	3021.431	1224.332	1220.2	3077.468	1224.149	1220.2
3135.112	1224.076	1220.2	3239.953	1223.861	1220.2	3287.981	1223.847	1220.2
3333.925	1223.663	1220.2	3420.438	1223.446	1220.2	3471.01	1223.226	1220.2
3524.233	1223.134	1220.2	3647.114	1222.801	1220.2	3690.704	1222.628	1220.2
3734.354	1222.506	1220.2	3777.976	1222.451	1220.2	3874.414	1222.257	1220.2
3923.729	1222.21	1220.2	3969.303	1222.141	1220.2	4317.666	1222.284	1220.2
4323.538	1222.338	1220.2	4326.88	1222.343	1220.2	4365.106	1222.407	1220.2
4398.141	1222.448	1220.2	4417.066	1222.57	1220.2	4420.754	1222.569	1220.2
4465.424	1222.526	1220.2	4568.241	1222.496	1220.2	4585.485	1222.488	1220.2
4671.044	1222.363	1220.2	4681.732	1222.346	1220.2	4692.566	1222.344	1220.2
4789.737	1222.331	1220.2	4796.342	1222.323	1220.2	4860.114	1222.256	1220.2
4906.556	1222.199	1220.2	4910.813	1222.199	1220.2	4913.838	1222.185	1220.2
4987.242	1222.227	1220.2	4989.993	1222.234	1220.2	5030.318	1222.212	1220.2
5031.712	1222.215	1220.2	5125.19	1222.324	1220.2	5139.591	1222.374	1220.2
5153.024	1222.361	1220.2	5267.417	1222.349	1220.2	5277.63	1222.366	1220.2
5293.292	1222.396	1220.2	5372.467	1222.587	1220.2	5391.737	1222.599	1220.2
5459.132	1222.709	1220.2	5509.605	1222.646	1220.2	5537.56	1222.648	1220.2
5594.546	1222.85	1220.2	5614.317	1222.859	1220.2	5649.101	1223.088	1220.2
5665.203	1223.109	1220.2	5714.268	1223.244	1220.2	5760.27	1223.224	1220.2
5789.06	1223.256	1220.2	5845.319	1223.227	1220.2	5874.501	1223.23	1220.2
5939.661	1223.122	1220.2	6015.296	1223.286	1220.2	6052.573	1223.35	1220.2
6087.229	1223.451	1220.2	6147.433	1223.534	1220.2	6174.873	1223.497	1220.2
6201.498	1223.501	1220.2	6290.726	1223.536	1220.2	6315.667	1223.599	1220.2
6384.865	1223.581	1220.2	6420.091	1223.588	1220.2	6501.379	1223.83	1220.2
6524.939	1223.888	1220.2	6601.577	1223.895	1220.2	6627.698	1223.865	1220.2
6700.94	1224.114	1220.2	6733.501	1224.207	1220.2	6831.178	1224.122	1220.2
6854.148	1224.171	1220.2	6957.93	1224.36	1220.2	6983.271	1224.363	1220.2
7010.392	1224.401	1220.2						

Upstream Bridge Cross Section Data
Station Elevation Data num= 206

```
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1758.5691225.4451814.8281225.3571840.7391225.4371857.2821225.6991922.4421225.592
1932.1811225.5751978.2821225.3772010.0241225.5412044.1081225.4272065.9281225.474
2080.7971225.5212092.1151225.4922111.5171225.4062135.0921225.3212141.224 1224.87
2180.0091224.7832209.3361224.6062240.5081224.3342271.1531224.3082309.594 1224.25
2343.6411224 1922374.5181224.4082405.9441224.4532426.5131224.3362469.5661224.366
2506.6131224.2912531.2771224.5612550.0471224.6472560.4181224.7852600.9231224.608
2605.4361224.712 2615.091224.8622621.7851224.9632642.223  1224.92651.104 1224.73
2671.7481224.5872697.1031224.593 2717.151224.1362737.912  1223.72779.0461223.708
 2810.971223.6082860.8681223.5042902.407 1223.38 2970.591223.1833015.5641223.358
 3066.421223.3033096.0221223.4953111.5661223.501 3125.691223.6573134.9891223.823
3138.5741223.9953184.2661223.8883208.8451223.8633213.5141223.7993223.9041223.583
3227.8771223.5923245.5931223.2353269.9791222.9573294.256 1222.883333.1251222.392
3362.181 1222.283395.956 1222.173446.9491222.0063472.036 1221.583481.4191221.604
3492.626 1221.583502.4781221.5693609.9381221.362  3622.61221.3333631.7191221.296
3639.6471221.1843646.151 1221.213724.9741221.1043734.8121221.1383742.1011221.147
3752.8851221.0623764.4591220.9623859.6641220.6443875.4311220.6413887.8491220.636
3897.8151220.5463976.647 1220.423985.3991220.5063992.4611220.4974004.8721220.316
4078.069 1219.86  4090.6 1219.924102.6041219.9464111.9771219.935 4168.041219.794
4179.6321219.6754194.5581219.7154256.3991219.5574268.3791220.2794270.3461220.301
4275.4221220.837 4308.891220.7764354.6421220.841 4382.431221.433 4392.471220.895
4394.359 1220.954395.7361215.1354399.761  1213.24416.896  1213.24422.955  1213.2
4431.597  1213.24435.434  1213.24436.5621217.5294440.7571220.5614442.2961220.561
4473.2121220.3874521.4741220.8754584.8251220.8424625.8631220.6224658.0561220.582
4675.5971220.867 4678.541220.8874678.6491220.2914680.245  1213.24682.761  1213.2
4709.335  1213.24712.382  1213.24718.512  1213.2 4718.64  1213.24721.3731217.663
4725.1741220.4544727.0541220.2514754.3411220.2754767.3631219.9494776.5771220.439
4787.1821220.6544802.6471220.622 4873.181220.4384890.4241220.4134905.4671220.537
4954.1381220.4724960.177 1220.654960.5981220.7964963.3561217.2884966.083  1213.2
4968.543  1213.25000.868  1213.25003.189  1213.25007.079  1213.25013.9211221.432
5016.7611221.5545024.6591221.592 5035.291221.7155042.4931221.6215050.4971221.337
5080.5331221.4335098.4261221.4625141.0171221.3935163.7191221.4785213.5481221.475
5224.9571221.4175276.3861221.1985281.4391221.1675281.7081221.1675281.9931221.163
5304.4651221.2575362.3341221.4755367.0921221.4695427.1641221.5095501.745 1221.44
5502.227 1221.44 5571.481221.642 5581.761221.6535629.5941221.8615643.1221221.874
5699.3341221.9755747.7311222.0895766.0511222.0985815.7031221.8125830.0581221.703
5837.5521221.7225924.2891221.9525924.7351221.9535924.8451221.9535924.8961221.954
5924.9741221.9535934.6621221.9395994.4791221.8246001.8961221.8436073.9861221.887
6085.7561221.9036149.4241221.9926223.0081221.9656235.4451221.9566301.6071222.128
 6318.351222.1766387.0351222.2926405.9721222.2736488.8681222.2656511.173 1222.35
6571.7061222.6226595.6321222.5756654.7681222.5546715.7031222.7386743.3961222.833
6810.5261222.8636818.9661222.8756879.1791223.0766893.1631223.076 6952.061222.836
 6999.421222.672

Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta    n Val
1758.569     .035 4382.43      .035013.921     .035

Bank Sta: Left   Right     Coeff Contr.    Expan.
       4382.435013.921              .1        .3

Downstream  Deck/Roadway Coordinates
    num=       97
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
1816.1391226.294 1219.971927.866 1226.11 1219.971971.5141225.991 1219.97
2039.3371226.901 1219.97 2096.981225.792 1219.972187.1661225.656 1219.97
2252.6751225.541 1219.97 2310.941225.464 1219.972432.5951225.355 1219.97
2514.0481225.272 1219.972566.9391225.155 1219.972623.9691225.155 1219.97
2751.1471224.887 1219.972795.311 1224.76 1219.97 2854.451224.661 1219.97
2965.1971224.436 1219.973021.4311224.332 1219.973077.4681224.149 1219.97
3135.1121224.076 1219.973239.9531223.861 1219.973287.9811223.847 1219.97
3333.9251223.663 1219.973420.4381223.446 1219.97 3471.011223.226 1219.97
3524.2331223.134 1219.973647.1141222.801 1219.973690.7041222.628 1219.97
3734.3541222.506 1219.973777.9761222.451 1219.973874.4141222.257 1219.97
3923.729 1222.21 1219.973969.3031222.141 1219.974317.6661222.284 1219.97
4323.5381222.338 1219.97 4326.881222.343 1219.974365.1061222.407 1219.97
 4398.141222.448 1219.974417.066 1222.57 1219.974420.7541222.569 1219.97
4465.4241222.526 1219.974568.2411222.496 1219.974585.4851222.488 1219.97
4671.0441222.363 1219.974681.7321222.346 1219.974692.5661222.344 1219.97
4789.7371222.331 1219.974796.3421222.323 1219.974860.1141222.256 1219.97
4906.5561222.199 1219.974910.8131222.199 1219.974913.8381222.185 1219.97
4987.2421222.227 1219.974989.9931222.234 1219.975030.3181222.212 1219.97
5031.7121222.215 1219.97 5125.191222.324 1219.975139.5911222.374 1219.97
5153.0241222.361 1219.975267.4171222.349 1219.97 5277.631222.366 1219.97
5293.2921222.396 1219.975372.4671222.587 1219.975391.7371222.599 1219.97
5459.1321222.709 1219.975509.6051222.646 1219.97 5537.561222.648 1219.97
5594.546 1222.85 1219.975614.3171222.859 1219.975649.1011223.088 1219.97
5665.2031223.109 1219.975714.2681223.244 1219.97 5760.271223.224 1219.97
 5789.061223.256 1219.975845.3191223.227 1219.975874.501 1223.23 1219.97
5939.6611223.122 1219.976015.2961223.286 1219.976052.573 1223.35 1219.97
6087.2291223.451 1219.976147.4331223.534 1219.976174.8731223.497 1219.97
6201.4981221.501 1219.976290.7261223.536 1219.976315.6671223.599 1219.97
6384.8651223.581 1219.976420.0911223.588 1219.976501.379 1223.83 1219.97
6524.9391223.888 1219.976601.5771223.895 1219.976627.6981223.865 1219.97
 6700.941224.114 1219.976733.5011224.207 1219.976831.1781224.122 1219.97
6854.1481224.171 1219.97 6957.93 1224.36 1219.976983.2711224.363 1219.97
7010.3921224.401 1219.97

Downstream Bridge Cross Section Data
Station Elevation Data     num=      291
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
1812.7541222.4941818.7221222.5371822.4691222.6621827.5941222.6821832.3571222.576
1865.1091222.4581869.9411222.5091876.1521222.4841884.7511222.4261916.1031222.411
1925.2391222.3811931.9011222.247 1940.291222.318 1978.811222.3871987.3861222.218
1995.6851222.2042001.1341222.214 2025.161222.3122032.8161222.4762037.9211222 663
2053.646 1222.812057.6511222.9522060.9521223.0912073.2461223.0392093.2521223.594
2093.7631223.3552097.8341219.1392100.9141219.1312114.7871219.1982116.326  1219.2
2128.6461219.1882136.5971223.9432136.9561224.2272137.0561224.2242137.1471224.222
2143.2331223.5072145.5871223.6532151.9581223.2832167.7041223.0372175.8881223.027
2193.5791223.0482223.2381222.5322260.2851221.9572260.4981221.958 2270.031221.915
  2278.71222.0932314.166 1221.992324.4471221.8482336.5621221.6082349.8011221.749
```

```
2385.1331221.8152394.0451221.6282405.427 1221.872413.6041221.886 2441.661221.819
 2449.561221.8792458.5421221.8452487.6221221.6952804.6541221.6522527.8721221.742
2546.575 1222.042571.3651222.278 2587.161222.5522607.988 1222.732627.8491222.992
2635.7721223.048 2641.24 1223.112651.8791223.4652653.6511223.2772655.7011219.576
2656.843  1218.42660.1831218.3712685.8411218.3712689.519  1218.42690.7581220.123
2693.6371223.4752697.3261223.4332712.8861222.3852723.9051222.3622746.574  1222.1
2771.2211222.0082795.7661221.4932816.4771221.0172865.8621220.9372872.8381220.931
2923.8021220.9512966.7261220.8282973.0471220.8053015.3861220.7533046.2651220.805
3057.6811220.772 3090.921220.9213113.8561221.2343129.1851221.3062148.7881221.426
3190.3181222.0893200.1091222.2883205.2491222.3393205.6991222.2883209.7141217.687
3210.259  1217.23215.132  1217.23242.117  1217.23243.4191218.7563245.1461222.324
3246.7711222.5183262.1651222.0843317.9651221.4093385.8991220.3313394.0421220.282
3435.1891220.174 3470.651219.9273484.1981219.8983487.1981219.9443489.8881219.918
3537.5721219.7043541.8261219.681 3548.091219.5453554.3251219.4923607.8721219.392
 3611.191219.2623618.9341219.3823626.356 1219.243677.4171219.1423684.7541219.135
3690.621 1219.123698.0591219.2143744.1371219.1733752.3541219.1073762.6531219.235
 3808.361219.2993815.3721219.3233822.0681219.1783829.3961219.1993874.4771219.135
3880.3511219.0993890.8321219.0013924.7751218.8523931.6461218.921 3940.051218.893
 3976.961218.7973985.5951218.7273992.0731218.7344046.3511218.7774052.6741218.732
4059.7461218.771 4067.811218.7614083.3161217.877 4103.34 1217.614121.4381217.973
4216.1541217.7584230.8061217.7534244.5511217.6754258.093 1217.684270.3611217.601
4287.6361217.8664313.8211218.0284325.6541218.1294327.6811218.6464334.3931218.716
4347.0121219.0124351.5271219.1094355.6711218.9584358.5311218.657 4360.851218.659
4365.0691218.7974386.3721218.865 4386.881218.6724388.4411217.8294395.8521213.595
4396.4251213.5914398.347 1212.974419.578 1212.974436.118 1212.974442.6531214.026
4447.3741218.8554449.8351219.0314450.4811219.0464451 4331219.0464469.3011219.048
 4556.531219.1354577.2911219.2154645.2361219 4314672.5551219.6384676.8641219.445
4679.1871218.7644681.529 1212.974698.616 1212.974709.594 1212.974722.639 1212.97
4726.573  1216.24728.2181219.9464730.4841220.0824768.1161219.7464783.1611219.632
 4819.851220.1954841.3021220.2224901.5631220.3254934.2811220.4964959.8451220.576
4961.147 1220.564982.1831220.1594984.1181216.0954966.869 1212.974974.563 1212.97
4982.114 1212.975004.814 1212.975005.9241215.0515009.8031220.7565017.5421220.942
5023.8511220.553 5063.381220.3225111.8811220.7335170 5851220.7585188.2271220.924
5195.0061221.003 5211.161221.009 5280.161220.9715287.6131220.7635300.9411220.867
5316.7861220.9245393.6521221.0965403.9631221.0675420.9651221.0415492.1561220.976
5503.1661220.9745552.0121220.9535554.1581220.9255556.7421220.9625568.3961221.143
5596.573 1221.355608.9811221.4395640.9171221.4825656.9711221.4175675.5891221.577
5718.4091221.6495722.6321221.6775731.3531221.7445759.8741221.2245776.1791221.022
5796.2181220.3215808.7861220.061 5828.751219.3935832.3371219.3215860.4021219.443
5879.7211219.1435890.1251218.7165902.2591218.7255924.1651218.714  5944.61218.585
5964.3371218.8345991.497 1219.116030.7481219.2256069.4811219.303 6101.541219.294
6145.1781219.3326176.4061219.3296191.5551219.3236218.1881219.3936233.0031219.029
 6241.791218.8976285.6171218.9266308.7811219.4816335.0021219.4166362.5851219.504
6402.0651219.4766417.2681219.4996432.467 1219.71  6449.11219.5136494.6531219.588
6515.1661219.486 6533.721219.4316563.2371219.3986596.9271219.3896614.5331219.686
6635.7211219.3366674.298 1219.366703.6381219.487 6735.051219.5486773 9631219.617
6809.4761219.5836844.7091219.9586884.8811219.9226907.4381219.8176923.9371220.082
6943.7221220.1136965.3441219.9996985.9461220.1437008.4291220.2717030.1011220.603
7054.6581220.654
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1812.754	.035	4386.88	.035	009.803	.035

Bank Sta: Left Right Coeff Contr. Expan.
4386.885009.803 .1 .3
Left Levee Station=3246.771 Elevation=1222.518

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Culvert #1	Box	7	10

FHWA Chart # 58- Rectangular concrete
FHWA Scale # 2 - Side tapered; More favorable edges
Solution Criteria = Highest U.S. SG

Culvert	Upstrm Dist	Length	n Value	Entrance Loss Coef	Exit Loss Coef
	14	62	.014	.3	1

Number of Barrels = 9
Upstream Elevation = 1213.2
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
4405	4416	4427	4689	4700	4711	4975	4986	4997

Downstream Elevation = 1212.97
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
4405	4416	4427	4690	4701	4712	4974	4985	4996

CROSS SECTION RIVER: Harquahala
REACH: I-10 Reach RS: 16.6470

INPUT
Description: 16.6470
Station Elevation Data num= 291

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
1812.7541222.4941818.7221222.5371822.4691222.6621827.5941222.6821832.3571222.576
1865.1091222.4581869.9411222.5091876.1521222.4841884.7511222.4261916.1021222.411
1925.2391222.3811931.9011222.247 1940.291222.318 1978.811222.3871987.3861222.218
1995.6851222.2042001.1341222.214 2025.161222.3122032.8161222.4762037.9211222.663
2053.646 1222.812057.6511222.9522060.9521223.0912073.2461223.0392093.2521223.594
2093.7631223.3552097.8341219.1392100.9141219.1312114.7871219.1982116.326  1219.2
2128.6461219.1882136.5971223.9432136.9561224.2272137.0561224.2242137.1471224.222
2143.2331223.5072145.5871223.6532151.9581223.2832167.7041223.0372175.8861223.027
2193.5791223.0482223.2381222.5322260.2851221.9572260.4981221.958 2270.031221.915
```

```
  2278.71222.0932314.166 1221.992324.4471221.8482336.5621221.6082349.8011221.749
2385.1331221.8152394.0451221.6282405.427 1221.872413.6041221.886 2441.661221.819
 2449.561221.8792458.5421221.8452487.8221221.6952504.0541221.6522527.8731221.742
2546.575 1222.042571.3651222.278 2587.161222.5522607.986 1222.732627.8491222.992
2635.7711223.048 2641.24 1223.112651.8751223.4652653.6511223.2772655.7011219.576
2656.843  1218.42660.1831218.3712685.8411218.3712689.519  1218.42690.7581220.133
2693.6371223.4752697.3261223.4332742.8881222.3852723.9051222.3622746.574  1222.1
2771.2211222.0082795.7681221.4932816.4771221.0172865.8621220.9372872 8381220.931
2923.8021220.9512966.7281220.8282973.0471220.8053015.3861220.7533046 2651220.805
3057.6811220.772 3090.921220.9213113.8561221.2343129.1851221.3063148.7881221 426
3190.3181222.0893200.1091222.2883205.2491222.3393205.6991222.2883209.7141217 687
3210.259  1217.23215.132  1217.23242.117  1217.23243.4191218.7563245.1461222.324
3246.7711222.5183262.1651222.0843317.9651221.4093385.8991220.3313394.0421220.282
3435.1891220.174 3470.651219.9273484.1981219.8983487.1981219.9443489.8981219.918
3537.5721219.7043541.8261219.681 3548.091219.5453554.3251219.4923607.8721219.392
 3611.191219.2623618.9341219.3823626.356 1219.243677.4171219.1423684 7541219.135
3690.621 1219.123698.0591219.2143744.1371219.1733752.3541219.1073762.6531219.235
 3808.361219.2993815.3721219.3233822.0681219.1783829.3961219.1993874.4771219.135
3880.3511219.0993890.8321219.0013924.7751218.8523931.6461218.921 3940.051218.893
 3976.961218.7973985.5951218.7273992.0731218.7344046.3511218.7774052.6741218.732
4059.7461218.771 4067.811218.7614083.3161217.877 4103.34 1217.614121.4381217.973
4216.1541217.7584230.8061217.7534244.5511217.6754258.093 1217.684270.3611217.601
4287.6361217.8664313.8211218.0284335.6541218.1294327.6811218.6464334.3931218.716
4347.0121219.0124351.5271219.1094355.6711218.9584358.5311218.657 4360.851218.659
4365.0691218.7974386.3721218.865 4386.881218.8724388.4411217.8294395.8521213.595
4396.4251213.5914398.347 1212.974419.578 1212.974436.118 1212.974442.6531214.026
4447.3741218.8554449.8351219.0314450.4811219.0464451.4331219.0464469.3011219.048
 4556.531219.1354577.2911219.2154645.2361219.4314672.5551219.6384676.8641219.445
4679.1871216.7644681.529 1212.974698.618 1212.974709.594 1212.974722.639 1212.97
4726.573  1216.24728.2181219.9464730.4641220.0824768.1161219.7464783.1611219.632
 4819 851220.1954841.3021220.2224901.5631220.3254934.2811220.4964959.8451220.576
4961.147 1220.564962.1831220.1594964.1181216.0954966.869 1212.974974.563 1212.97
4982.114 1212.975004.814 1212.975005.9241215.0515009.8031220.7565017.5421220.942
5023.8511220.553 5063.381220.3225111.8811220.7335170.5851220.7585188.2271220.924
5195.0061221.003 5211.161221.009 5280.161220.9715287.6131220.7635300.9411220.867
5316.7861220.9245393.6521221.0965403.9631221.0675420.9651221.0415492.1561220.976
5503.1661220.9745552.0121220.9535554.1581220.9255556.7421220.9625568.3961221.143
5596.573 1221.355608.9811221.4395640.9171221.4825656.9711221.4175675.5891221.577
5718.4091221.6495722.6321221.6775731.3531221.7445759.8741221.2245776.1791221.022
5796.2161220.3215808.7861220.061 5828.751219.3935832.3371219.3215860.4021219 443
5879.7211219.1435890.1251218.7165902.2591218.7255924.1651218.714  5944.61218.585
5964.3371218.9345991.497 1219.116030.7481219.2256069.4611219.303 6101.541219.294
6145.1781219.2326176.4061219.3296191.5551219.3236218.1881219.3936233.0031219.029
 6241.791218.8976285.6171218.9266308.7811219.4816335.0021219.4166362.5851219.504
6402.0651219.4766417.2681219.4996433.467 1219.71  6449.11219.5136494.6531219.588
6515.1661219.486 6533.721219.4316563.2271219.3986596.9271219.3896614.5331219.686
6635.7211219.3366674.298 1219.366703.6381219.487 6735.051219.5486773.9631219.617
6809.4761219.5836844.7091219.9586884.8811219.9226907.4381219.8176923.9371220.082
6943.7221220.1136965.3441219.9996985.9461220.1437008.4291220.2717030.1011220.603
7054.6581220.654
```

```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
1812.754    .035 4386.88      .035009.803    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       4386.885009.803                 38  57.874      52            .1       .3
Left Levee       Station=3246.771       Elevation=1222.518
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1220.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.51	Wt. n-Val.	0.035	0.030	0.035
E.G. Elev (ft)	1220.59	Reach Len. (ft)	38.00	57.87	52.00
Crit W.S. (ft)	1220.08	Flow Area (sq ft)	1182.75	1233.88	778.46
E.G. Slope (ft/ft)	0.005765	Area (sq ft)	1182.75	1233.88	778.46
Q Total (cfs)	15000.00	Flow (cfs)	4449.17	8581.13	1969.70
Top Width (ft)	2552.92	Top Width (ft)	938.11	472.21	1142.60
Vel Total (ft/s)	4.69	Avg. Vel. (ft/s)	3.76	6.95	2.53
Max Chl Dpth (ft)	7.11	Hydr. Depth (ft)	1.26	2.61	0.68
Conv. Total (cfs)	197552.7	Conv. (cfs)	58596.3	113015.0	25941.3
Length Wtd. (ft)	52.55	Wetted Per. (ft)	938.24	490.67	1142.65
Min Ch El (ft)	1212.97	Shear (lb/sq ft)	0.45	0.91	0.25
Alpha	1.48	Stream Power (lb/ft s)	1.71	6.29	0.62
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	0.63	1.27	0.51
C & E Loss (ft)	0.01	Cum SA (acres)	0.66	0.73	0.83

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION RIVER: Harquahala
REACH: 1-10 Reach RS: 16.6361

INPUT
Description: 16.6361
Station Elevation Data num= 357

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
1837.5861219.1691856.3921219.201 1862.291219.231  1864.41219.2731874.6481219.499
1889.2421219.6441895.437 1219.75 1907.751219.9641927.1141220.1651937.2021220.359
1965.6491220.3841978.0751220.3611995.561 1220.332016.0371220.2952028.8581220.176
```

```
 2046.761219.8712057.8811219.5092067.3781219.559 2076.25 1219.522094.9671219 383
2105.2021219.2622110.6521219.3782111.8371219.2072132.0441219.0372145.2161219.826
2156.022  1216.92167.2631218.8392169.555 1218 892177.1721218.8492182.659 1218.99
2198.0681219.2412207.2811219.2592229.436 1219.442241.5671219.3512256.0521219.328
 2266.271219.3322275.8331219.3662300.7721219.417 2310.442219.531  2319.51219.448
2330.4071219.407 2354 241219.4512364.885 1219.41 2376.091219.4592403.8831219.405
 2411.931219.2632422.2211219.3252451.483 1219.242459.8011219.1062469.4351219.135
 2480.581219.1062510.522 1219.032519.9371218.9842534.3031218.9932564.7711218.927
2573.7791218.7742583.6761218.6742600.5341218.7432611.6141218.7242624.7881218.551
2643.5021218.4362646.8521218.4342667.403 1218.652678.2491218.4652701.0911218.254
2702.3621218.2372702.9471218.2312703.9121218.2192731.5321218.3622739.2331217.969
2747.4581217.9122760.3011218.1972773.9771218.0792787.6051217.9252801.1811217.763
2814.6711217.6932819.5241217.5862826.5771217.7262836.4171217.6332845.7731217.743
2856.3861217.7312863.6761217.7242879.1581217.7512889.3541217.8982908.7091217.861
2917.8541217.783 2927.241217.5932948.0711217.516 2957.471217.397 2973.481217.345
2981.8311217.3182988.1661217.3313004.2951217.2773009.3131217.3923015.7591217.503
3023.8411217.592 3030.891217.5143049.466 1217.453058.4391217.4273078.1011217.345
3084.6541217.366 3090.731217.3513118.1951217.3193121.0121217.1783129.9741217.069
3140.1521216.9993145.7931217.0893149.7341216.6393152.0861216.3273154.3221215.725
 3156.651215.8983162.5881216.075  3164.3 1216.153168.2631216.1513178.7581216.346
3189.8671216.5343194.986  1216.63205.8531216.626  3208.41216.673 3211.741216.701
3221.7641216.5623224.6451216.761 3239.741216.7643274.358   12173282.9361216.999
3291.4141215.8973298.3631215.9273314.3851215.8053314.9061215.7853335.4331215.547
3343.1321215.5023346.5931215.4083365.471 1215.423368.9231215.4863377.4151215.451
3383.5731215.519 3387.251215.5263392.368 1215 573396.753 1215.633400.4751215.621
3421.2931215.8583438.2971215.8393449.5821215.866 3467.81 1215 843480.6011215.907
 3493.66 1216.033508.4431216.2163520.5371216.1853532.7141216.2363546.2371216.321
  3558.1 1216 273584.5111215.8233592.685 1215.753596.9811215.4763602.6211214.876
3603.0611214.8413603.5061214.8863611.5851215.6393613.0611215.6433617.1881215.665
3629.0751215.6733637.3631215.736 3658.031215.6663672.2621215.5213685.8821215.406
3712.6581215.379 3723.981215.3783738.1451215.5353759.2841215.7113774.6521215.708
 3793.66 1215.783815.5421215.8163828.2981215.6783851.0241215.6053865.032  1215.6
3878.7731215.5663897.499 1215.553908.6091215.4393927.3871215.4163943.6291215 351
3955.4641215.4163972.2431215.4163985.6581215.4764003.2731215.479 4018.381215.209
4032.1291214.939 4042 83 1214 814046.8621214.6344056.191 1214.254057.1771214.213
4057.9791214.2454071.8081214.4484081.5711214.6984108.8691214.8624125.702 1214.94
4147.5081214.6554171.9131214.6024194.1071214.7544212.282  1214.84229.8021214.862
4246.0921214.8594271.0991214.9264285.0151214.8534298.2891214.8354314.704 1214.85
4328.3511214.8684335.4841215.0644349.4961215.6854357.1041215.5434367.279 1214.74
4389.5331214.7724390.4381214.7624390.9661214.7184392.6161214.5964406.803  1212.7
4408.943  1212.74421.626  1212.74430.169  1212.74447.2741215.5614449.7351215.835
 4450.091215.8474450.1941215.8514451.0471215.8344456.8361215.891 4467.84  1215.6
4474.374 1215.444475.2661215.4274484.7991215.0564486.9381214.9814488.4731214.984
4511.7591215.1394517.2251215.0594539.7041215.2394544.0731215.261 4558.031215 109
4565.5831215.0164565.9641215.0354589.5781214.9424589.6311214.9434589.6811214.942
4596.3151214.9564613.7821214.9934614.4281214.9974643.6991215.3474647.9971215.225
4656.9871215.1654661.4461215.0194684.767  1212.74686.413  1212.74686.583  1212.7
 4687.54  1212.74697.552  1212.74701.972  1212.74719.091  1212.74724.7051213.801
4731.9161214.894 4739.881214.4754753.6911214.5124759.9731214.7244762.6211214.589
4766.6561214.5684770.883 1214.614780.6511214.7044796.0371214.7184814.2971214.718
4825.9221214.6684847.3691214.7194858.5711214.8054884.8031214.9214893.9931215.034
4910.5891215.243 4923.431215.2054943.5351215.0564946.5011215.0454946.8831215.028
4955.1921214.6364960.175  1212.74962.385  1212.74966.986  1212.74968.355  1212.7
    5001  1212.75005.404  1212.7 5015.691218.247 5020.571220.2615038.4671220.286
5038.8871220.2765039.9461220.0925059.7821216.6845069.638 1215.995075.0371215.614
5099.6691215.4045103.8611215.3255109.4531215.3715115.0511215.279 5139.291215.593
5146.004 1216.525151.0221217.1635157.6911217.1045165.0851217.0225170.4871215.351
5177.1141214.9685182.159 1215.425186.865 1215.495195.3861215.5845215.0911215.859
5221.9571215.4365231.2091215.3265247.7771215.143 5251.461215.1565304.997 1214.93
5312.2621214.9975353.1061214.9965353.2671214.9965391.7841215.5035396.6291215.465
5405.9221215.6845413.8161215.6575425.2321215.8875442.2741216.1885454.2751216.292
5455.8771216.3255471.2381217.379 5479.571218.0565494.1771219.2895503.4371220.022
5518.4171221.0415533.2771219.2585551.7991217.4295558.8721216.7425560.138 1216.47
5575.306 1216.075591.5321216.1665607.394 1216.195616.8691216.1815647.2921216.249
5649.7321216.2545661.2171216.2585692.2311216.5925698.3111216.6525734.4241216.974
5740.7051217.082 5771.041217.3785783.9021217.747 5805.541218.223 5832.421219.003
5836.5721219.1535857.4331219.9825862.6211220.018 5865.141220.0585875.7921220.223
5922.2381220.9495930.7561220.9965959.6871221.624  5975.71220.9385979.5941220.833
5982.7531220.7575984.3761220.682
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1837.586	.035	4349.496	.035	5020.57	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
4349.496	5020.57	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1215.53	Element			
Vel Head (ft)	3.83	Wt. n-Val.	0.035	0.035	0.035
E.G. Elev (ft)	1219.35	Reach Len. (ft)			
Crit W.S. (ft)	1216.38	Flow Area (sq ft)	267.39	672.25	81.09
E.G. Slope (ft/ft)	0.147690	Area (sq ft)	267.39	672.25	81.09
Q Total (cfs)	15000.00	Flow (cfs)	2888.73	11441.56	669.71
Top Width (ft)	1451.86	Top Width (ft)	574.54	629.21	248.11
Vel Total (ft/s)	14.70	Avg. Vel. (ft/s)	10.80	17.02	8.26
Max Chl Dpth (ft)	2.83	Hydr. Depth (ft)	0.47	1.07	0.33
Conv. Total (cfs)	39031.6	Conv. (cfs)	7516.8	29772.1	1742.7
Length Wtd. (ft)		Wetted Per. (ft)	574.65	630.96	248.18
Min Ch El (ft)	1212.70	Shear (lb/sq ft)	4.29	9.82	3.01
Alpha	1.14	Stream Power (lb/ft s)	46.35	167.20	24.88
Frctn Loss (ft)	0.89	Cum Volume (acre-ft)			
C & E Loss (ft)	0.33	Cum SA (acres)			

Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

SUMMARY OF MANNING'S N VALUES

River:Harquahala

Reach	River Sta.	n1	n2	n3	n4	n5
Upper Reach A	20.0000	.03	.03	.03		
Upper Reach A	19.9735	.03	.031	.03		
Upper Reach A	19.9458	.035	.085	.035		
Upper Reach A	19.9052	.035	.085	.035		
Upper Reach A	19.8387	.035	.085	.035		
Upper Reach A	19.8173	.035	.085	.035		
Upper Reach B	19.7349	.035	.085	.035		
Upper Reach B	19.6465	.035	.085	.035		
Upper Reach B	19.5602	.035	.085	.035		
Upper Reach B	19.4887	.035	.085	.035		
Upper Reach B	19.3761	.035	.085	.035		
Upper Reach B	19.2665	.035	.085	.035		
Upper Reach B	19.1607	.035	.085	.035		
Upper Reach B	19.0557	.035	.085	.035		
Split1	19.6872	.035	.065	.035		
Split1	19.6513	.035	.065	.035		
Split1	19.5997	.035	.065	.035		
Split1	19.5616	.035	.065	.035		
Split1	19.5223	.035	.065	.035		
Split1	19.4869	.035	.065	.035		
Split1	19.3980	.035	.065	.035	.065	.035
Split 1A	19.3216	.035	.065	.035		
Split 1A	19.2398	.035	.065	.035		
Split 1A	19.1676	.035	.065	.035		
Split 1A	19.0811	.035	.065	.035		
Split 1A	18.9967	.035	.065	.035		
Split 1A	18.9165	.035	.065	.035		
Split 1B	19.3158	.035	.065	.035		
Split 1B	19.2400	.035	.065	.035		
Split 1B	19.1631	.035	.065	.035		
Split 1B	19.0836	.035	.065	.035		
Split 1B	19.0153	.035	.065	.035		
Split 1B	18.9337	.035	.065	.035		
Split 1B	18.8560	.035	.065	.035		
Split 1B	18.7744	.035	.065	.035		
Split 1B	18.7184	.035	.065	.035		
Split 1B	18.6384	.035	.065	.035		
Split 1B	18.5485	.035	.065	.035		
Upper Mid Reach	18.9676	.035	.085	.035		
Upper Mid Reach	18.8526	.035	.085	.035		
Upper Mid Reach	18.7424	.035	.085	.035		
Upper Mid Reach	18.6296	.035	.085	.035		
Lower Mid Reach	18.5237	.035	.085	.035		
Lower Mid Reach	18.3861	.035	.085	.035		
Lower Mid Reach	18.2834	.035	.085	.035		
Lower Mid Reach	18.1956	.035	.085	.035		
Lower Mid Reach	18.0888	.035	.085	.035		
Lower Mid Reach	17.9877	.035	.085	.035		
Lower Mid Reach	17.8771	.035	.085	.035		
Lower Mid Reach	17.7710	.035	.085	.035		
Lower Mid Reach	17.6702	.035	.085	.035		
Split2	17.5883	.035	.075	.035		
Split2	17.4913	.035	.075	.035		
Split2	17.3965	.035	.075	.035		
Split2	17.1420	.035	.075	.035		
Lower Reach	17.5767	.035	.085	.035		
Lower Reach	17.4734	.035	.085	.035		
Lower Reach	17.3602	.035	.085	.035		
Lower Reach	17.2691	.035	.085	.035		
Lower Reach	17.1738	.035	.085	.035		
Lower Reach	17.0788	.035	.085	.035		
Lower Reach	16.9865	.035	.085	.035		
I-10 Reach	16.8902	.035	.085	.035		
I-10 Reach	16.7885	.035	.085	.035		
I-10 Reach	16.7242	.035	.085	.035		
I-10 Reach	16.7087	.035	.03	.035		
I-10 Reach	16.7017	Culvert				
I-10 Reach	16.6948	.035	.03	.035		
I-10 Reach	16.6789	.035	.035	.035		
I-10 Reach	16.6642	.035	.03	.035		
I-10 Reach	16.6556	Culvert				
I-10 Reach	16.6470	.035	.03	.035		
I-10 Reach	16.6361	.035	.035	.035		

SUMMARY OF REACH LENGTHS

River: Harquahala

Reach	River Sta.	Left	Channel	Right
Upper Reach A	20.0000	140	140	140
Upper Reach A	19.9735	139	146.2242	139
Upper Reach A	19.9458	149	214.1756	183
Upper Reach A	19.9052	305	351.3504	259
Upper Reach A	19.8387	100	113.028	166
Upper Reach A	19.8173	347	435.1131	500
Upper Reach B	19.7349	398	466.6451	399

Upper Reach B	19.6465	521	455.3716	397
Upper Reach B	19.5602	375	377.9404	331
Upper Reach B	19.4887	570	594.3238	517
Upper Reach B	19.3761	578	578.96	500
Upper Reach B	19.2665	534	558.4567	540
Upper Reach B	19.1607	422	554.2729	519
Upper Reach B	19.0557	446	465.0548	437
Split1	19.6872	167	189.4667	230
Split1	19.6513	194	272.8215	298
Split1	19.5997	166	200.6815	260
Split1	19.5616	175	207.8089	272
Split1	19.5223	178	186.7914	295
Split1	19.4869	459	469.5331	543
Split1	19.3980	399	433.8286	377
Split 1A	19.3216	338	431.8443	325
Split 1A	19.2398	377	381.3855	359
Split 1A	19.1676	441	456.6185	438
Split 1A	19.0811	421	445.8344	442
Split 1A	18.9967	407	423.507	419
Split 1A	18.9165	354	346.1658	218
Split 1B	19.3158	371	400.1655	350
Split 1B	19.2400	384	406.012	396
Split 1B	19.1631	390	419.9715	385
Split 1B	19.0836	337	360.4106	372
Split 1B	19.0153	395	431.1926	422
Split 1B	18.9337	391	410.0502	393
Split 1B	18.8560	365	431.1373	427
Split 1B	18.7744	292	295.6265	292
Split 1B	18.7164	378	422.3776	347
Split 1B	18.6384	452	474.4267	303
Split 1B	18.5485	660	632.2013	440
Upper Mid Reach	18.9676	559	607.2768	521
Upper Mid Reach	18.8526	533	581.9578	508
Upper Mid Reach	18.7424	586	595.6793	540
Upper Mid Reach	18.6296	501	559.1249	525
Lower Mid Reach	18.5237	690	726.5636	654
Lower Mid Reach	18.3861	520	542.3258	497
Lower Mid Reach	18.2834	460	463.5521	404
Lower Mid Reach	18.1956	511	563.677	427
Lower Mid Reach	18.0888	557	533.7156	426
Lower Mid Reach	17.9877	523	584.0225	526
Lower Mid Reach	17.8771	446	560.1197	525
Lower Mid Reach	17.7710	400	532.6463	445
Lower Mid Reach	17.6702	558	493.6868	475
Split2	17.5883	439	512.2301	523
Split2	17.4913	434	500.395	490
Split2	17.3965	993	1343.966	1000
Split2	17.1420	490	262.0117	645
Lower Reach	17.5767	340	545.0853	555
Lower Reach	17.4734	491	598.031	608
Lower Reach	17.3602	401	480.8423	450
Lower Reach	17.2691	423	503.3689	495
Lower Reach	17.1738	380	501.3424	530
Lower Reach	17.0788	348	487.5188	495
Lower Reach	16.9865	281	508.1319	548
I-10 Reach	16.8902	356	537.2477	602
I-10 Reach	16.7885	361	339.3988	273
I-10 Reach	16.7242	70	81.5588	71
I-10 Reach	16.7087	62	73.6675	62
I-10 Reach	16.7017	Culvert		
I-10 Reach	16.6948	88	101.2588	86
I-10 Reach	16.6789	67	77.7151	68
I-10 Reach	16.6642	76	90.3017	79
I-10 Reach	16.6556	Culvert		
I-10 Reach	16.6470	38	57.874	52
I-10 Reach	16.6361	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Harquahala

Reach	River Sta.	Contr.	Expan.
Upper Reach A	20.0000	.1	.3
Upper Reach A	19.9735	.1	.3
Upper Reach A	19.9458	.1	.3
Upper Reach A	19.9052	.1	.3
Upper Reach A	19.8387	.1	.3
Upper Reach A	19.8173	.1	.3
Upper Reach B	19.7349	.1	.3
Upper Reach B	19.6465	.1	.3
Upper Reach B	19.5602	.1	.3
Upper Reach B	19.4887	.1	.3
Upper Reach B	19.3761	.1	.3
Upper Reach B	19.2665	.1	.3
Upper Reach B	19.1607	.1	.3
Upper Reach B	19.0557	.1	.3
Split1	19.6872	.1	.3
Split1	19.6513	.1	.3
Split1	19.5997	.1	.3
Split1	19.5616	.1	.3
Split1	19.5223	.1	.3
Split1	19.4869	.1	.3
Split1	19.3980	.1	.3
Split 1A	19.3216	.1	.3
Split 1A	19.2398	.1	.3
Split 1A	19.1676	.1	.3
Split 1A	19.0811	.1	.3

Split 1A	18.9967		.1	.3
Split 1A	18.9165		.1	.3
Split 1B	19.3158		.1	.3
Split 1B	19.2400		.1	.3
Split 1B	19.1631		.1	.3
Split 1B	19.0836		.1	.3
Split 1B	19.0153		.1	.3
Split 1B	18.9337		.1	.3
Split 1B	18.8560		.1	.3
Split 1B	18.7744		.1	.3
Split 1B	18.7184		.1	.3
Split 1B	18.6384		.1	.3
Split 1B	18.5485		.1	.3
Upper Mid Reach	18.9676		.1	.3
Upper Mid Reach	18.8528		.1	.3
Upper Mid Reach	18.7424		.1	.3
Upper Mid Reach	18.6296		.1	.3
Lower Mid Reach	18.5237		.1	.3
Lower Mid Reach	18.3861		.1	.3
Lower Mid Reach	18.2834		.1	.3
Lower Mid Reach	18.1956		.1	.3
Lower Mid Reach	18.0888		.1	.3
Lower Mid Reach	17.9877		.1	.3
Lower Mid Reach	17.8771		.1	.3
Lower Mid Reach	17.7710		.1	.3
Lower Mid Reach	17.6702		.1	.3
Split2	17.5883		.1	.3
Split2	17.4913		.1	.3
Split2	17.3965		.1	.3
Split2	17.1420		.1	.3
Lower Reach	17.5767		.1	.3
Lower Reach	17.4734		.1	.3
Lower Reach	17.3602		.1	.3
Lower Reach	17.2691		.1	.3
Lower Reach	17.1738		.1	.3
Lower Reach	17.0788		.1	.3
Lower Reach	16.9865		.1	.3
I-10 Reach	16.8902		.1	.3
I-10 Reach	16.7885		.1	.3
I-10 Reach	16.7242		.1	.3
I-10 Reach	16.7087		.1	.3
I-10 Reach	16.7017	Culvert		
I-10 Reach	16.6948		.1	.3
I-10 Reach	16.6789		.1	.3
I-10 Reach	16.6642		.1	.3
I-10 Reach	16.6556	Culvert		
I-10 Reach	16.6470		.1	.3
I-10 Reach	16.6361		.1	.3

Profile Output Table - Standard Table 1

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)	
Upper Reach A	20.0000	15000.00	1410.36	1417.15	1417.15	1420.56	0.007751	14.81	1012.96		150.12
Upper Reach A	19.9735	15000.00	1390.09	1392.63	1396.38	1415.60	0.247363	38.46	389.98		190.07
Upper Reach A	19.9458	15000.00	1389.05	1395.21	1396.12	1398.47	0.037887	9.83	1073.14		376.92
Upper Reach A	19.9052	15000.00	1379.10	1390.45	1390.70	1392.17	0.026633	9.95	1455.18		611.34
Upper Reach A	19.8387	15000.00	1374.30	1382.96	1383.19	1384.21	0.026707	8.08	1727.69		999.85
Upper Reach A	19.8173	15000.00	1372.55	1379.73	1379.71	1380.73	0.015052	5.02	1992.71		988.77
Upper Reach B	19.7349	13750.00	1366.33	1372.70	1372.69	1374.02	0.018842	7.63	1512.16		600.70
Upper Reach B	19.6465	13750.00	1359.85	1366.67	1366.67	1367.67	0.012573	6.24	1735.79		668.20
Upper Reach B	19.5602	13750.00	1353.58	1358.22	1358.54	1360.12	0.018282	5.85	1314.08		464.36
Upper Reach B	19.4887	13750.00	1347.87	1352.41	1352.62	1353.91	0.014949	5.34	1425.81		540.66
Upper Reach B	19.3761	13750.00	1340.81	1343.01	1343.14	1343.96	0.019862	3.47	1780.59		1191.26
Upper Reach B	19.2665	13750.00	1331.06	1333.87	1334.08	1334.79	0.014669	2.36	1975.59		1438.28
Upper Reach B	19.1607	13750.00	1324.61	1326.07	1326.09	1326.77	0.014930	1.76	2069.71		1539.31
Upper Reach B	19.0557	13750.00	1315.79	1318.57	1318.77	1319.39	0.016524	3.07	2059.69		1850.75
Split1	19.6872	1250.00	1372.00	1375.42	1374.94	1375.74	0.015080	4.54	275.37	171.82	0.63
Split1	19.6513	1250.00	1369.17	1372.39	1371.85	1372.63	0.017690	3.95	316.63	213.75	0.57
Split1	19.5997	1250.00	1365.14	1369.67	1368.15	1369.81	0.006628	3.10	403.64	187.16	0.37
Split1	19.5616	1250.00	1363.27	1367.50	1366.95	1367.71	0.018897	3.71	336.77	261.79	0.58
Split1	19.5223	1250.00	1360.68	1364.68		1364.89	0.010100	3.68	339.92	167.19	0.45
Split1	19.4869	1250.00	1357.30	1362.40	1361.35	1362.74	0.013078	4.69	266.27	109.64	0.53
Split1	19.3980	1250.00	1352.11	1354.76	1354.36	1355.05	0.021159	4.33	288.67	220.84	0.67
Split 1A	19.3216	190.00	1346.76	1348.29	1347.73	1348.38	0.007577	2.14	83.28	87.27	0.36
Split 1A	19.2398	190.00	1341.01	1342.41	1342.25	1342.53	0.033636	2.82	67.38	122.00	

0.67											
Split 1A	19.1676	190.00	1336.01	1336.61	1336.44	1336.75	0.008691	0.98	66.40	116.79	
0.31											
Split 1A	19.0811	190.00	1327.96	1329.80	1329.80	1330.02	0.032221	3.92	53.11	120.68	
0.71											
Split 1A	18.9967	190.00	1321.21	1322.96	1322.67	1323.05	0.008520	2.03	82.41	139.58	
0.37											
Split 1A	18.9165	190.00	1314.34	1315.99	1315.99	1316.26	0.042339	4.13	44.98	82.01	
0.80											
Split 1B	19.3158	1060.00	1346.28	1348.19	1348.17	1348.38	0.011059	2.91	307.74	373.23	
0.44											
Split 1B	19.2400	1060.00	1339.34	1342.04	1342.04	1342.41	0.025987	5.14	215.64	289.92	
0.70											
Split 1B	19.1631	1060.00	1334.12	1336.15	1336.15	1336.45	0.025462	3.92	242.46	424.16	
0.65											
Split 1B	19.0836	1060.00	1324.91	1328.60	1328.37	1328.81	0.012112	2.90	299.36	414.67	
0.46											
Split 1B	19.0153	1060.00	1320.41	1322.56	1322.56	1322.91	0.022026	3.62	224.07	317.82	
0.60											
Split 1B	18.9337	1060.00	1314.24	1316.66	1316.45	1316.83	0.009379	2.63	328.47	441.59	
0.40											
Split 1B	18.8560	1060.00	1309.33	1311.58	1311.58	1311.84	0.017015	3.16	256.96	374.78	
0.53											
Split 1B	18.7744	1060.00	1304.12	1305.66	1305.43	1305.81	0.009247	1.75	336.40	481.00	
0.36											
Split 1B	18.7184	1060.00	1300.43	1301.66	1301.66	1301.98	0.020042	2.26	240.20	380.29	
0.52											
Split 1B	18.6384	1060.00	1295.32	1297.00	1296.74	1297.16	0.007625	1.76	332.15	419.75	
0.34											
Split 1B	18.5485	1060.00	1290.17	1292.44	1292.44	1292.69	0.026160	3.82	267.47	530.32	
0.66											
Upper Mid Reach	18.9676	13940.00	1309.70	1312.59	1312.59	1313.23	0.015161	2.33	2295.82		
2049.68	0.39										
Upper Mid Reach	18.8526	13940.00	1302.10	1305.61	1305.46	1306.06	0.010821	2.53	2697.86		
2147.07	0.35										
Upper Mid Reach	18.7424	13940.00	1294.41	1298.38	1298.38	1299.04	0.017337	4.31	2167.99		
1695.66	0.47										
Upper Mid Reach	18.6296	13940.00	1287.21	1291.72	1291.33	1292.11	0.007821	3.29	2839.54		
1920.38	0.33										
Lower Mid Reach	18.5237	15000.00	1282.22	1286.13	1286.03	1286.82	0.011408	3.33	2404.36		
1589.96	0.38										
Lower Mid Reach	18.3861	15000.00	1277.51	1279.70		1280.18	0.008765	2.31	2774.00		
1840.33	0.31										
Lower Mid Reach	18.2834	15000.00	1272.75	1274.37	1274.30	1274.94	0.012714	1.94	2530.91		
1938.88	0.34										
Lower Mid Reach	18.1956	15000.00	1267.06	1270.48		1270.88	0.007722	2.43	2996.08		
1967.82	0.30										
Lower Mid Reach	18.0888	15000.00	1262.50	1266.00	1265.86	1266.50	0.012456	3.79	2647.65		
1984.99	0.40										
Lower Mid Reach	17.9877	15000.00	1256.92	1261.77		1262.10	0.006350	3.07	3298.88		
2148.76	0.29										
Lower Mid Reach	17.8771	15000.00	1252.57	1256.64	1256.62	1257.24	0.014330	3.59	2481.63		
1993.48	0.42										
Lower Mid Reach	17.7710	15000.00	1249.90	1252.15	1251.81	1252.46	0.007501	1.50	3338.52		
2481.29	0.27										
Lower Mid Reach	17.6702	15000.00	1243.94	1248.30	1248.15	1248.68	0.011390	3.38	3048.68		
2648.66	0.38										
Split2	17.5883	1980.00	1239.27	1243.93	1243.13	1244.10	0.004615	2.32	633.87	391.32	
0.27											
Split2	17.4913	1980.00	1233.18	1238.97	1238.97	1239.44	0.034544	4.63	368.80	410.21	
0.67											
Split2	17.3965	1980.00	1225.15	1235.32	1234.04	1235.47	0.002556	2.74	700.28	573.25	
0.21											
Split2	17.1420	1980.00	1224.41	1225.98	1225.98	1226.36	0.091932	4.93	401.53	539.79	
1.01											
Lower Reach	17.5767	13020.00	1239.92	1243.80	1243.47	1244.06	0.007546	2.64	3202.50	2675.62	
0.31											
Lower Reach	17.4734	13020.00	1236.37	1240.30		1240.63	0.009341	2.66	2959.00	2687.62	
0.33											
Lower Reach	17.3602	13020.00	1233.27	1236.43	1236.03	1236.65	0.005936	2.23	3519.62	2919.11	
0.27											
Lower Reach	17.2691	13020.00	1230.19	1232.91	1232.74	1233.25	0.011516	2.39	2782.68	2635.51	
0.35											
Lower Reach	17.1738	13020.00	1226.04	1229.90		1230.09	0.004560	1.95	3773.44	2806.36	
0.23											
Lower Reach	17.0788	13020.00	1223.69	1226.16	1226.16	1226.68	0.015612	2.74	2258.97	2139.84	
0.40											
Lower Reach	16.9865	13020.00	1220.28	1225.41	1223.30	1225.46	0.000614	1.10	7432.48	3342.66	
0.10											
I-10 Reach	16.8902	15000.00	1217.58	1225.33	1221.71	1225.35	0.000110	0.61	14849.74	4314.61	
0.04											
I-10 Reach	16.7885	15000.00	1215.86	1225.32	1219.62	1225.32	0.000024	0.35	24128.41	4579.12	
0.02											
I-10 Reach	16.7242	15000.00	1214.57	1225.31	1218.03	1225.32	0.000012	0.26	29472.13	4333.54	
0.02											
I-10 Reach	16.7087	15000.00	1214.30	1225.28	1222.77	1225.31	0.000175	1.85	12144.87	4522.47	
0.15											
I-10 Reach	16.7017	Culvert									
I-10 Reach	16.6948	15000.00	1214.07	1225.15		1225.19	0.000212	2.04	11280.81	4487.37	
0.16											
I-10 Reach	16.6789	15000.00	1213.73	1225.18		1225.18	0.000006	0.46	38139.28	5148.32	
0.03											
I-10 Reach	16.6642	15000.00	1213.20	1225.16	1221.57	1225.18	0.000081	1.45	16016.76	4868.48	
0.10											
I-10 Reach	16.6556	Culvert									
I-10 Reach	16.6470	15000.00	1212.97	1220.08	1220.08	1220.59	0.005765	6.95	3195.10	2552.92	
0.76											
I-10 Reach	16.6361	15000.00	1212.70	1215.53	1216.38	1219.35	0.147690	17.02	1020.72	1451.86	
2.90											

Profile Output Table - Standard Table 1

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)	
Upper Reach A	20.0000	15000.00	1410.36	1417.15	1417.15	1420.56	0.007751	14.81	1012.96		1.00
Upper Reach A	19.9735	15000.00	1390.09	1392.63	1396.38	1415.60	0.247363	38.46	389.98		4.73
Upper Reach A	19.9458	15000.00	1389.05	1395.21	1396.12	1398.47	0.037887	9.83	1073.14		0.78
Upper Reach A	19.9052	15000.00	1379.10	1390.45	1390.70	1392.17	0.026633	9.95	1455.18		0.67
Upper Reach A	19.8387	15000.00	1374.30	1382.96	1383.19	1384.21	0.026707	8.08	1727.69		0.65
Upper Reach A	19.8173	15000.00	1372.55	1379.73	1379.71	1380.73	0.015052	5.02	1992.71		0.47
Upper Reach B	19.7349	13750.00	1366.33	1372.70	1372.69	1374.02	0.018842	7.63	1512.16		0.56
Upper Reach B	19.6465	13750.00	1359.85	1366.67	1366.67	1367.67	0.012573	6.24	1735.79		0.46
Upper Reach B	19.5602	13750.00	1353.58	1358.22	1358.54	1360.12	0.018282	5.85	1314.08		0.52
Upper Reach B	19.4887	13750.00	1347.87	1352.41	1352.62	1353.91	0.014949	5.34	1425.81		0.47
Upper Reach B	19.3761	13750.00	1340.81	1343.01	1343.14	1343.96	0.019862	3.47	1780.59		0.47
Upper Reach B	19.2665	13750.00	1331.06	1333.87	1334.08	1334.79	0.014669	2.36	1975.59		0.38
Upper Reach B	19.1607	13750.00	1324.61	1326.07	1326.09	1326.77	0.014930	1.76	2069.71		0.36
Upper Reach B	19.0557	13750.00	1315.79	1318.57	1318.77	1319.39	0.016524	3.07	2059.69		0.42
Split1	19.6872	1250.00	1372.00	1375.42	1374.94	1375.74	0.015080	4.54	275.37	171.82	0.63
Split1	19.6513	1250.00	1369.17	1372.39	1371.85	1372.63	0.017690	3.95	316.63	213.75	0.57
Split1	19.5997	1250.00	1365.14	1369.67	1368.15	1369.81	0.006628	3.10	403.64	187.16	0.37
Split1	19.5616	1250.00	1363.27	1367.50	1366.95	1367.71	0.018897	3.71	336.77	261.79	0.58
Split1	19.5223	1250.00	1360.68	1364.68		1364.89	0.010100	3.68	339.92	167.19	0.45
Split1	19.4869	1250.00	1357.30	1362.40	1361.35	1362.74	0.013078	4.69	266.27	109.64	0.53
Split1	19.3980	1250.00	1352.11	1354.76	1354.36	1355.05	0.021159	4.33	288.67	220.84	0.67
Split 1A	19.3216	190.00	1346.76	1348.29	1347.73	1348.38	0.007577	2.14	83.28	87.27	0.36
Split 1A	19.2398	190.00	1341.01	1342.41	1342.25	1342.53	0.033636	2.82	67.38	122.00	0.67
Split 1A	19.1676	190.00	1336.01	1336.61	1336.44	1336.75	0.008691	0.98	68.40	116.79	0.33
Split 1A	19.0811	190.00	1327.96	1329.80	1329.80	1330.02	0.032221	3.92	53.11	120.68	0.71
Split 1A	18.9967	190.00	1321.21	1322.96	1322.67	1323.05	0.008520	2.03	82.41	139.58	0.37
Split 1A	18.9165	190.00	1314.34	1315.99	1315.99	1316.26	0.042339	4.13	44.98	82.01	0.80
Split 1B	19.3158	1060.00	1346.28	1348.19	1348.17	1348.38	0.011059	2.91	307.74	371.23	0.44
Split 1B	19.2400	1060.00	1339.34	1342.04	1342.04	1342.41	0.025987	5.14	215.64	289.92	0.70
Split 1B	19.1631	1060.00	1334.12	1336.15	1336.15	1336.45	0.025462	3.92	242.46	424.16	0.65
Split 1B	19.0836	1060.00	1324.91	1328.60	1328.37	1328.81	0.012112	2.90	299.36	414.67	0.46
Split 1B	19.0153	1060.00	1320.41	1322.56	1322.56	1322.91	0.022026	3.62	224.07	317.82	0.60
Split 1B	18.9337	1060.00	1314.24	1316.66	1316.45	1316.83	0.009379	2.63	128.47	441.59	0.40
Split 1B	18.8560	1060.00	1309.33	1311.58	1311.58	1311.84	0.017015	3.16	256.96	374.78	0.53
Split 1B	18.7744	1060.00	1304.12	1305.66	1305.43	1305.81	0.009247	1.75	336.40	481.00	0.36
Split 1B	18.7184	1060.00	1300.43	1301.66	1301.66	1301.98	0.020042	2.26	240.20	380.25	0.52
Split 1B	18.6384	1060.00	1295.32	1297.00	1296.74	1297.16	0.007625	1.76	332.15	419.75	0.34
Split 1B	18.5485	1060.00	1290.17	1292.44	1292.44	1292.69	0.026160	3.82	267.47	530.32	0.66
Upper Mid Reach	18.9676	13940.00	1309.70	1312.59	1312.59	1313.23	0.015161	2.33	2295.82		2049.68	0.39
Upper Mid Reach	18.8526	13940.00	1302.10	1305.61	1305.46	1306.06	0.010821	2.53	2697.86		2147.07	0.35
Upper Mid Reach	18.7424	13940.00	1294.41	1298.38	1298.38	1299.04	0.017337	4.31	2167.99		1695.66	0.47
Upper Mid Reach	18.6296	13940.00	1287.21	1291.72	1291.33	1292.11	0.007821	1.29	2839.54		1920.38	0.33
Lower Mid Reach	18.5237	15000.00	1282.22	1286.13	1286.03	1286.82	0.011408	3.33	2404.36		1589.96	0.38
Lower Mid Reach	18.3861	15000.00	1277.51	1279.70		1280.18	0.008765	2.31	2774.00		1840.33	0.31
Lower Mid Reach	18.2834	15000.00	1272.75	1274.37	1274.30	1274.94	0.012714	1.94	2530.91		1930.88	0.34
Lower Mid Reach	18.1956	15000.00	1267.06	1270.48		1270.88	0.007722	2.43	2996.08		1967.82	0.30
Lower Mid Reach	18.0888	15000.00	1262.50	1266.00	1265.86	1266.50	0.012456	1.79	2647.65		1984.99	0.40
Lower Mid Reach	17.9877	15000.00	1256.92	1261.77		1262.10	0.006350	3.07	3298.88			

2148.76	0.29										
Lower Mid Reach	17.8771	15000.00	1252.57	1256.64	1256.62	1257.24	0.014330	3.59	2481.63		
1993.48	0.42										
Lower Mid Reach	17.7710	15000.00	1249.90	1252.15	1251.81	1252.46	0.007501	1.50	3338.52		
2481.29	0.27										
Lower Mid Reach	17.6702	15000.00	1243.94	1248.30	1248.15	1248.68	0.011390	3.38	3048.68		
2648.66	0.38										
Split2	17.5883	1980.00	1239.27	1243.93	1243.13	1244.10	0.004615	2.32	633.87	391.32	
0.27											
Split2	17.4913	1980.00	1233.18	1238.97	1238.97	1239.44	0.034544	4.63	368.80	410.21	
0.67											
Split2	17.3965	1980.00	1225.15	1235.32	1234.04	1235.47	0.002556	2.74	700.28	573.25	
0.23											
Split2	17.1420	1980.00	1224.41	1225.98	1225.98	1226.36	0.091932	4.93	401.53	539.79	
1.01											
Lower Reach	17.5767	13020.00	1239.92	1243.80	1243.47	1244.06	0.007546	2.64	3202.50	2675.62	
0.31											
Lower Reach	17.4734	13020.00	1236.37	1240.30		1240.63	0.009341	2.66	2959.00	2687.62	
0.33											
Lower Reach	17.3602	13020.00	1233.27	1236.43	1236.03	1236.65	0.005936	2.23	3519.62	2919.11	
0.27											
Lower Reach	17.2691	13020.00	1230.19	1232.91	1232.74	1233.25	0.011516	2.39	2782.68	2635.51	
0.35											
Lower Reach	17.1738	13020.00	1226.04	1229.90		1230.09	0.004560	1.95	3773.44	2806.36	
0.23											
Lower Reach	17.0788	13020.00	1223.69	1226.16	1226.16	1226.68	0.015612	2.74	2258.97	2139.84	
0.40											
Lower Reach	16.9865	13020.00	1220.26	1225.41	1223.30	1225.46	0.000614	1.10	7432.48	3342.86	
0.10											
I-10 Reach	16.8902	15000.00	1217.58	1225.33	1221.71	1225.35	0.000110	0.61	14849.74	4314.61	
0.04											
I-10 Reach	16.7885	15000.00	1215.86	1225.32	1219.62	1225.32	0.000024	0.35	24128.41	4579.12	
0.02											
I-10 Reach	16.7242	15000.00	1214.57	1225.31	1218.03	1225.32	0.000012	0.26	29472.13	4333.54	
0.02											
I-10 Reach	16.7087	15000.00	1214.30	1225.28	1222.77	1225.31	0.000175	1.85	12144.87	4522.47	
0.15											
I-10 Reach	16.7017	Culvert									
I-10 Reach	16.6948	15000.00	1214.07	1225.15		1225.19	0.000212	2.04	11280.81	4487.37	
0.16											
I-10 Reach	16.6789	15000.00	1213.73	1225.18		1225.18	0.000006	0.46	38139.28	5148.32	
0.03											
I-10 Reach	16.6642	15000.00	1213.20	1225.16	1221.57	1225.18	0.000081	1.45	16016.76	4868.48	
0.10											
I-10 Reach	16.6556	Culvert									
I-10 Reach	16.6470	15000.00	1212.97	1220.08	1220.08	1220.59	0.005765	6.95	3195.10	2552.92	
0.76											
I-10 Reach	16.6361	15000.00	1212.70	1215.53	1216.38	1219.35	0.147690	17.02	1020.72	1451.86	
2.90											

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Q=15000

River: Harquahala Reach: Upper Reach A RS: 20.0000 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Harquahala Reach: Upper Reach A RS: 19.9735 Profile: PF#1
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Upper Reach A RS: 19.9458 Profile: PF#1
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Upper Reach A RS: 19.9052 Profile: PF#1
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Upper Reach A RS: 19.8387 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Upper Reach A RS: 19.8173 Profile: PF#1
Warning - Divided flow computed for this cross-section.

Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Harquahala Reach: Upper Reach B RS: 19.7349 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Upper Reach B RS: 19.6465 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Upper Reach B RS: 19.5602 Profile: PF#1
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Program found supercritical flow starting at this cross section.
River: Harquahala Reach: Upper Reach B RS: 19.4887 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critinal depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Upper Reach B RS: 19.3761 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - Divided flow computed for this cross-section.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Upper Reach B RS: 19.2665 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Upper Reach B RS: 19.1607 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Upper Reach B RS: 19.0557 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.6872 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.6513 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Harquahala Reach: Split1 RS: 19.5997 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.5616 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split1 RS: 19.5223 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.4869 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split1 RS: 19.3980 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.3216 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.2398 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.1676 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split 1A RS: 19.0811 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split 1A RS: 18.9967 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split 1A RS: 18.9165 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split 1B RS: 19.3158 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
River: Harquahala Reach: Split 1B RS: 19.2400 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Split 1B RS: 19.1631 Profile: PF#1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1B RS: 19.0836 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Harquahala Reach: Split 1B RS: 19.0153 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1B RS: 18.9337 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split 1B RS: 18.8560 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1B RS: 18.7744 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split 1B RS: 18.7184 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split 1B RS: 18.6384 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split 1B RS: 18.5485 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Upper Mid Reach RS: 18.9676 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Harquahala Reach: Upper Mid Reach RS: 18.8526 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Harquahala Reach: Upper Mid Reach RS: 18.7424 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Harquahala Reach: Upper Mid Reach RS: 18.6296 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.5237 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.3861 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.2834 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.1956 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 18.0888 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Harquahala Reach: Lower Mid Reach RS: 17.9877 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 17.8771 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 17.7710 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Lower Mid Reach RS: 17.6702 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Harquahala Reach: Split2 RS: 17.5883 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may

indicate
the need for additional cross sections.
River: Harquahala Reach: Split2 RS: 17.4913 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Split2 RS: 17.3965 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Split2 RS: 17.1420 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning - The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahela Reach: Lower Reach RS: 17.5767 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.4734 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.3602 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.2691 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.1738 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Harquahala Reach: Lower Reach RS: 17.0788 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Harquahala Reach: Lower Reach RS: 16.9865 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.8902 Profile: PF#1
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.7242 Profile: PF#1
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.6948 Profile: PF#1
Warning - Divided flow computed for this cross-section.
Warning - The cross-section end points had to be extended vertically for the computed water surface.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Harquahala Reach: I-10 Reach RS: 16.6789 Profile: PF#1
Warning - The cross-section end points had to be extended vertically for the computed water surface.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

River: Harquahala Reach: I-10 Reach RS: 16.6556 Profile: PF#1

Warning - During subcritical analysis, while trying to calculate culvert and weir flow, the program could not get a balance of energy within the specified tolerance and number of trials. The program used the solution with the minimum error.

Warning - The flow through the culvert is supercritical. However, since there is flow over the road (weir flow), the program cannot determine if the downstream cross section should be subcritical or supercritical. The program used the downstream subcritical answer, even though it may not be valid.

River: Harquahala Reach: I-10 Reach RS: 16.6556 Profile: PF#1 Culv: Culvert #1

Warning - During the supercritical analysis, the program could not converge on a supercritical answer in the downstream cross section. The program used the solution with the least error.

Note - The flow in the culvert is entirely supercritical.

Note - During the supercritical calculations a hydraulic jump occurred at the outlet of (leaving) the culvert.

River: Harquahala Reach: I-10 Reach RS: 16.6470 Profile: PF#1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

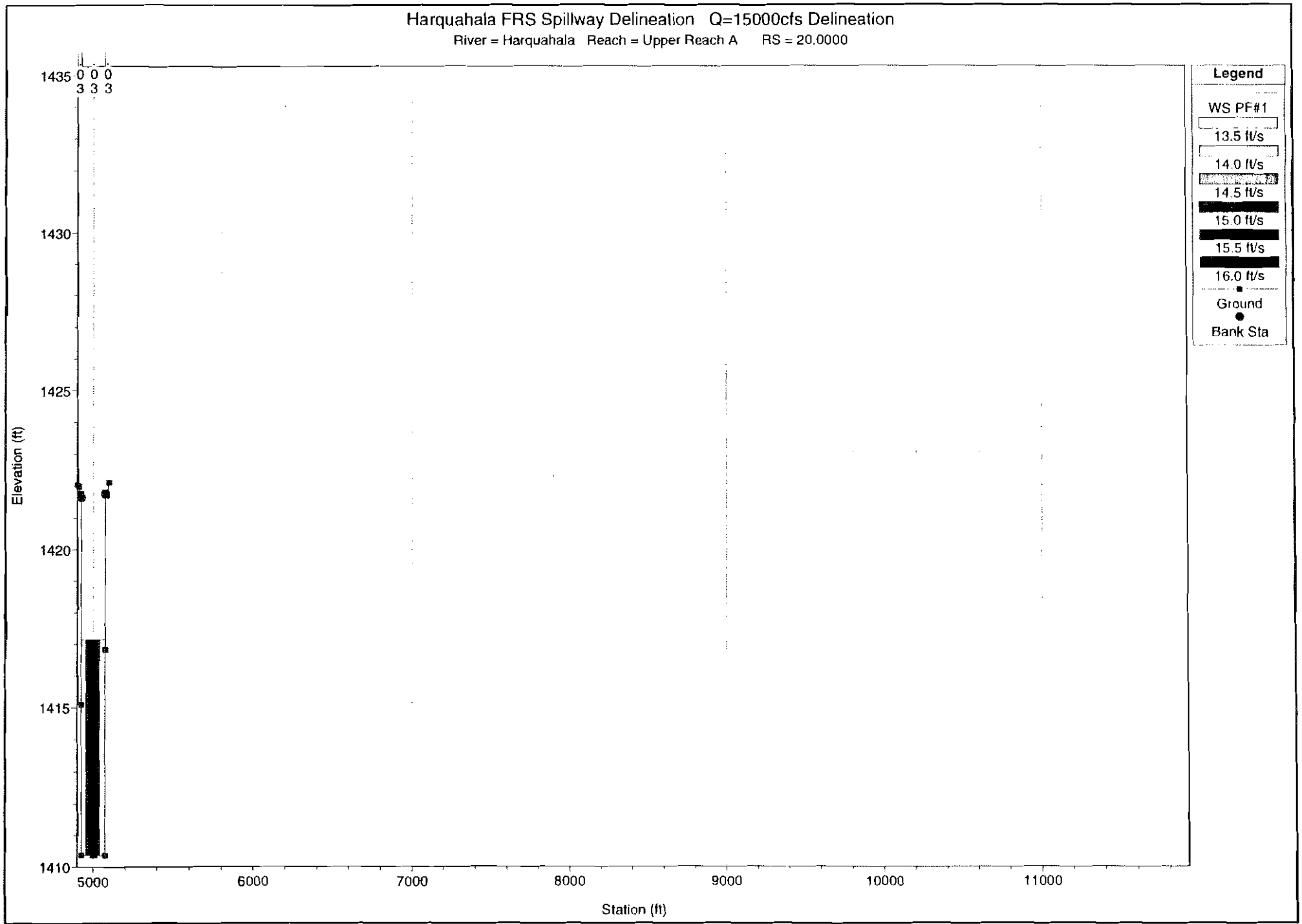
River: Harquahala Reach: I-10 Reach RS: 16.6361 Profile: PF#1

Warning - Divided flow computed for this cross-section.

Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

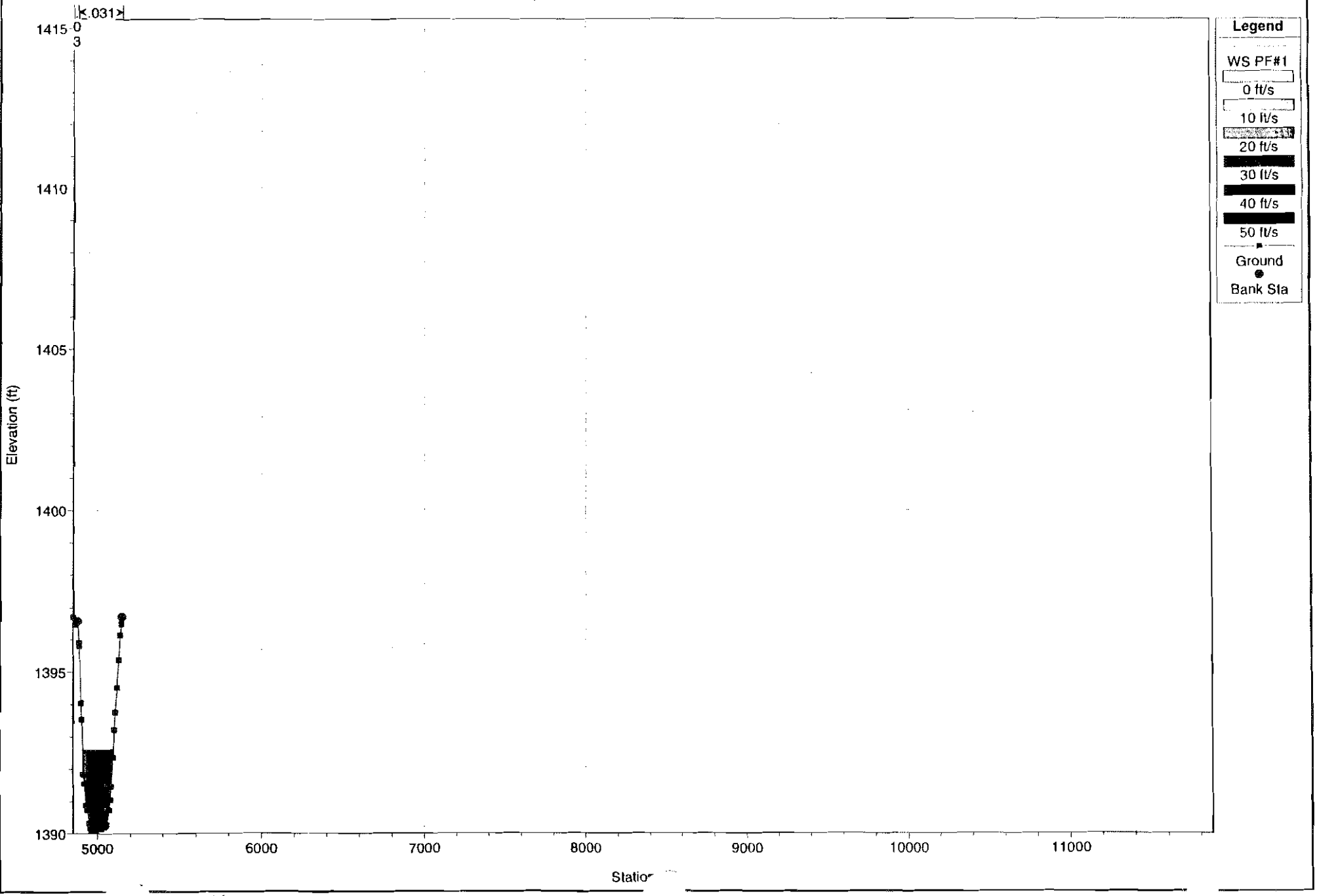
Warning - The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

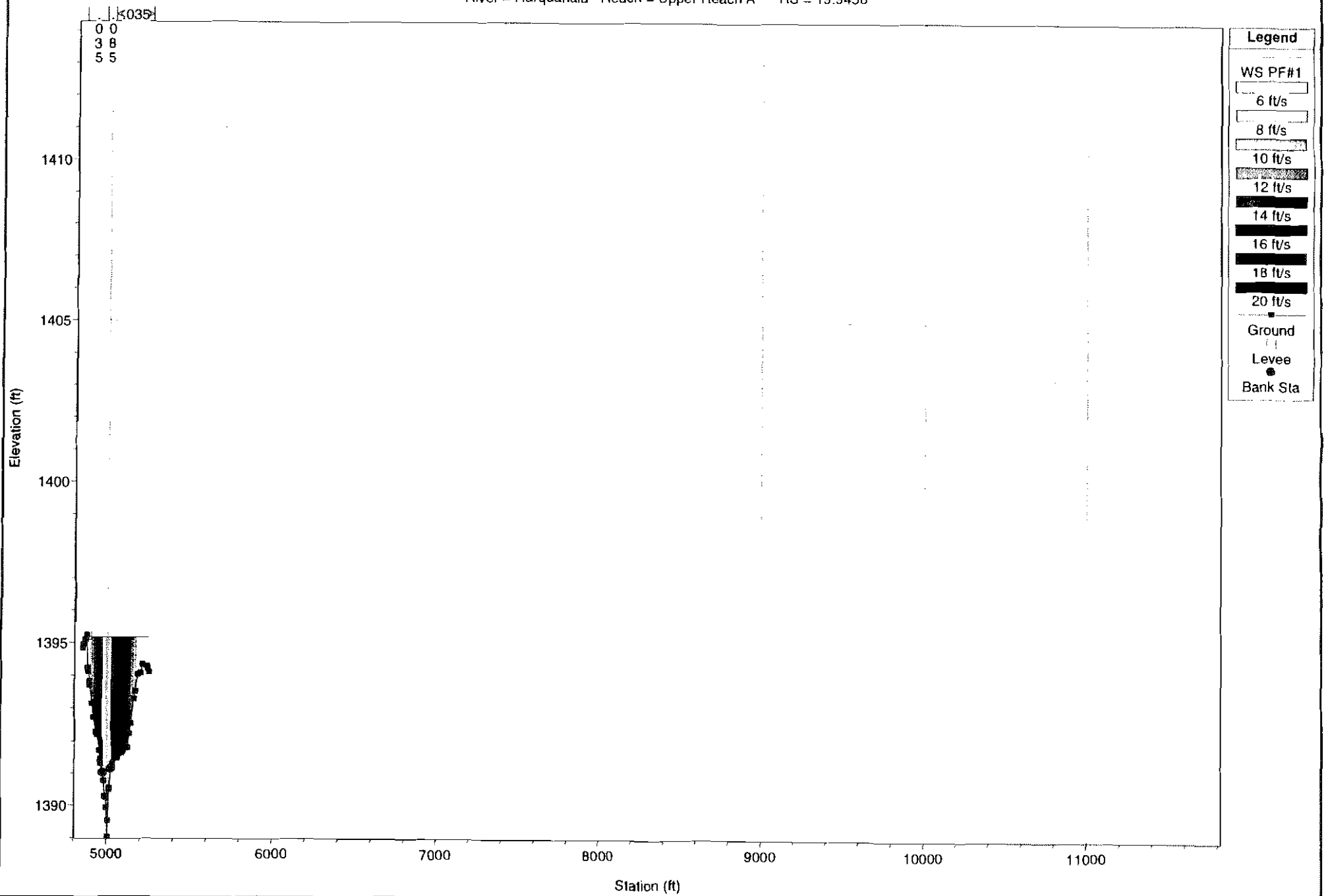
River = Harquahala Reach = Upper Reach A RS = 19.9735



1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

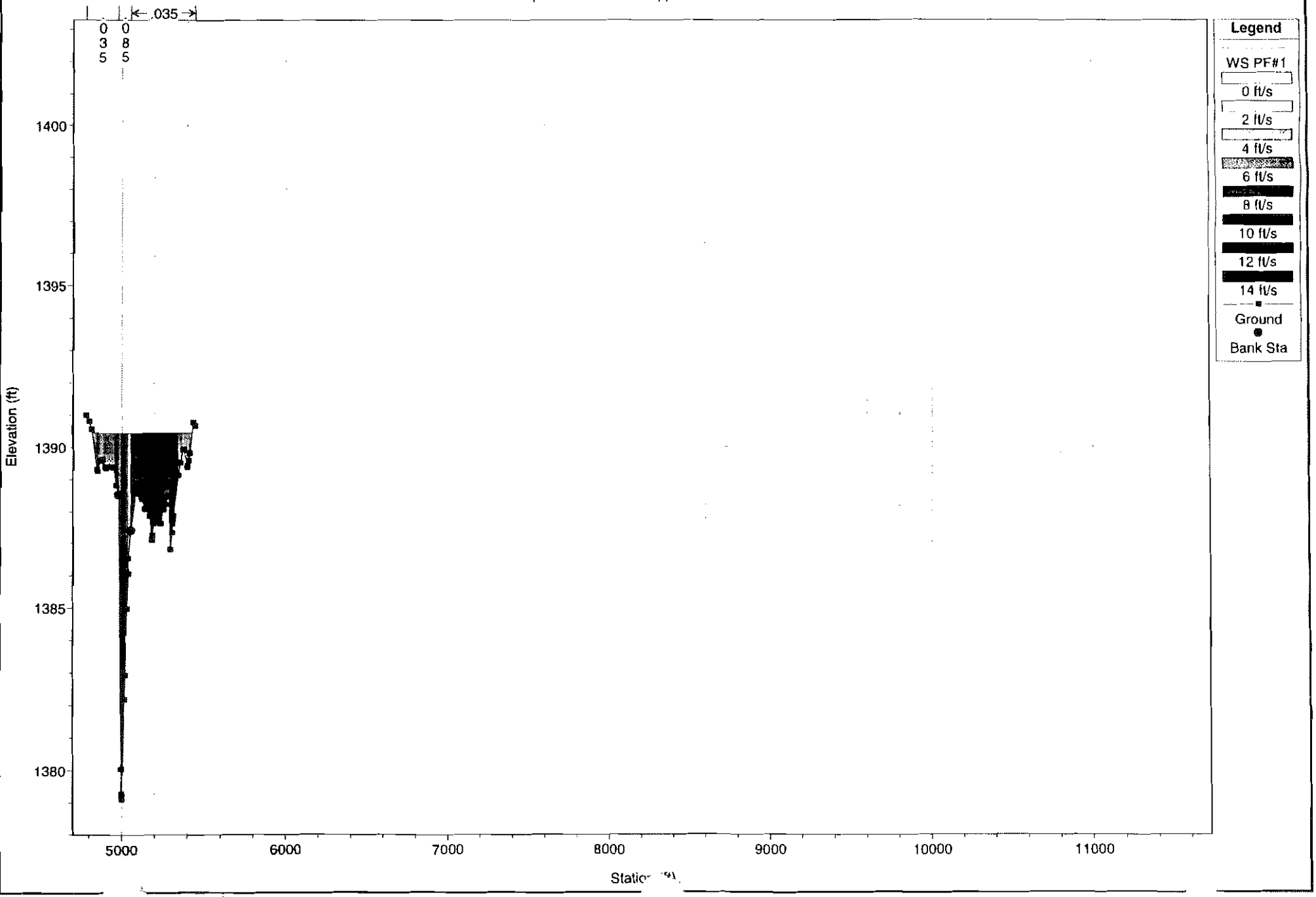
River = Harquahala Reach = Upper Reach A RS = 19.9458



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

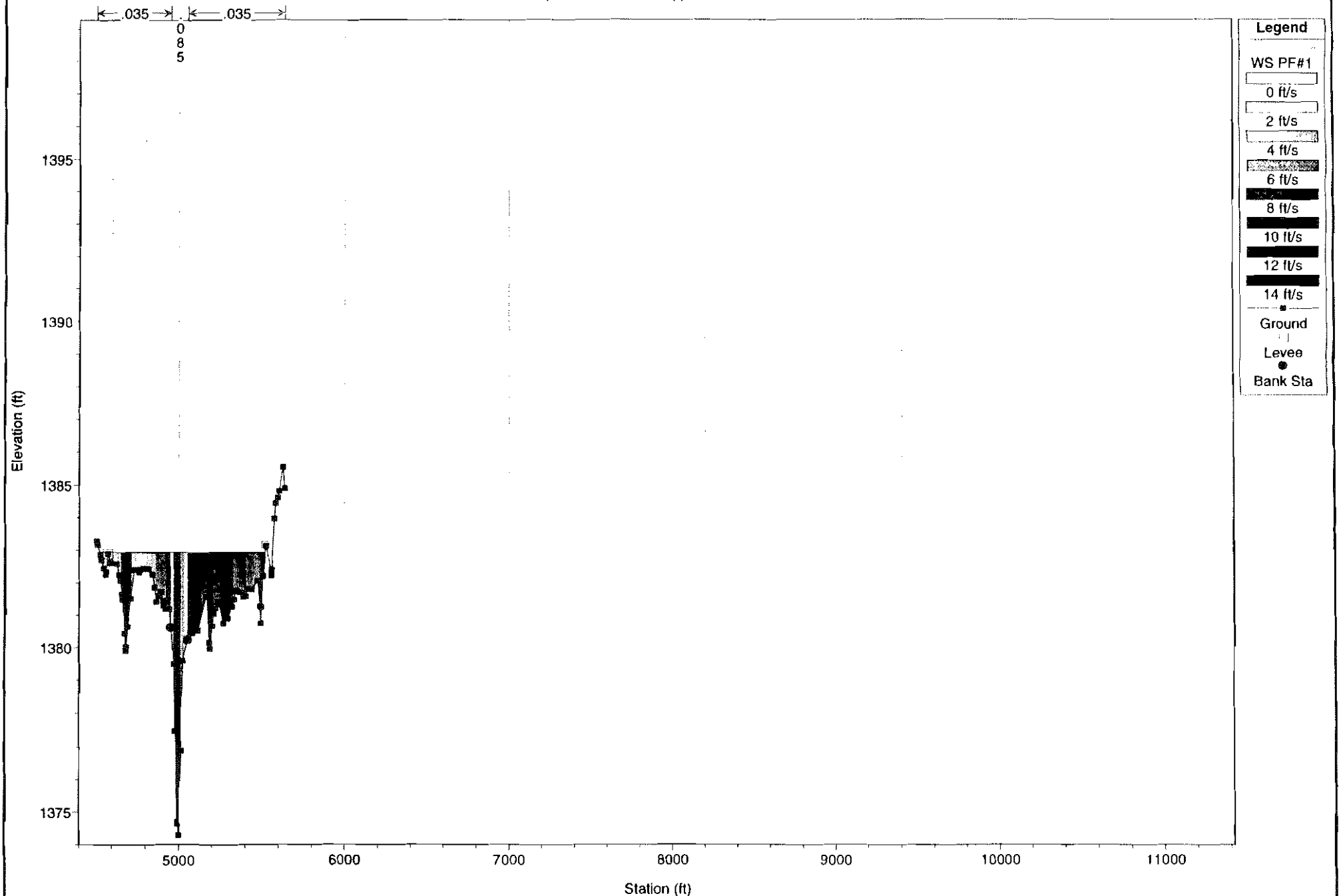
River = Harquahala Reach = Upper Reach A RS = 19.9052



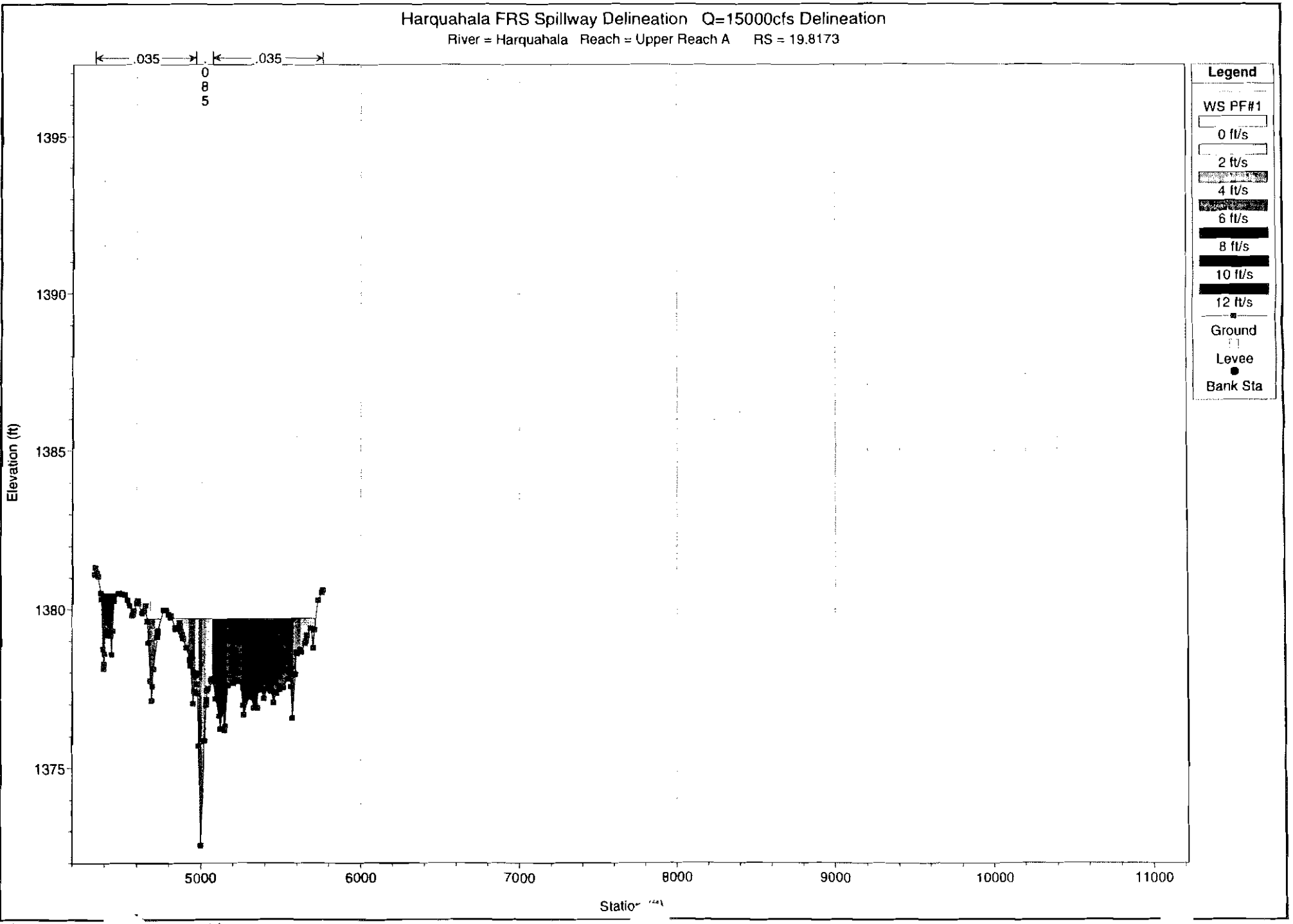
1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

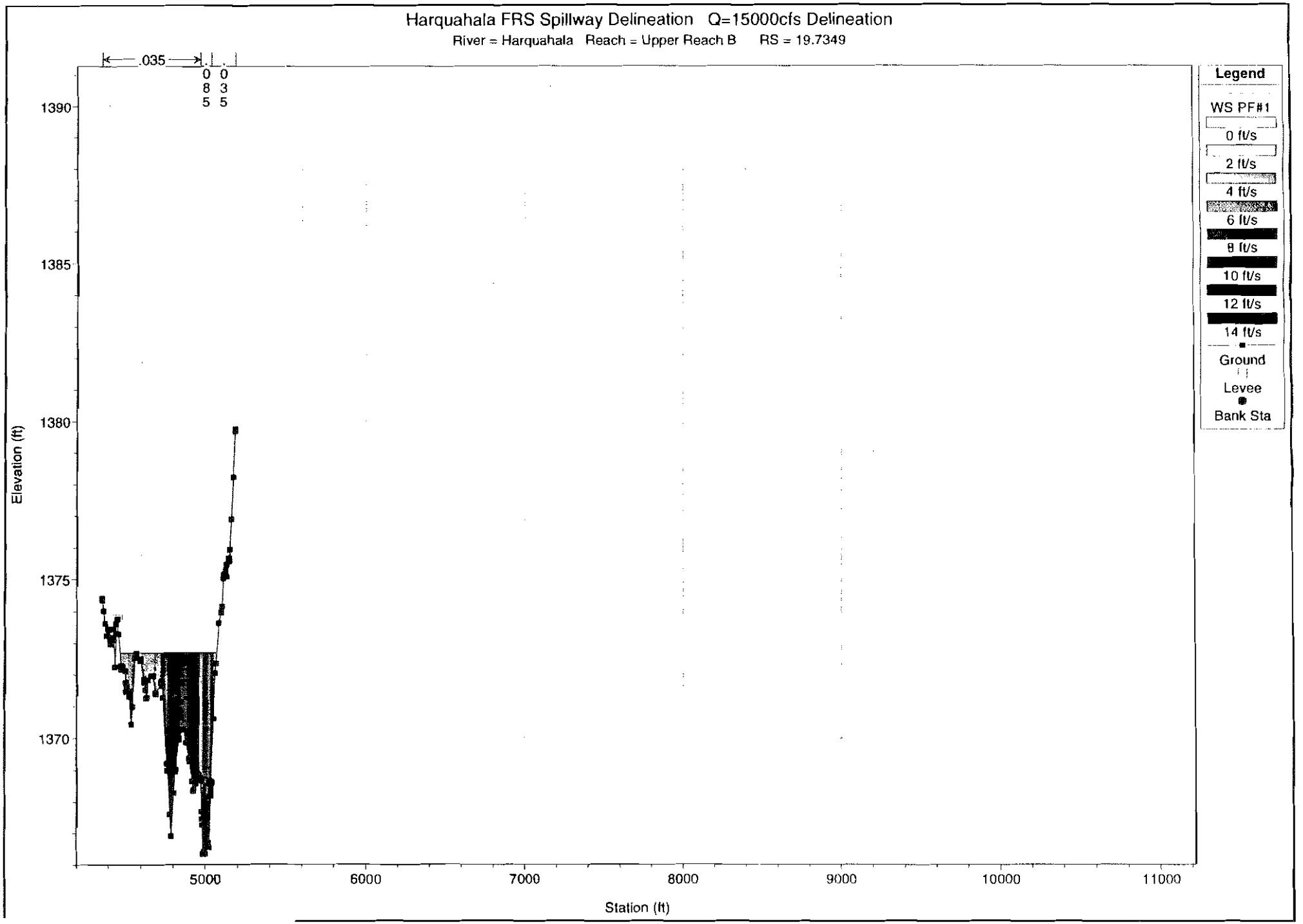
River = Harquahala Reach = Upper Reach A RS = 19.8387

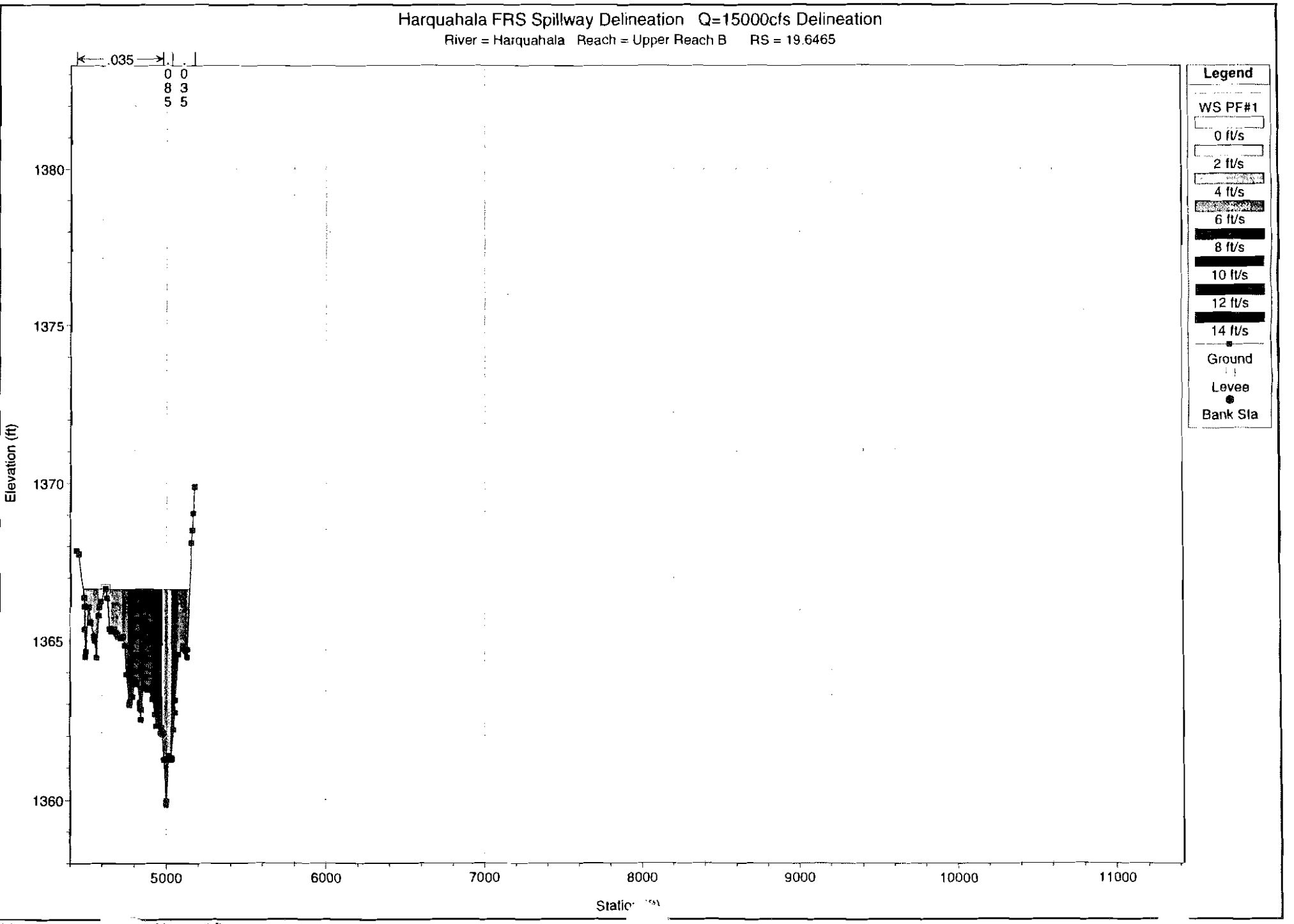


1 in Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 800 n Vert. = 4 ft

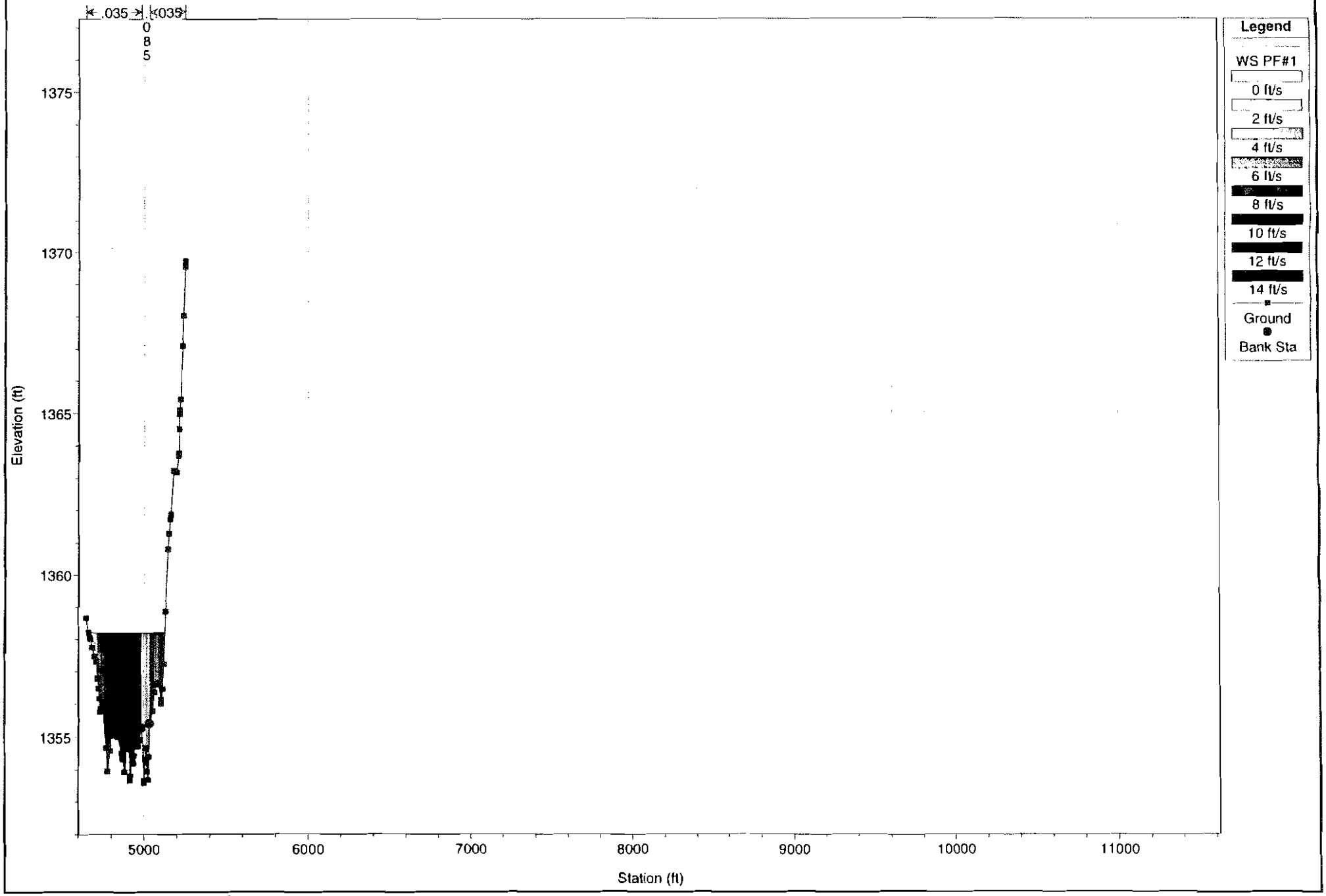

Harquahala FRS Spillway Delineation Q=15000cfs Delineation
River = Harquahala Reach = Upper Reach B RS = 19.7349
.035
0 0
8 3
5 5
1390
1385
1380
1375
1370
Elevation (ft)
5000
6000
7000
8000
9000
10000
11000
Station (ft)
Legend
WS PF#1
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
14 ft/s
Ground
Levee
Bank Sta



1 in Horiz. = 800 n Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

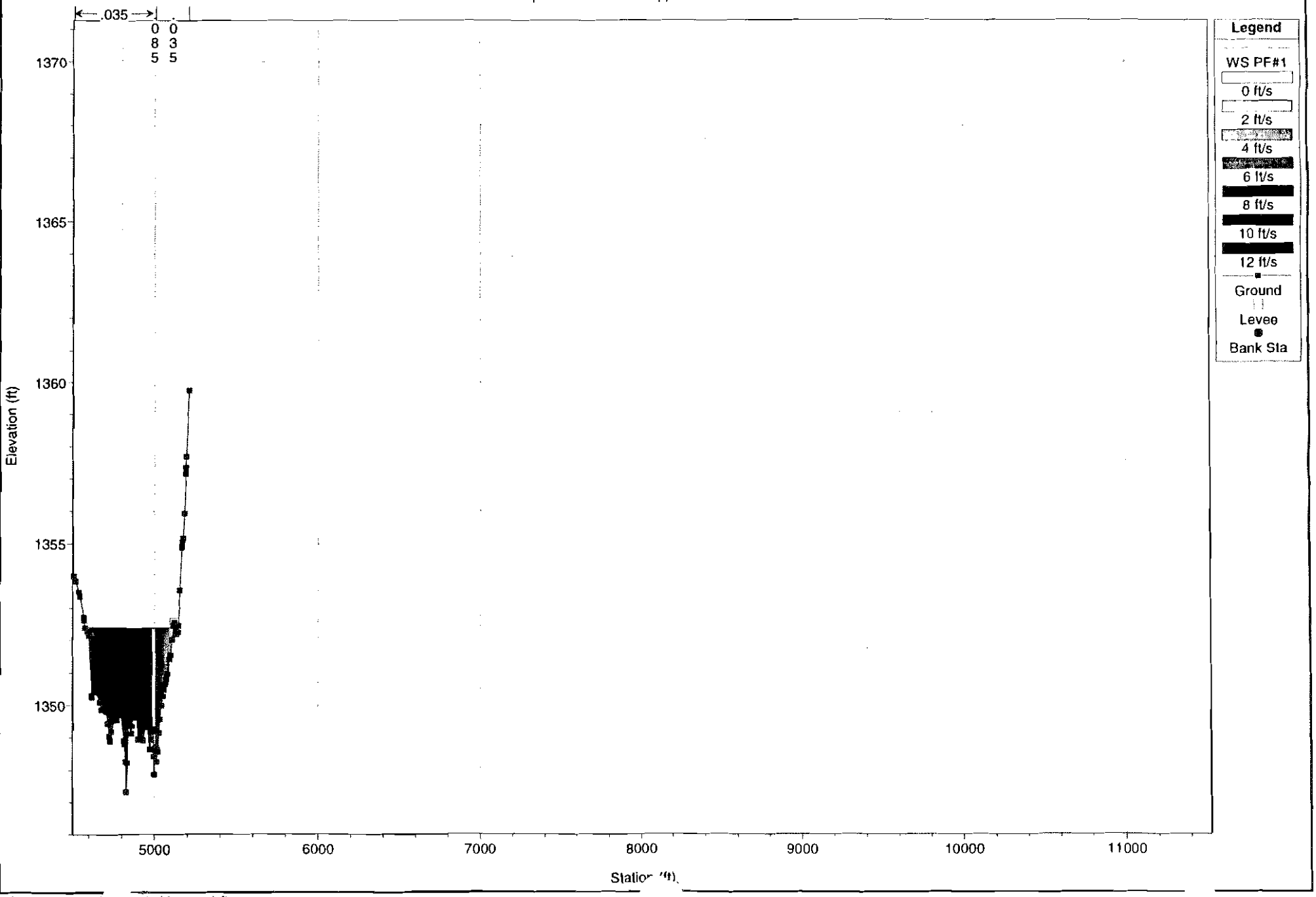
River = Harquahala Reach = Upper Reach B RS = 19.5602



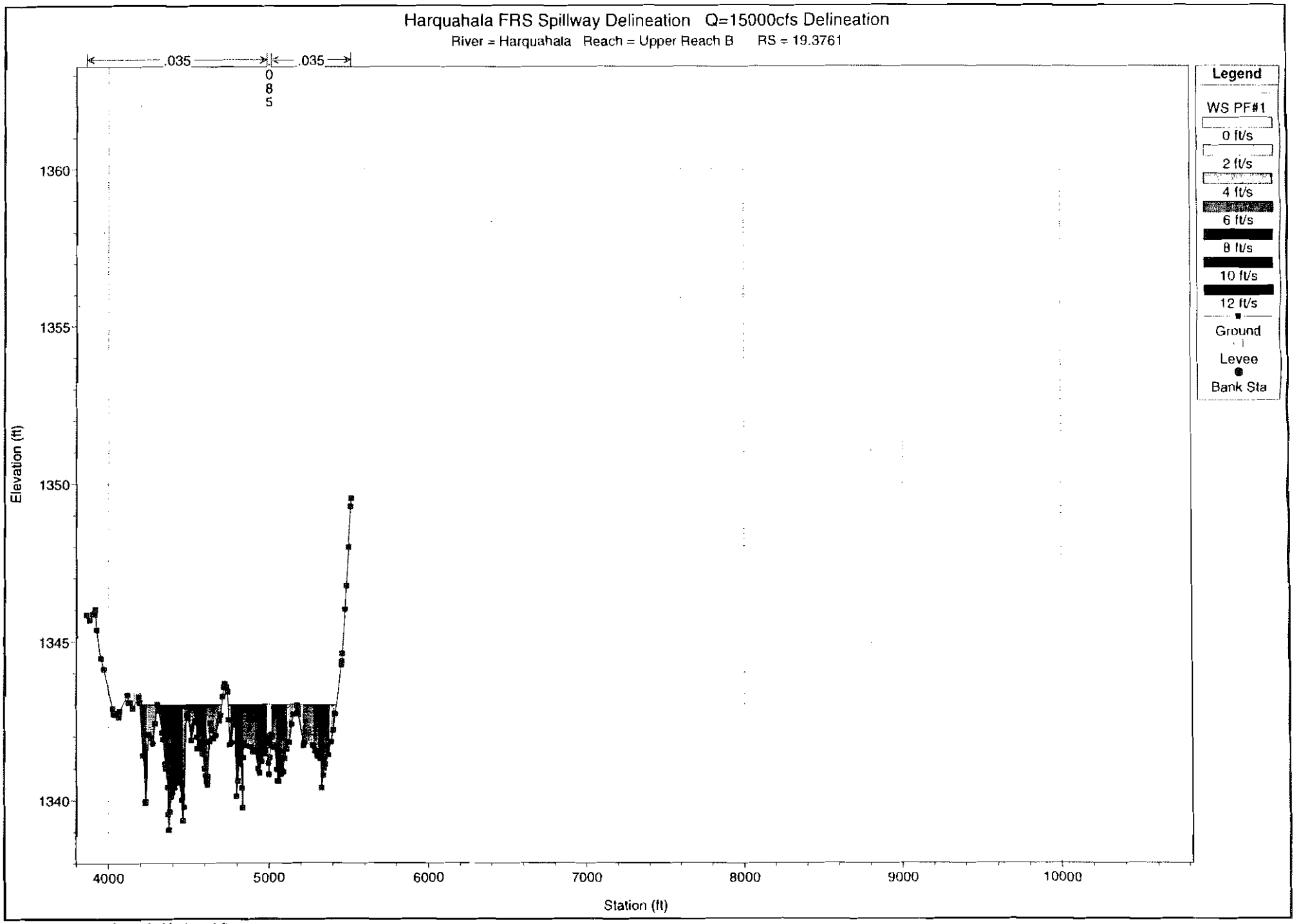
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

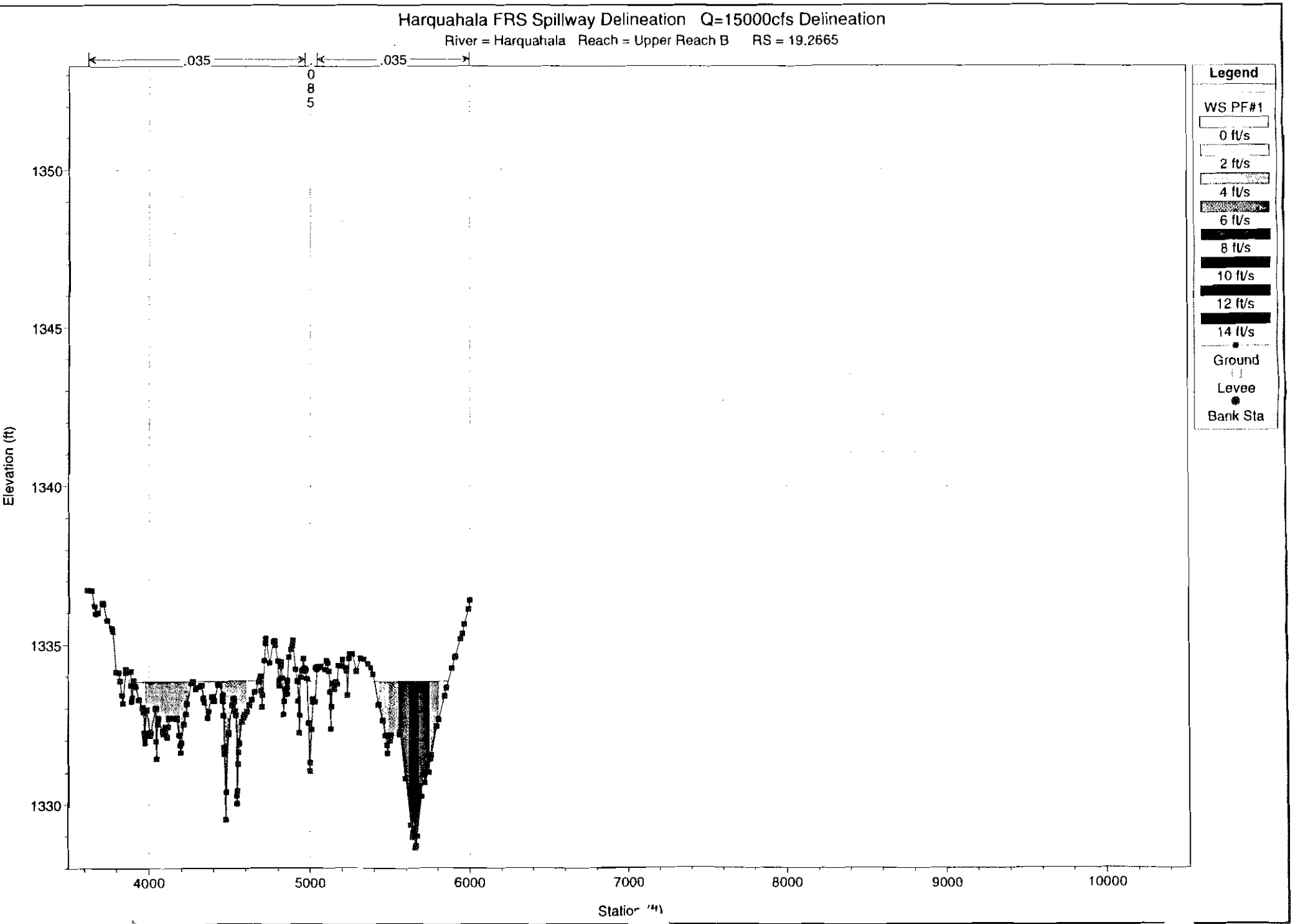
River = Harquahala Reach = Upper Reach B RS = 19.4887



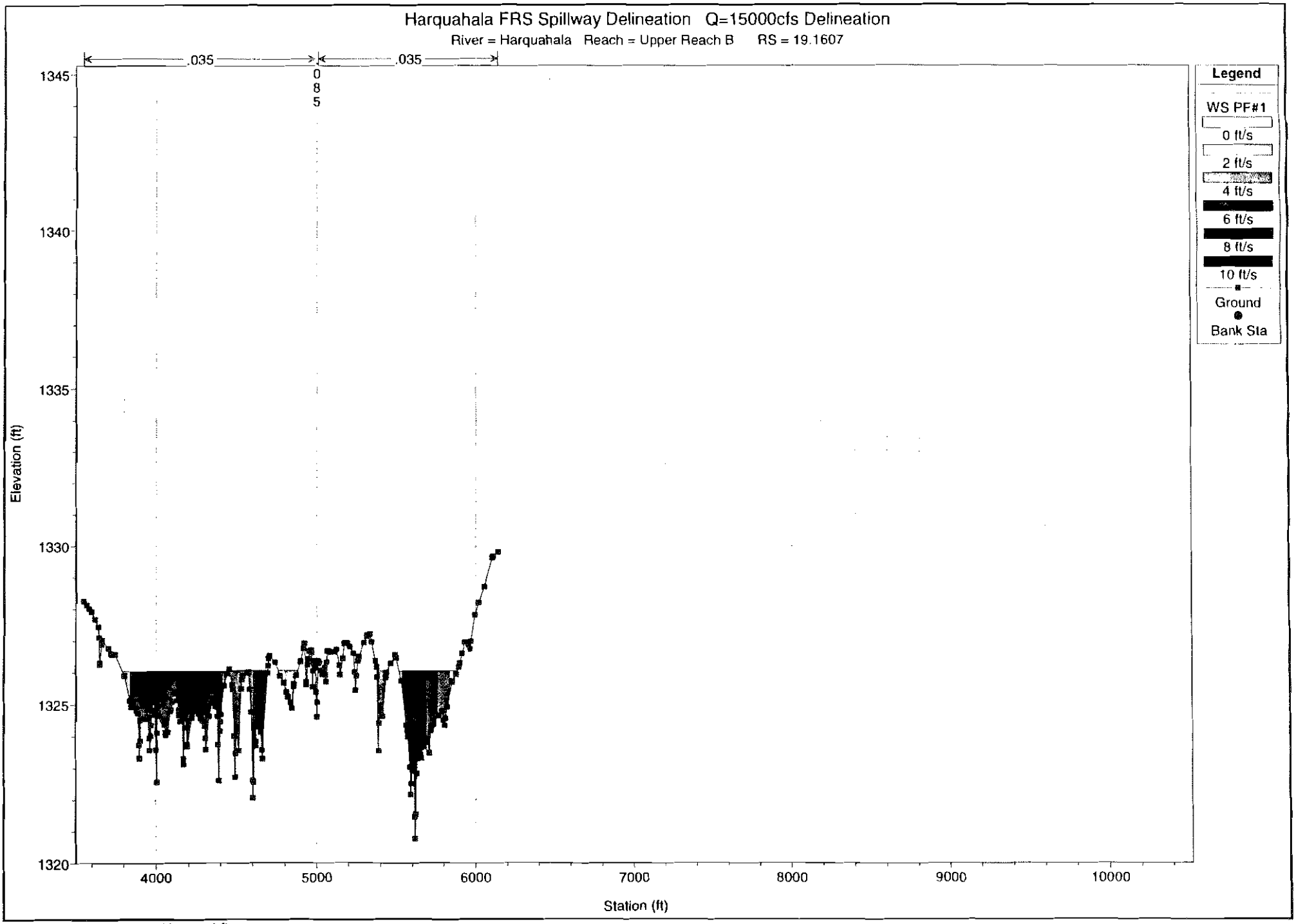
1 in Horiz. = 800 n Vert. = 4 ft



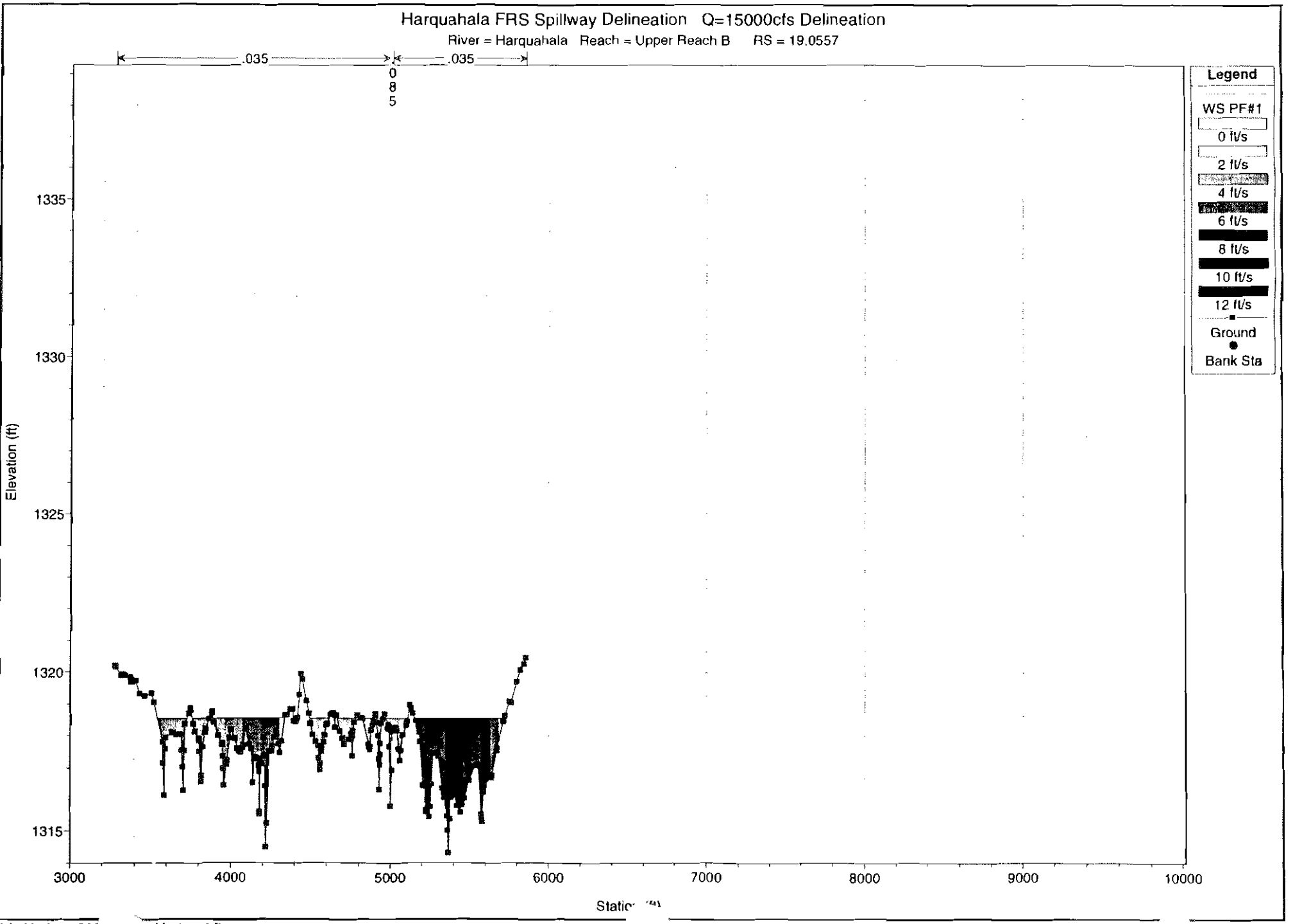
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 80C n Vert. = 4 ft



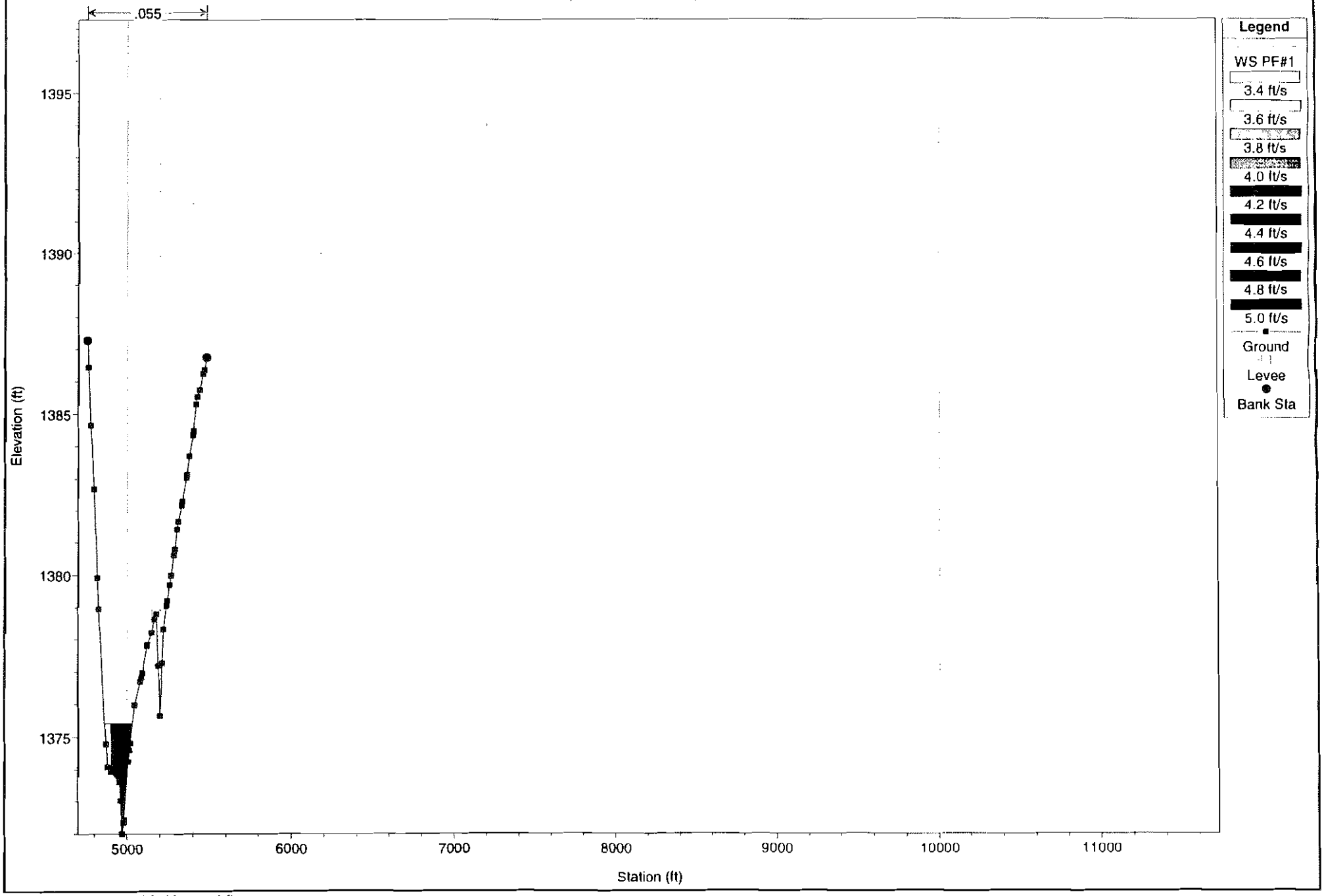
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



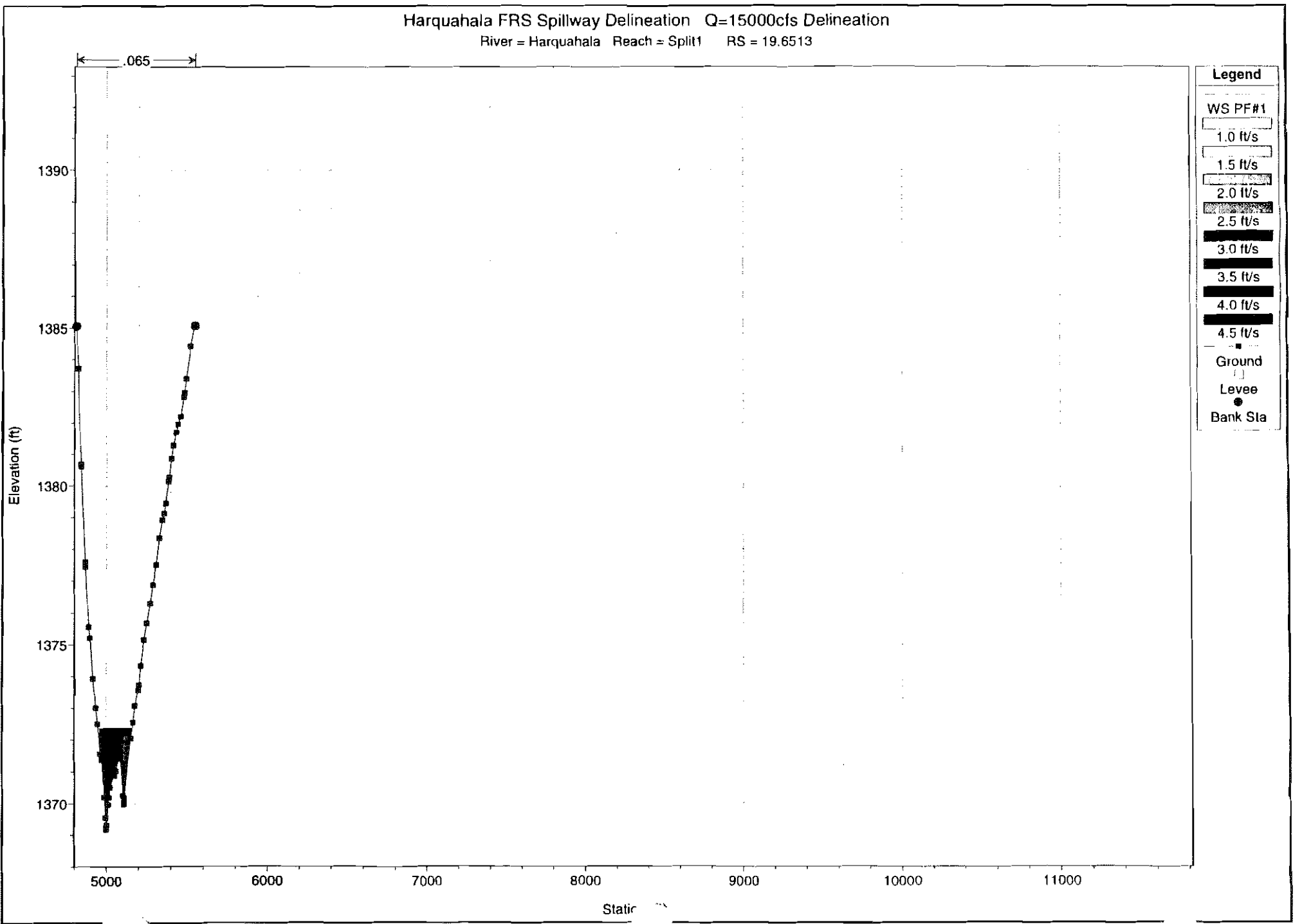
1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

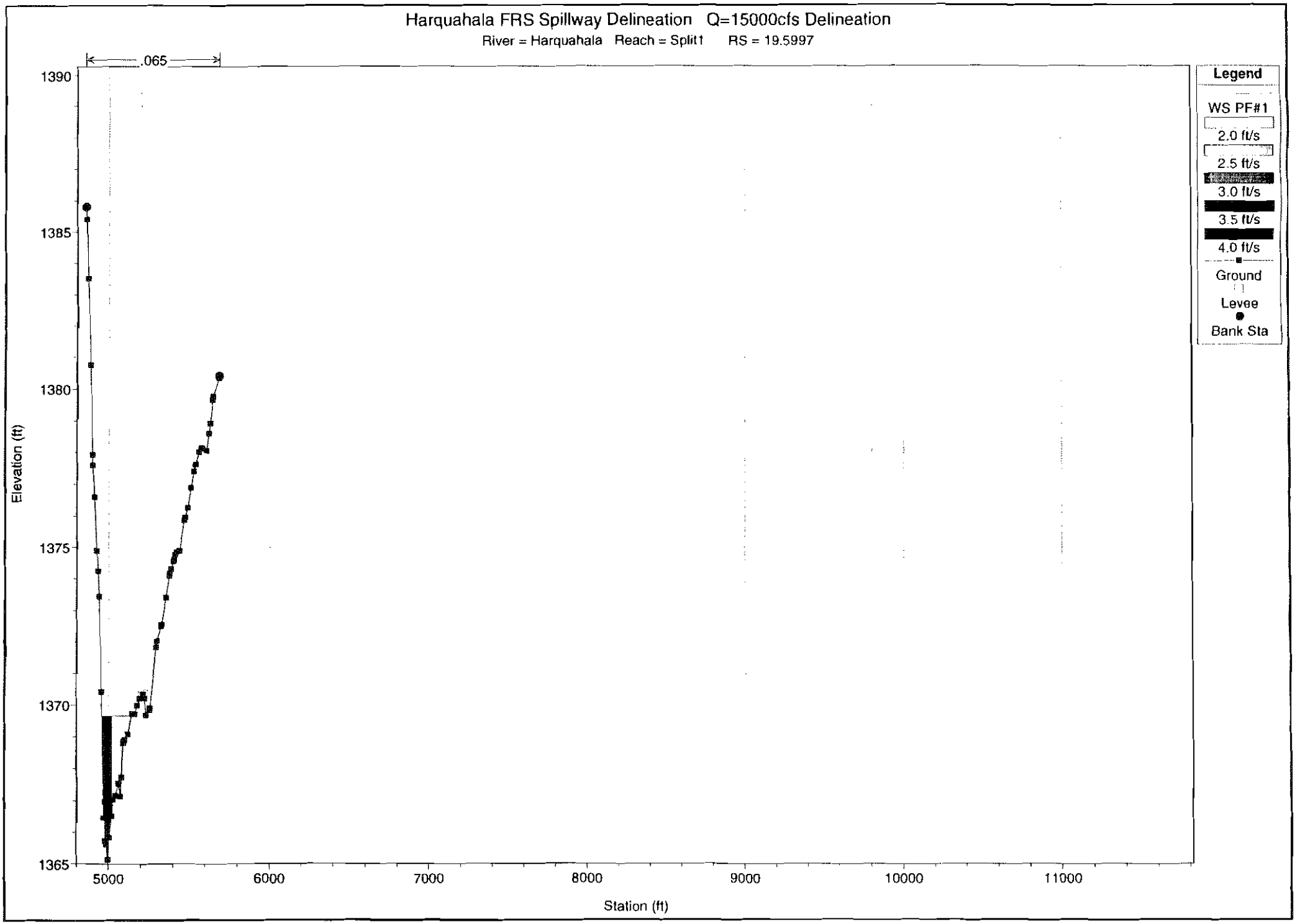
River = Harquahala Reach = Split1 RS = 19.6872



1 in Horiz. = 800 ft 1 in Vert. = 4 ft



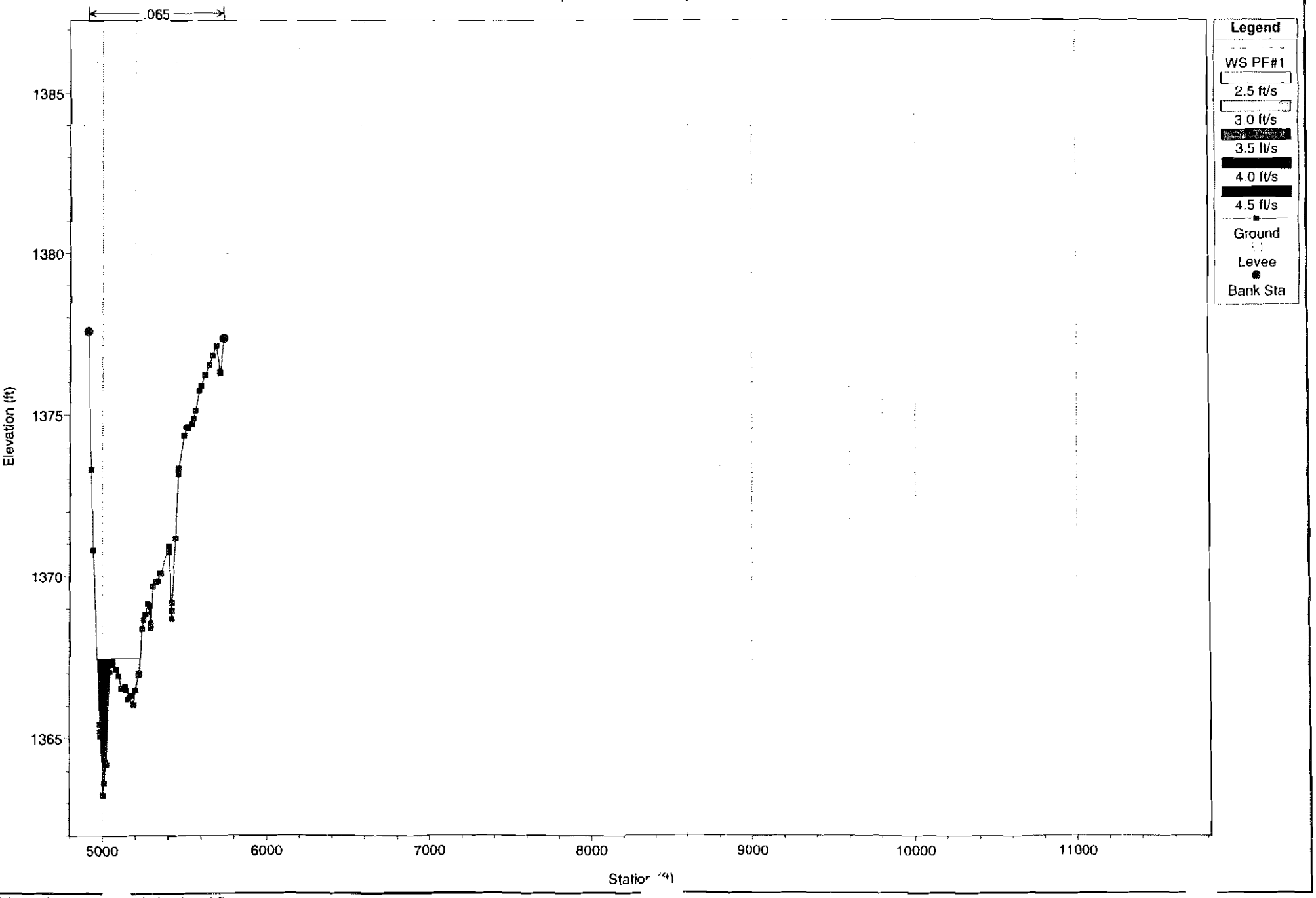
1 in Horiz. = 800 n Vert. = 4 ft



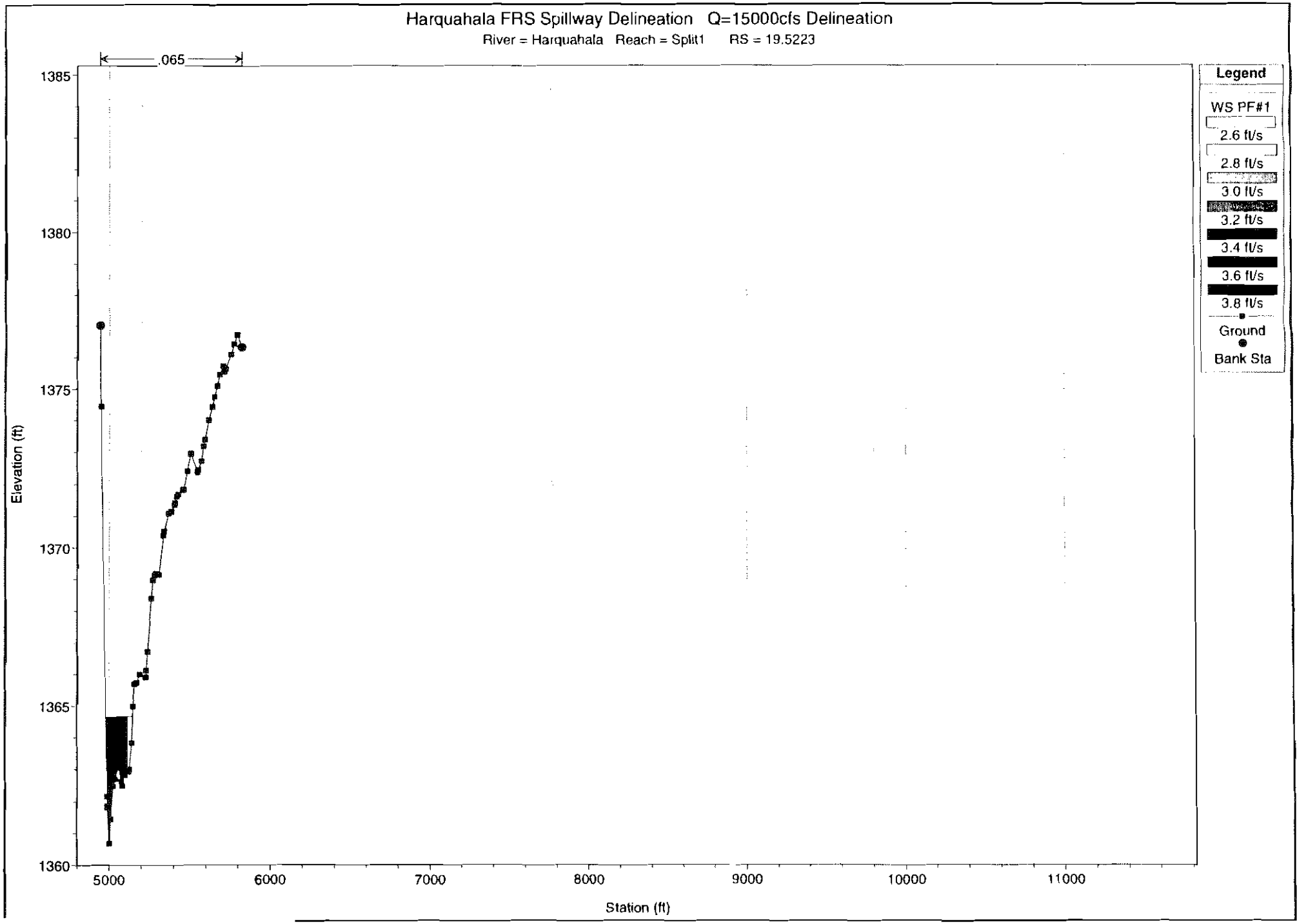
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

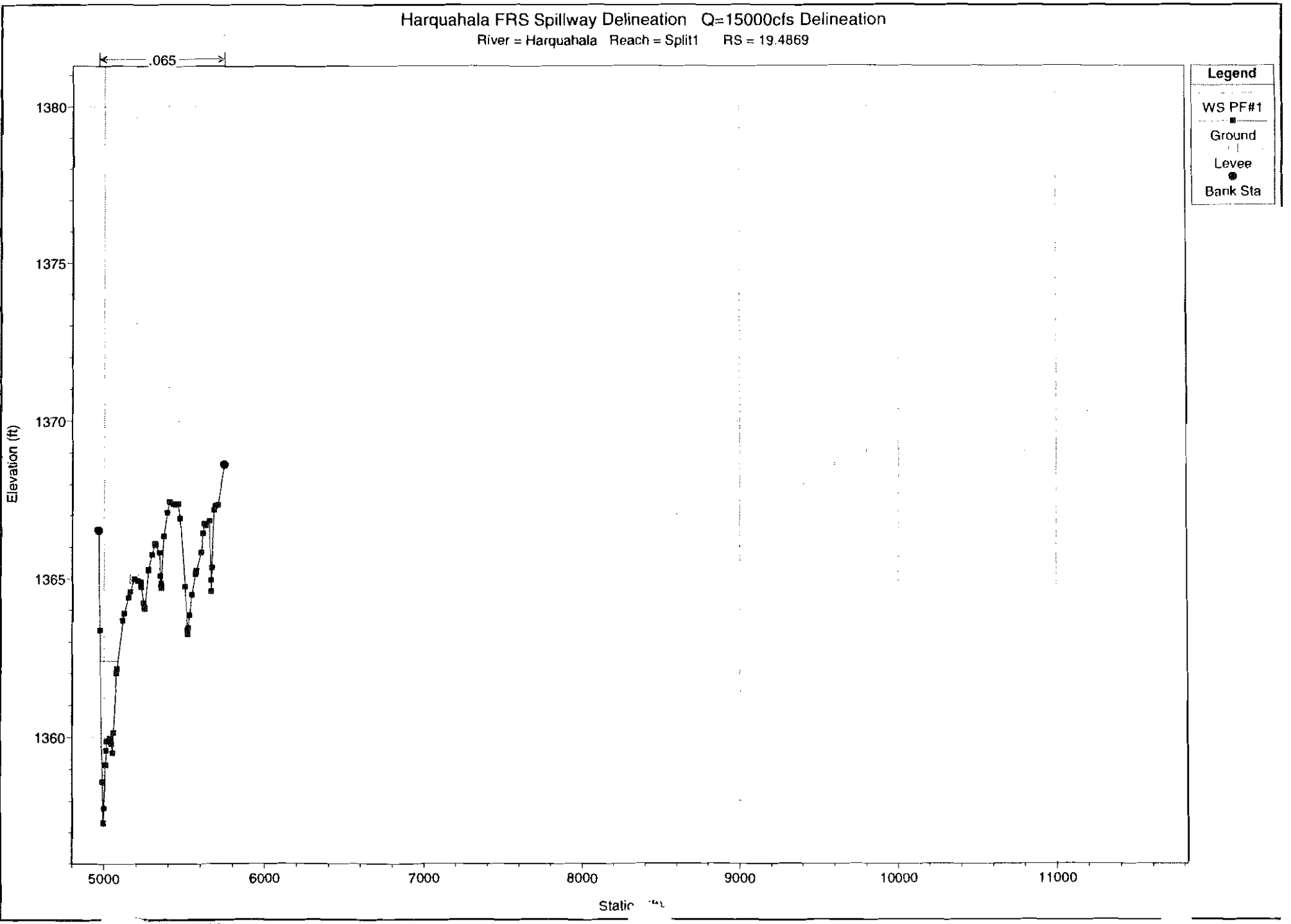
Harquahala FRS Spillway Delineation Q=15000cfs Delineation

River = Harquahala Reach = Split1 RS = 19.5616



1 in Horiz. = 800 1 Vert. = 4 ft

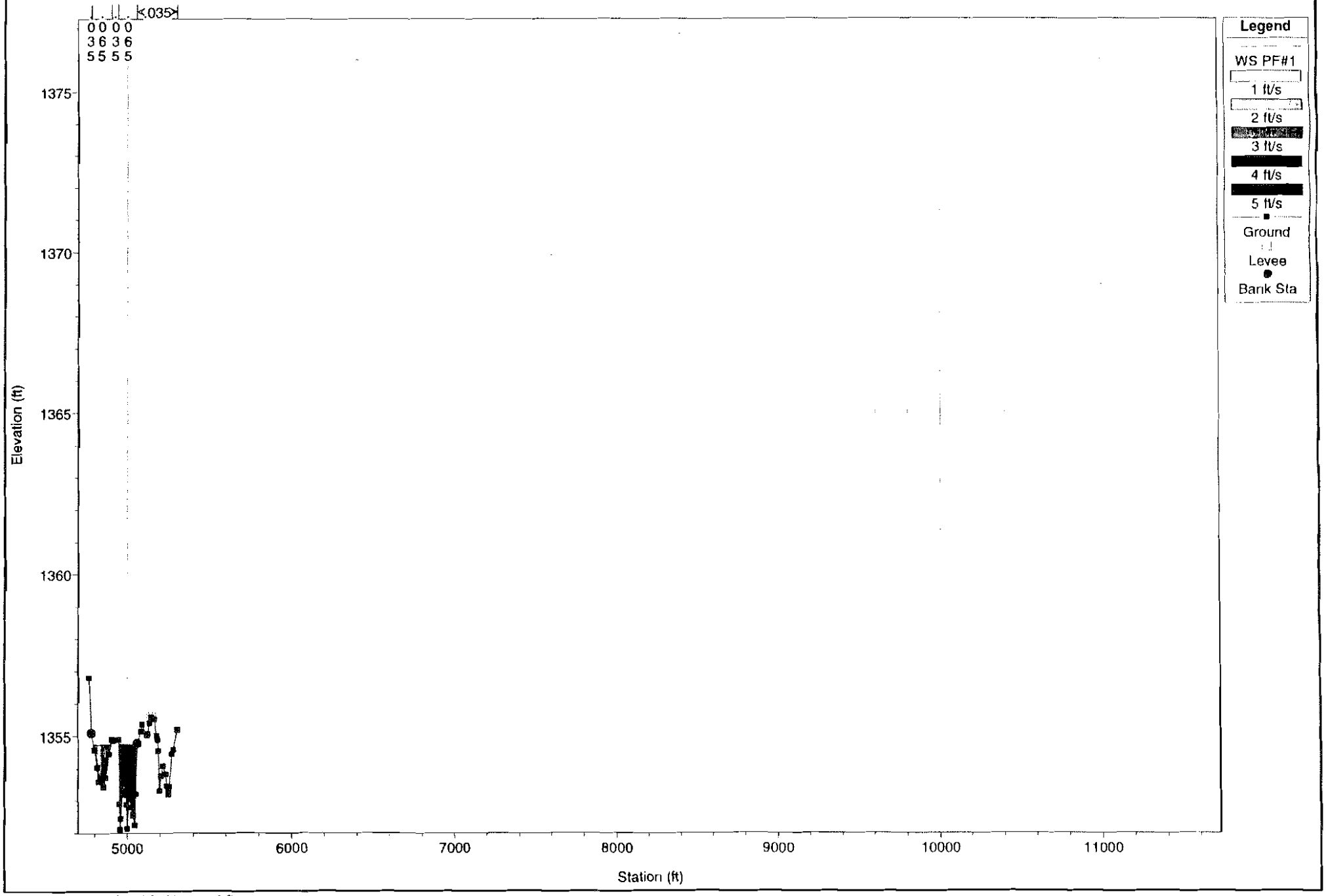

Harquahala FRS Spillway Delineation Q=15000cfs Delineation
River = Harquahala Reach = Split1 RS = 19.5223
.065
Elevation (ft)
1385
1380
1375
1370
1365
1360
5000
6000
7000
8000
9000
10000
11000
Station (ft)
Legend
WS PF#1
2.6 ft/s
2.8 ft/s
3.0 ft/s
3.2 ft/s
3.4 ft/s
3.6 ft/s
3.8 ft/s
Ground
Bank Sta



1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

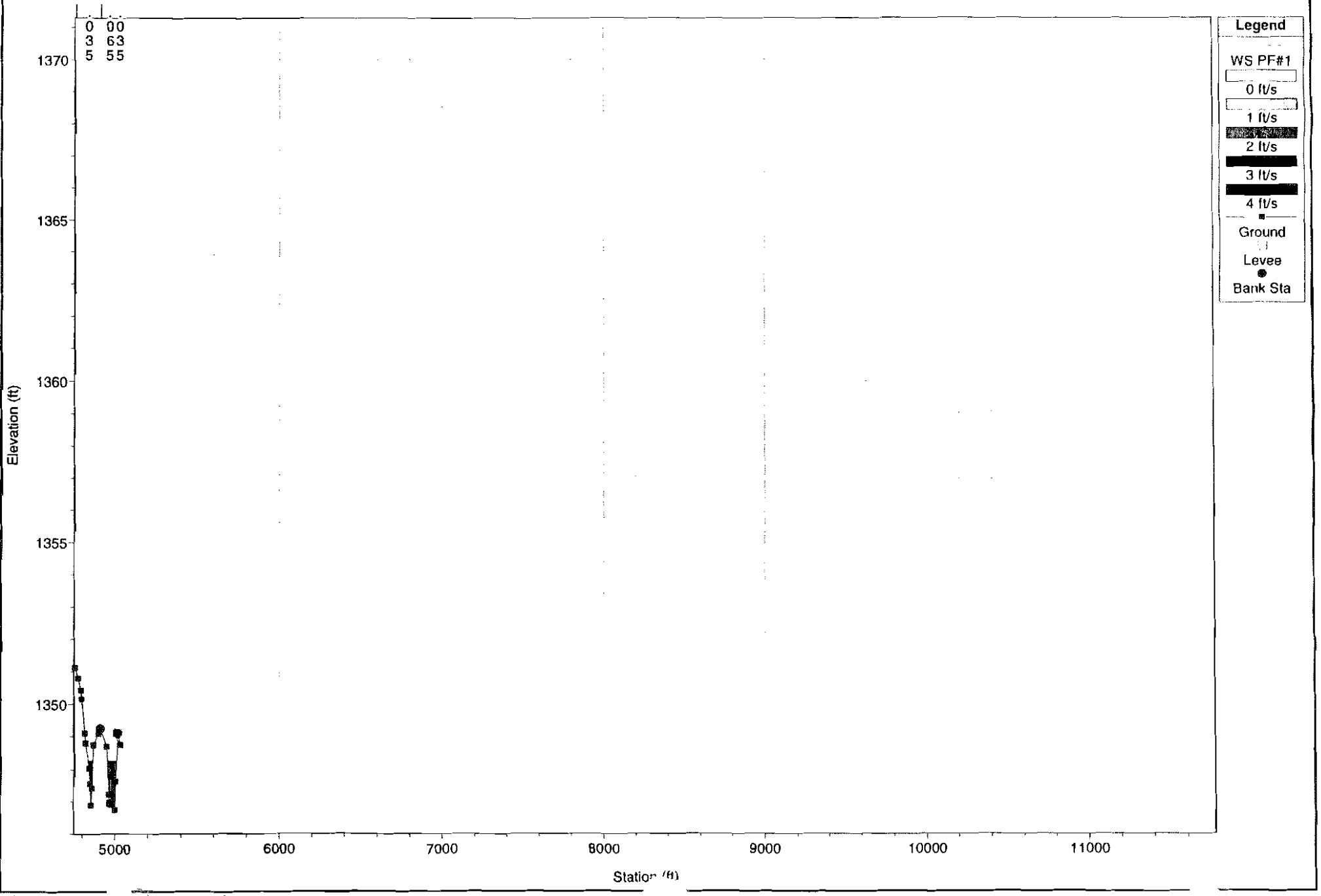
River = Harquahala Reach = Split1 RS = 19.3980



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

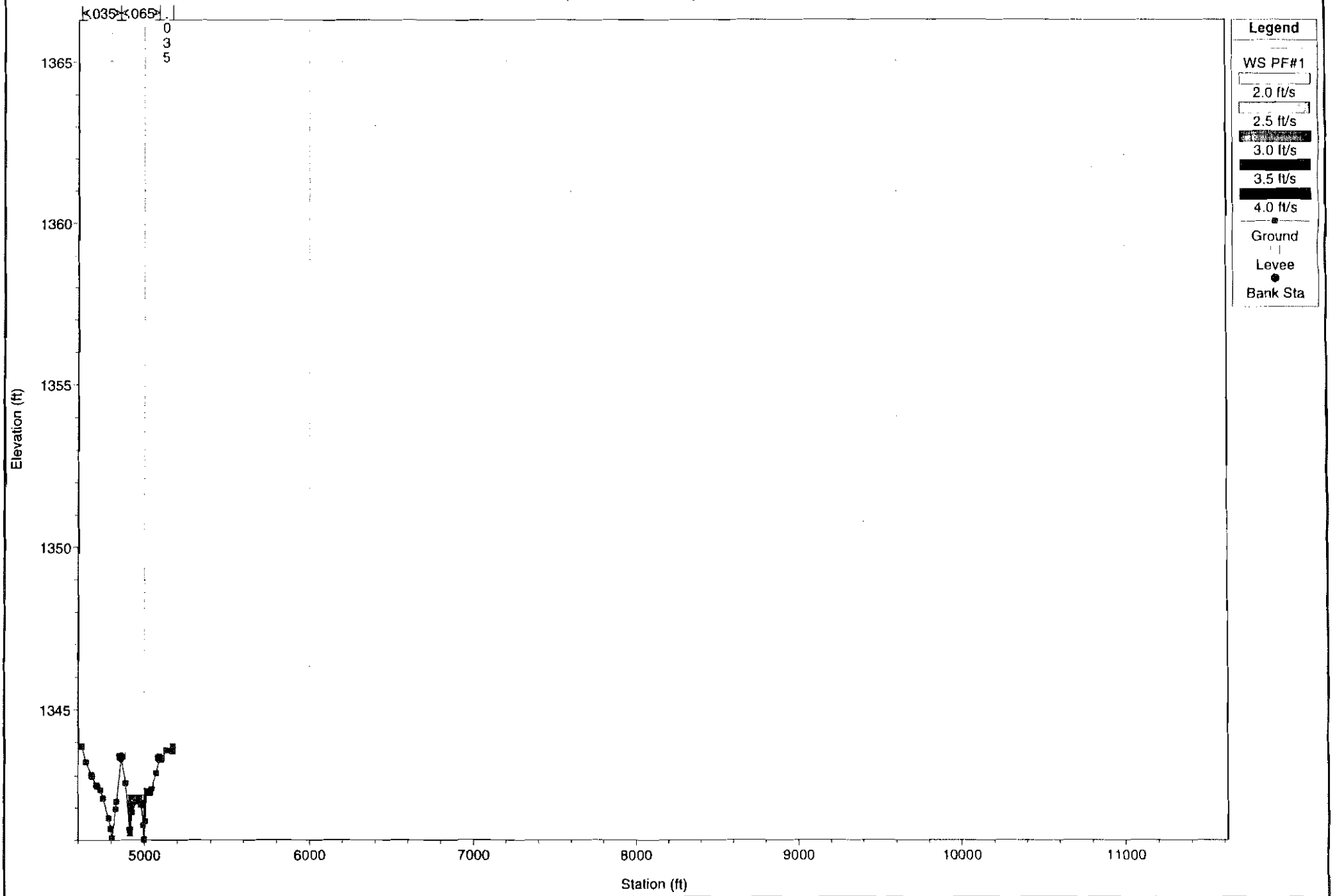
River = Harquahala Reach = Split 1A RS = 19.3216



1 in Horiz. = 80C ; Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

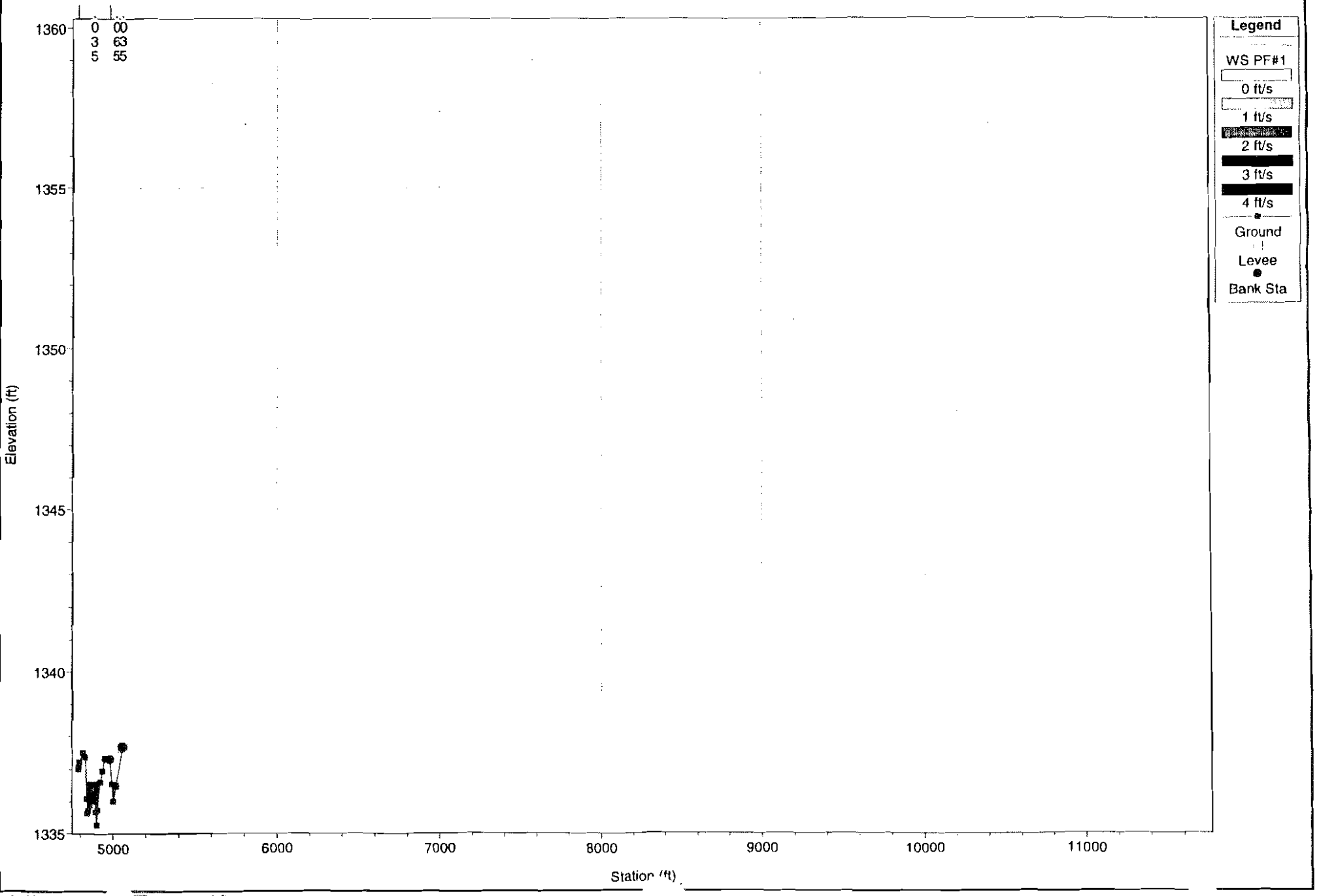
River = Harquahala Reach = Split 1A RS = 19.2398



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

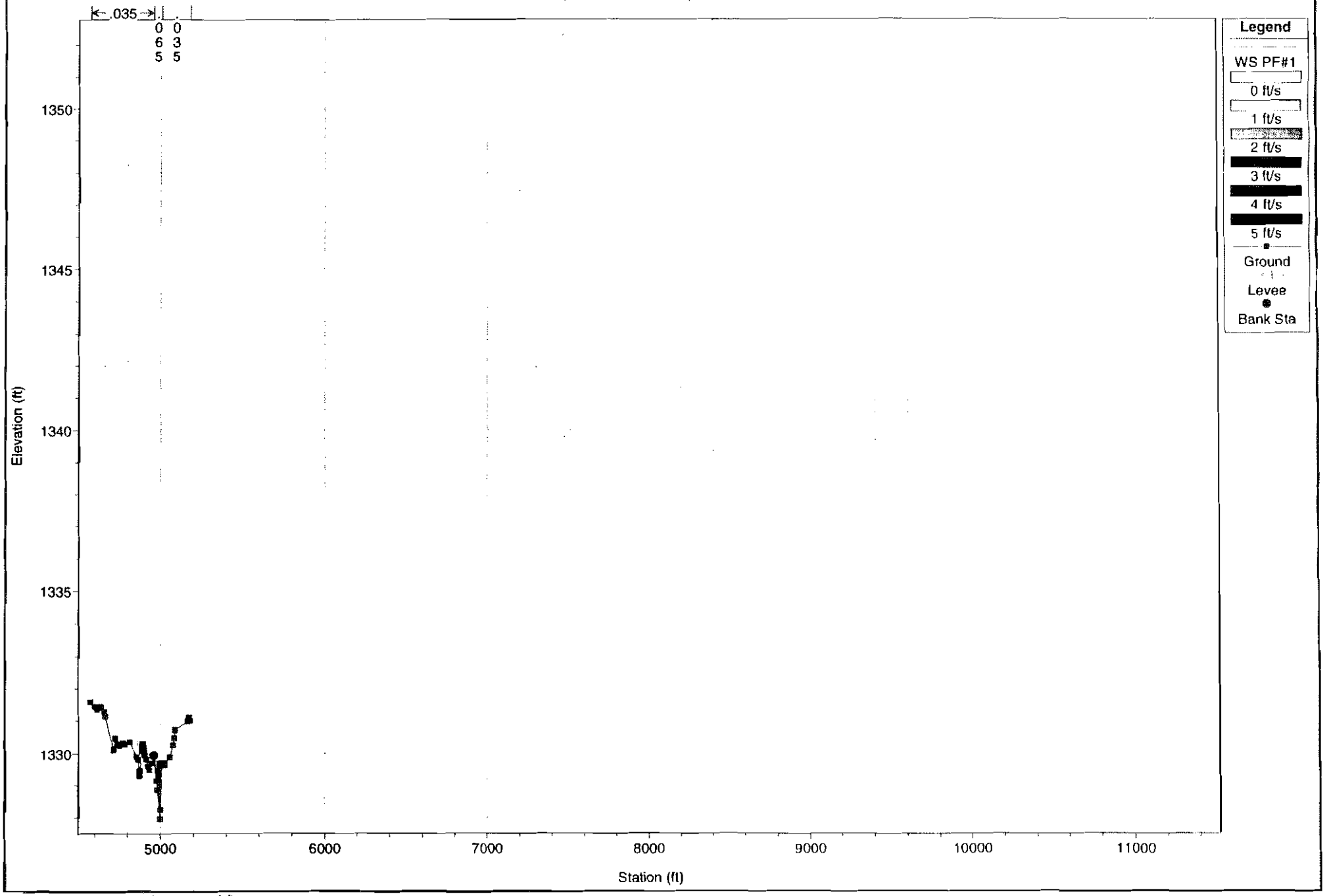
River = Harquahala Reach = Split 1A RS = 19.1676



1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

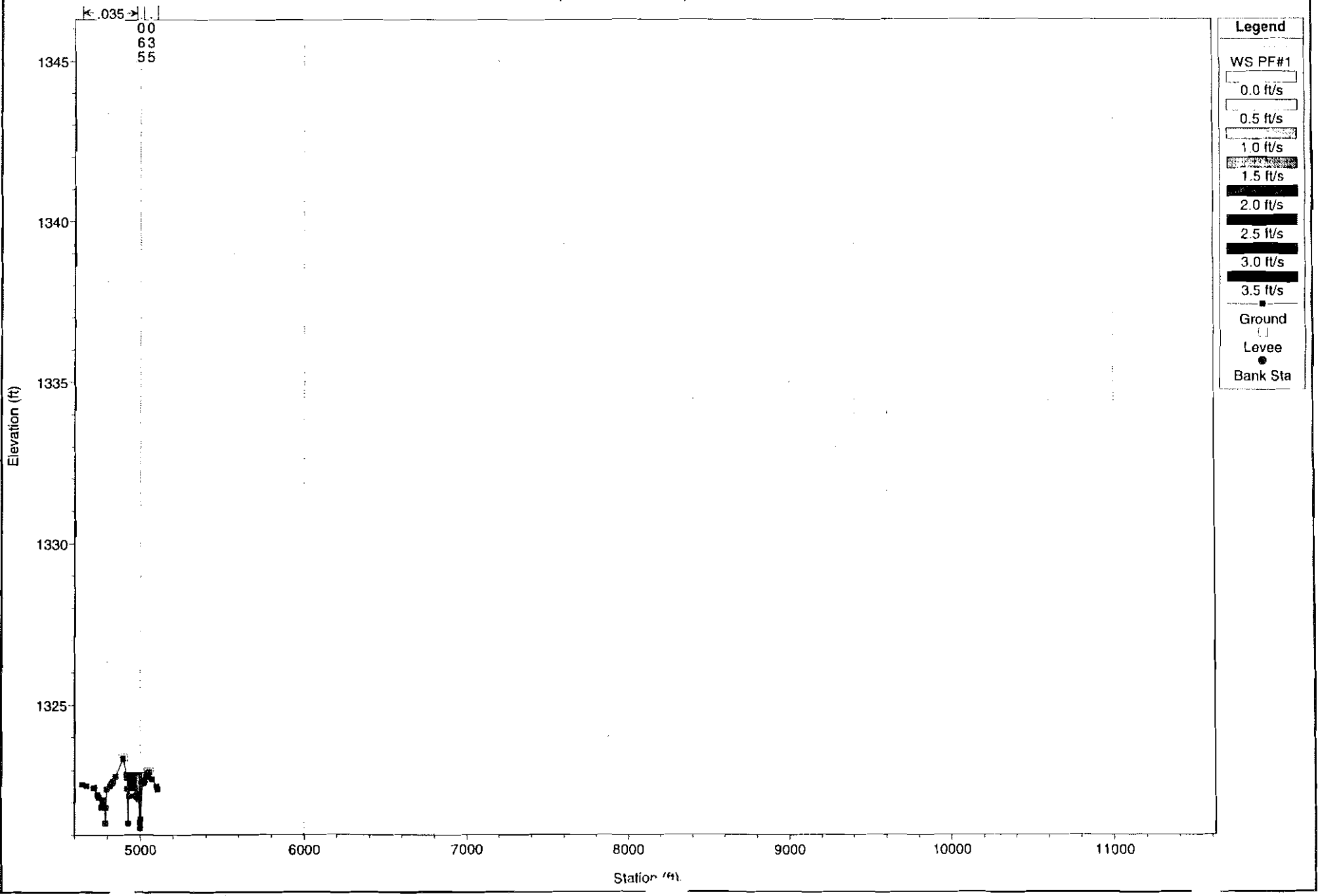
River = Harquahala Reach = Split 1A RS = 19.0811



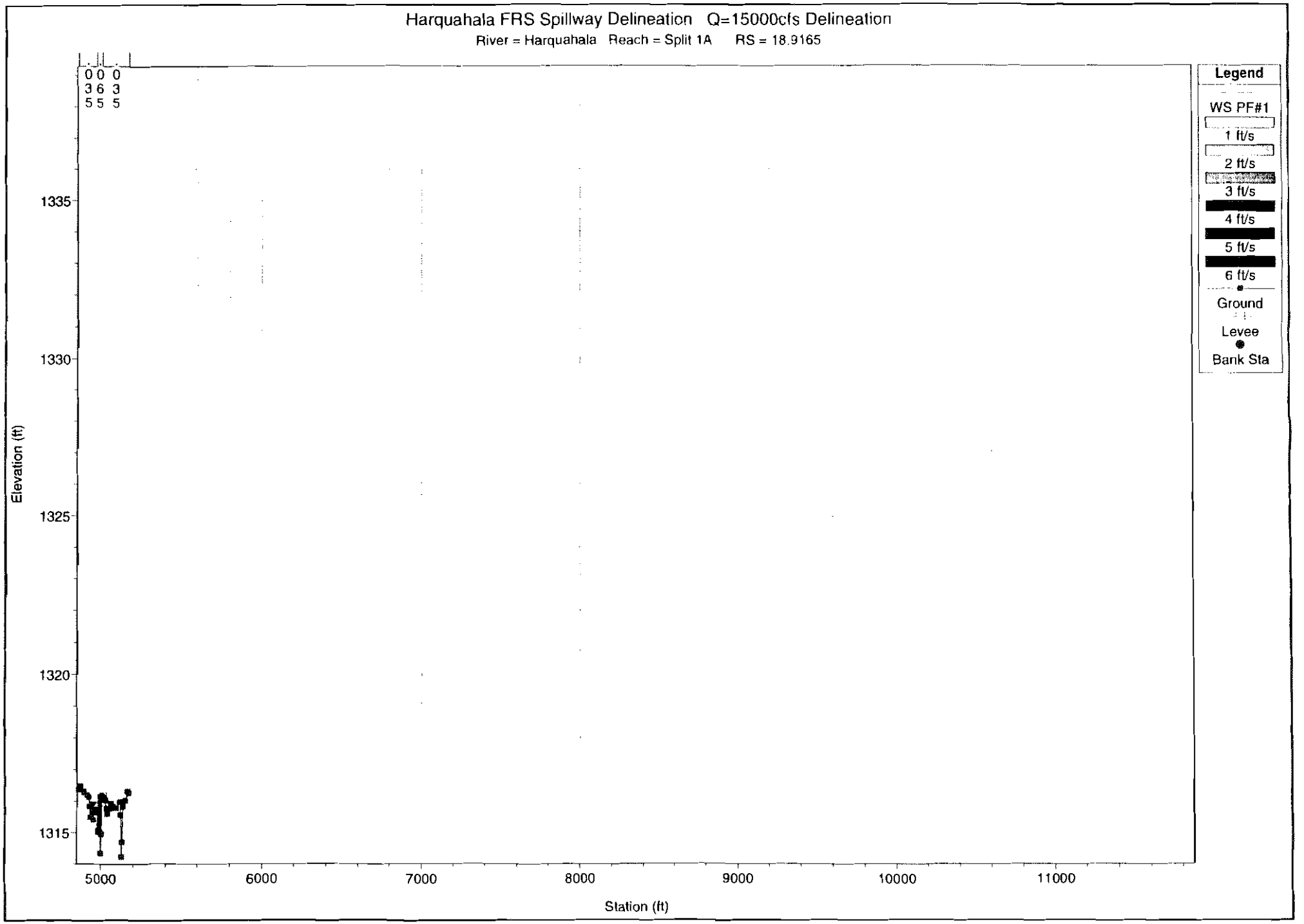
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

River = Harquahala Reach = Split 1A RS = 18.9967



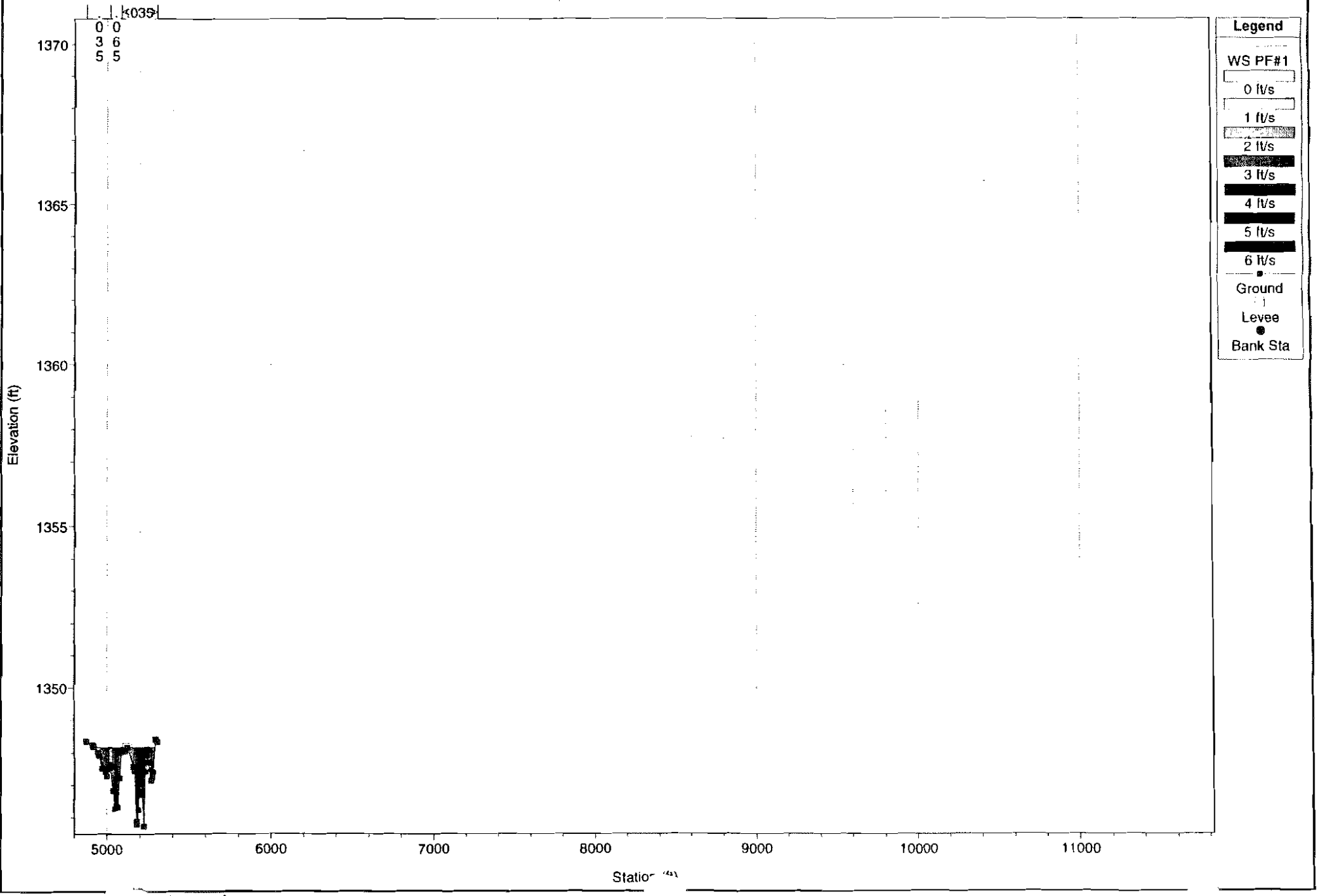
1 in Horiz. = 800 1 Vert. = 4 ft



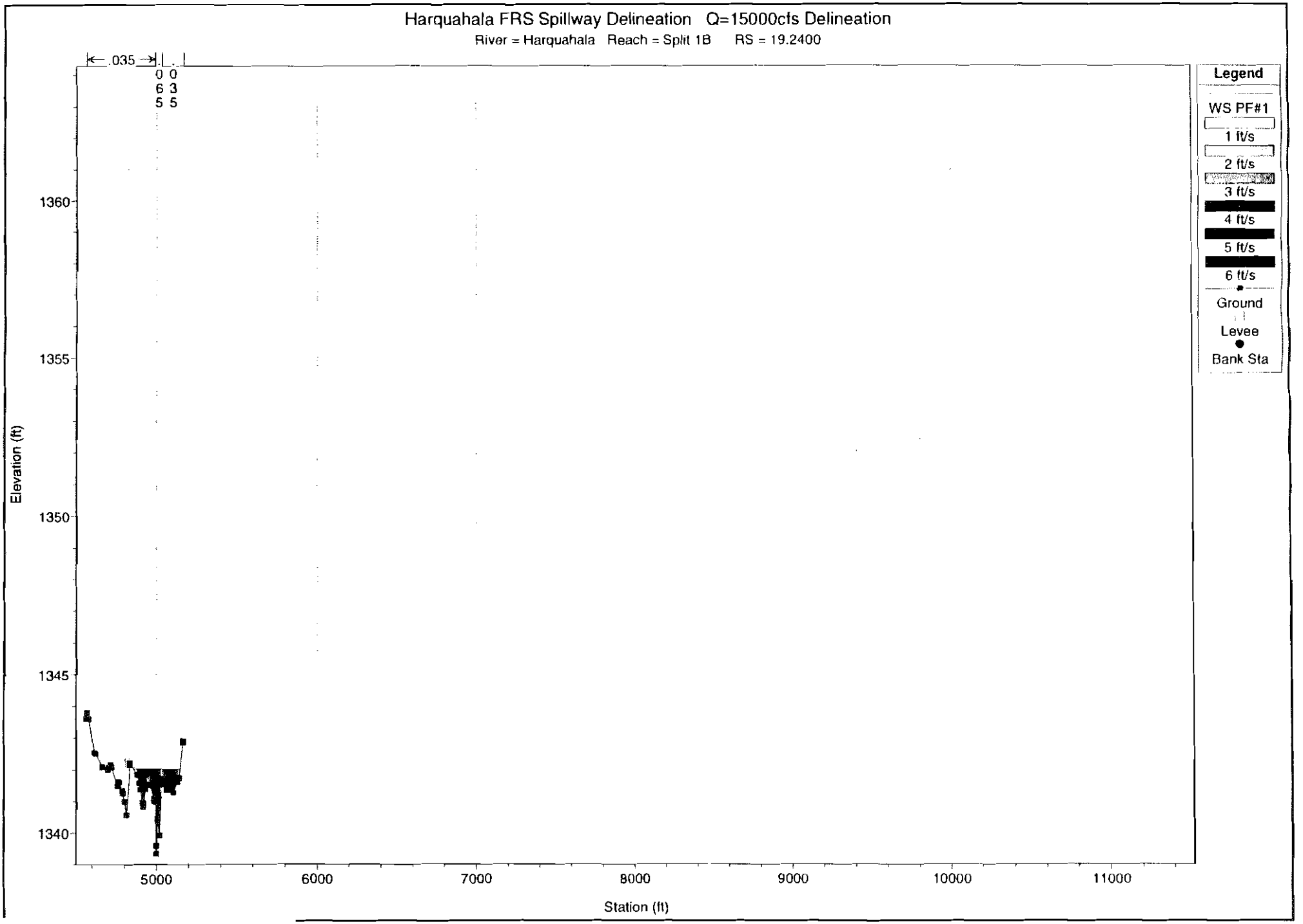
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

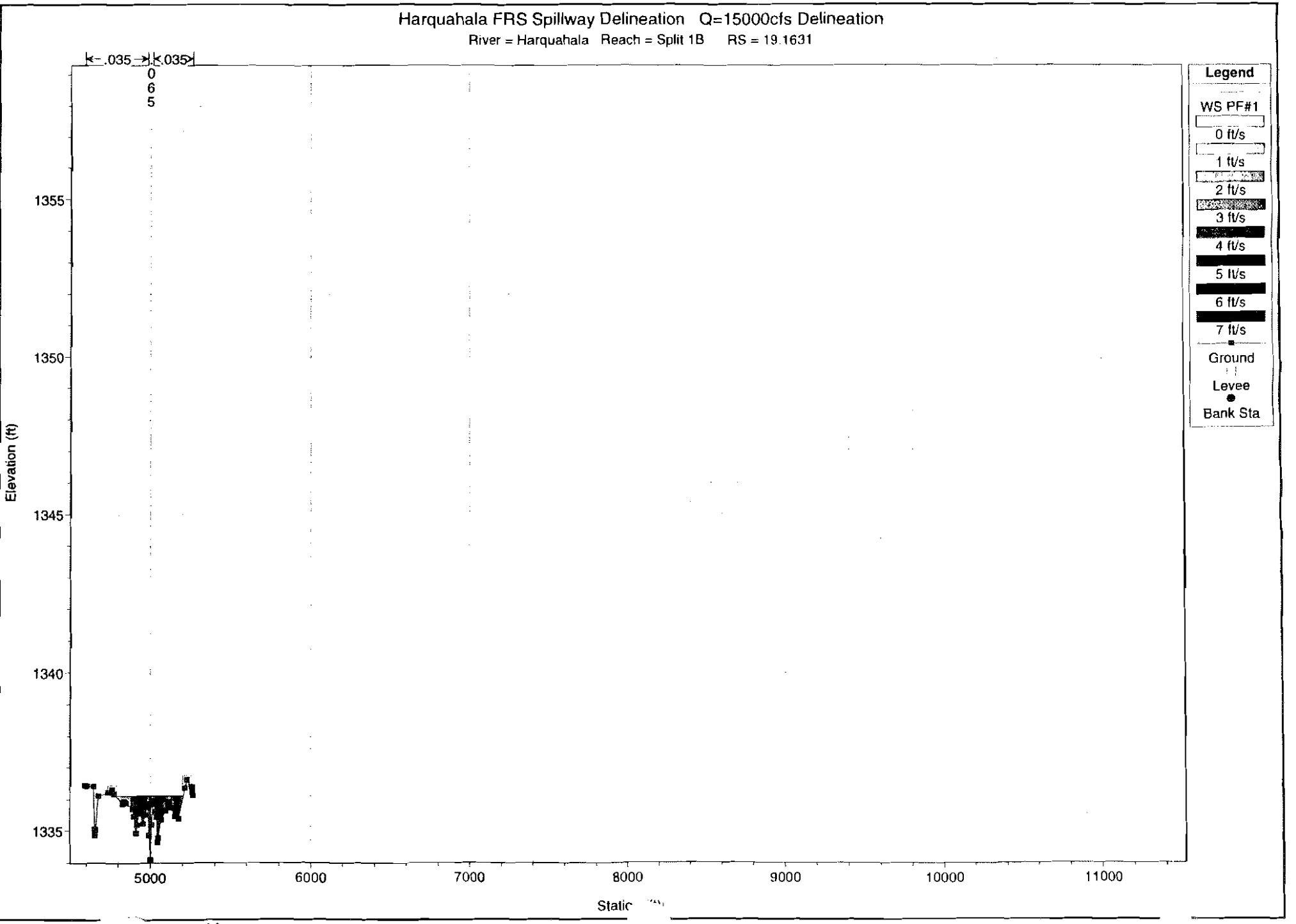
Harquahala FRS Spillway Delineation Q=15000cfs Delineation

River = Harquahala Reach = Split 1B RS = 19.3158



1 in Horiz. = 800) Vert. = 4 ft

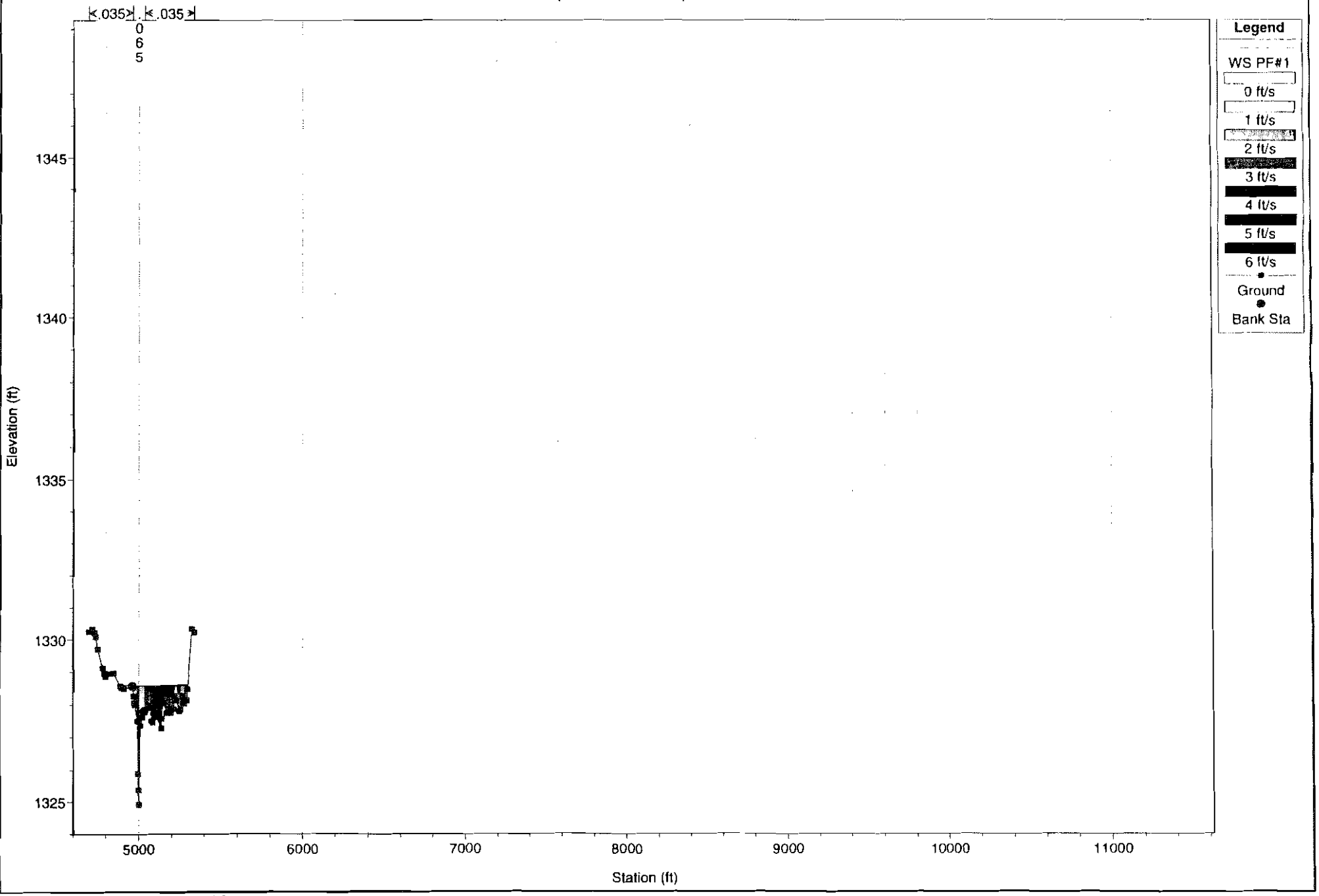

Harquahala FRS Spillway Delineation Q=15000cfs Delineation
River = Harquahala Reach = Split 1B RS = 19.2400
.035
0 0
6 3
5 5
Legend
WS PF#1
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Levee
Bank Sta
Elevation (ft)
1360
1355
1350
1345
1340
5000
6000
7000
8000
9000
10000
11000
Station (ft)



1 in Horiz. = 800 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

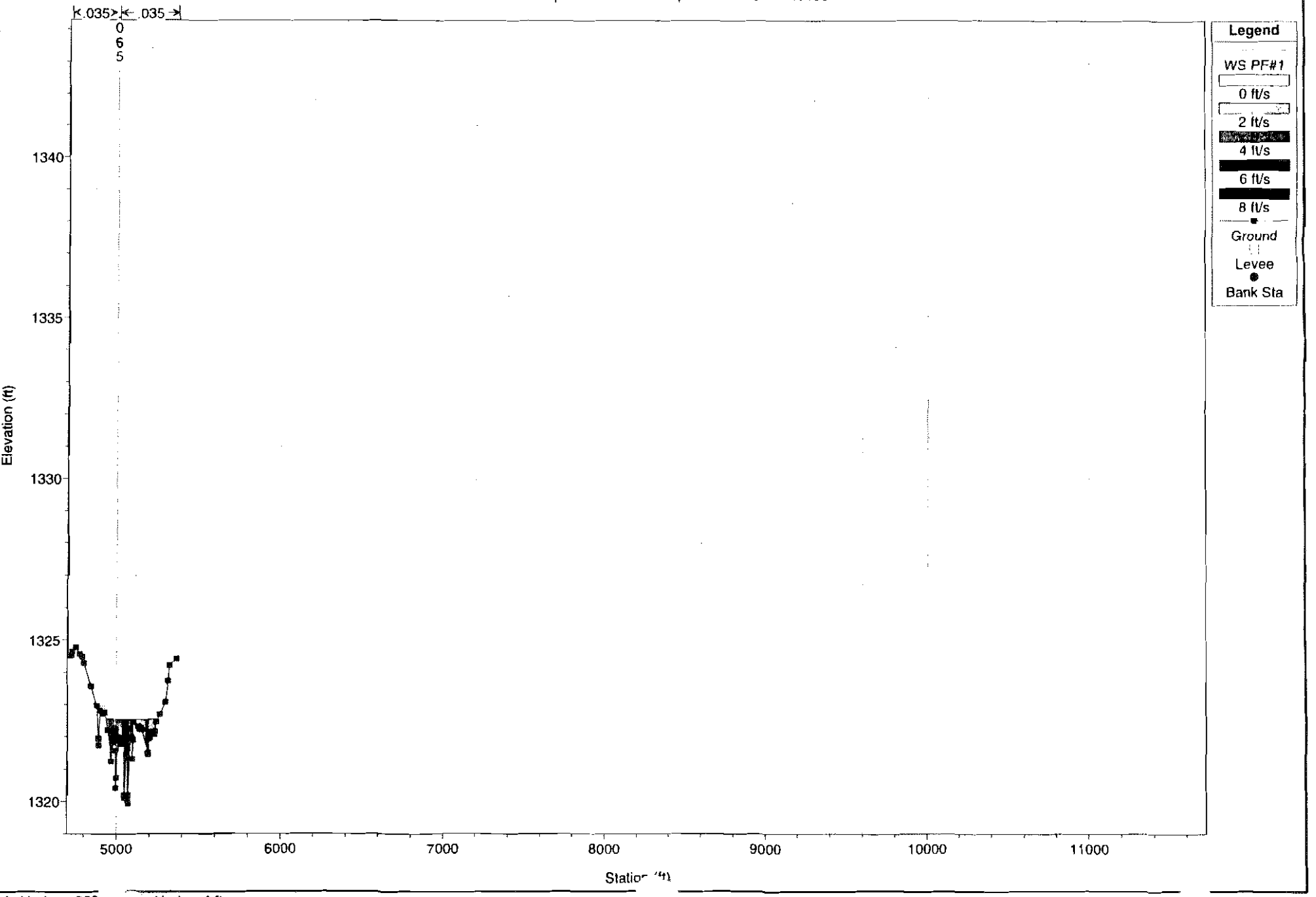
River = Harquahala Reach = Split 1B RS = 19.0836



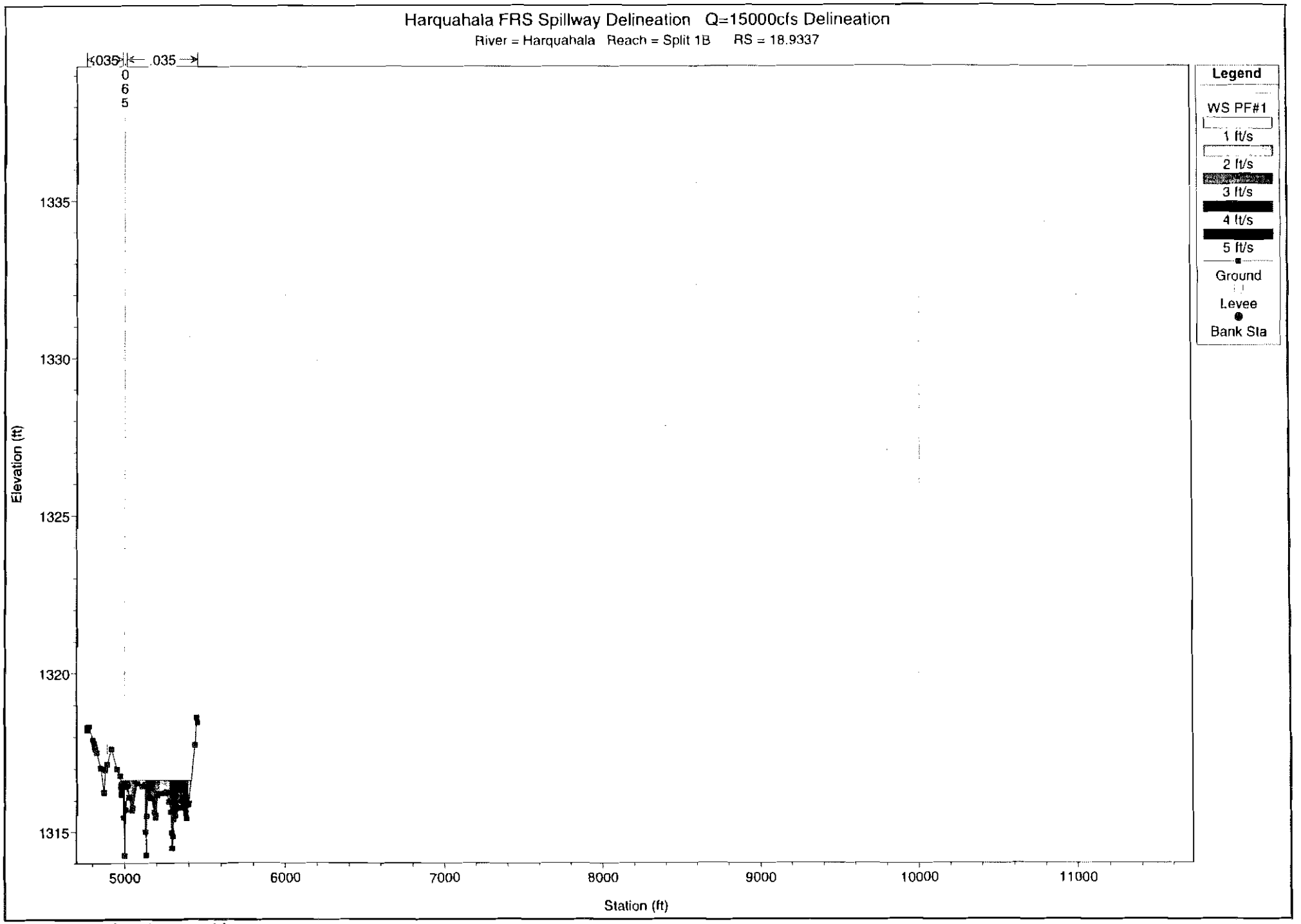
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

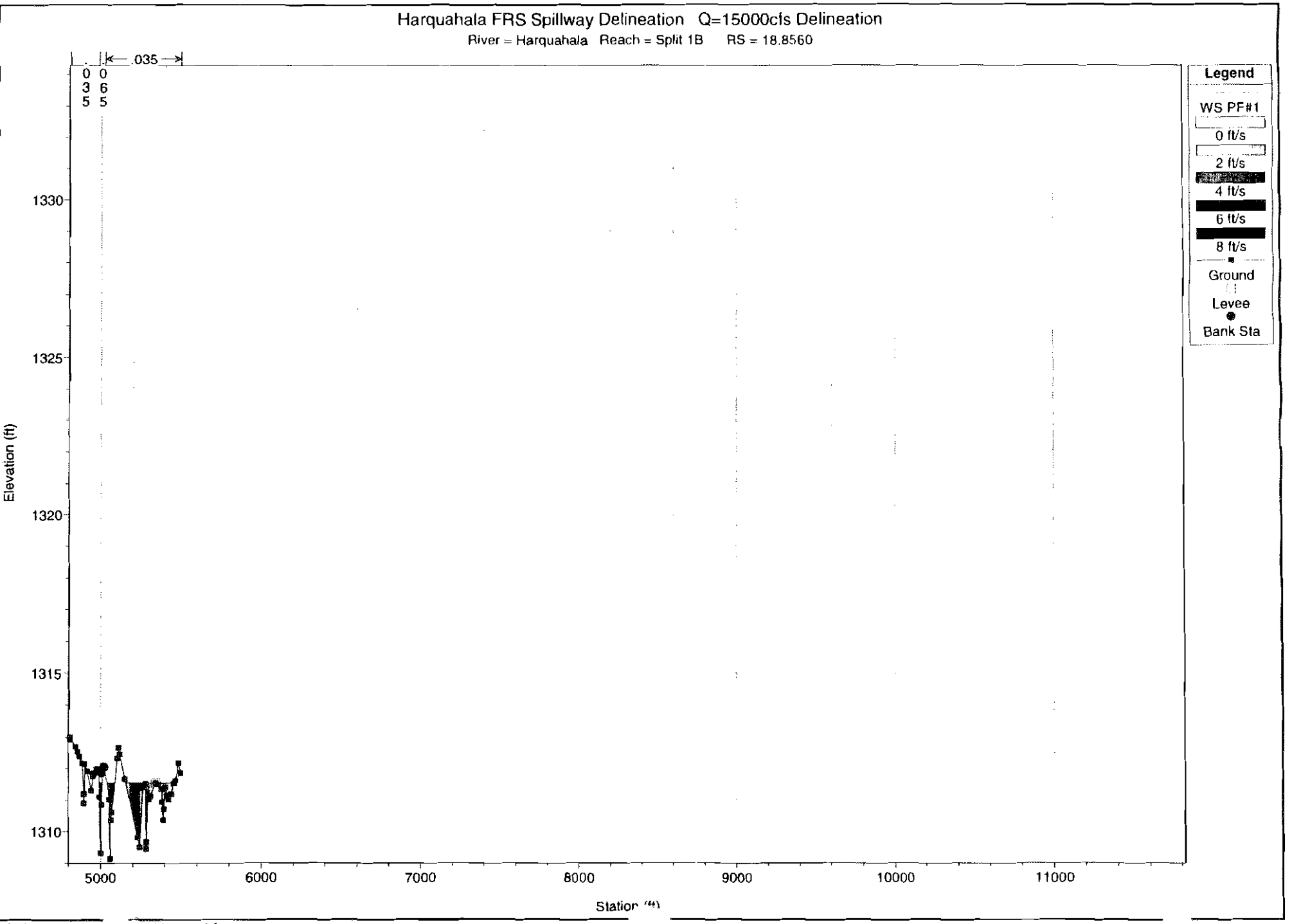
River = Harquahala Reach = Split 1B RS = 19.0153



in Horiz. = 800 1 Vert. = 4 ft



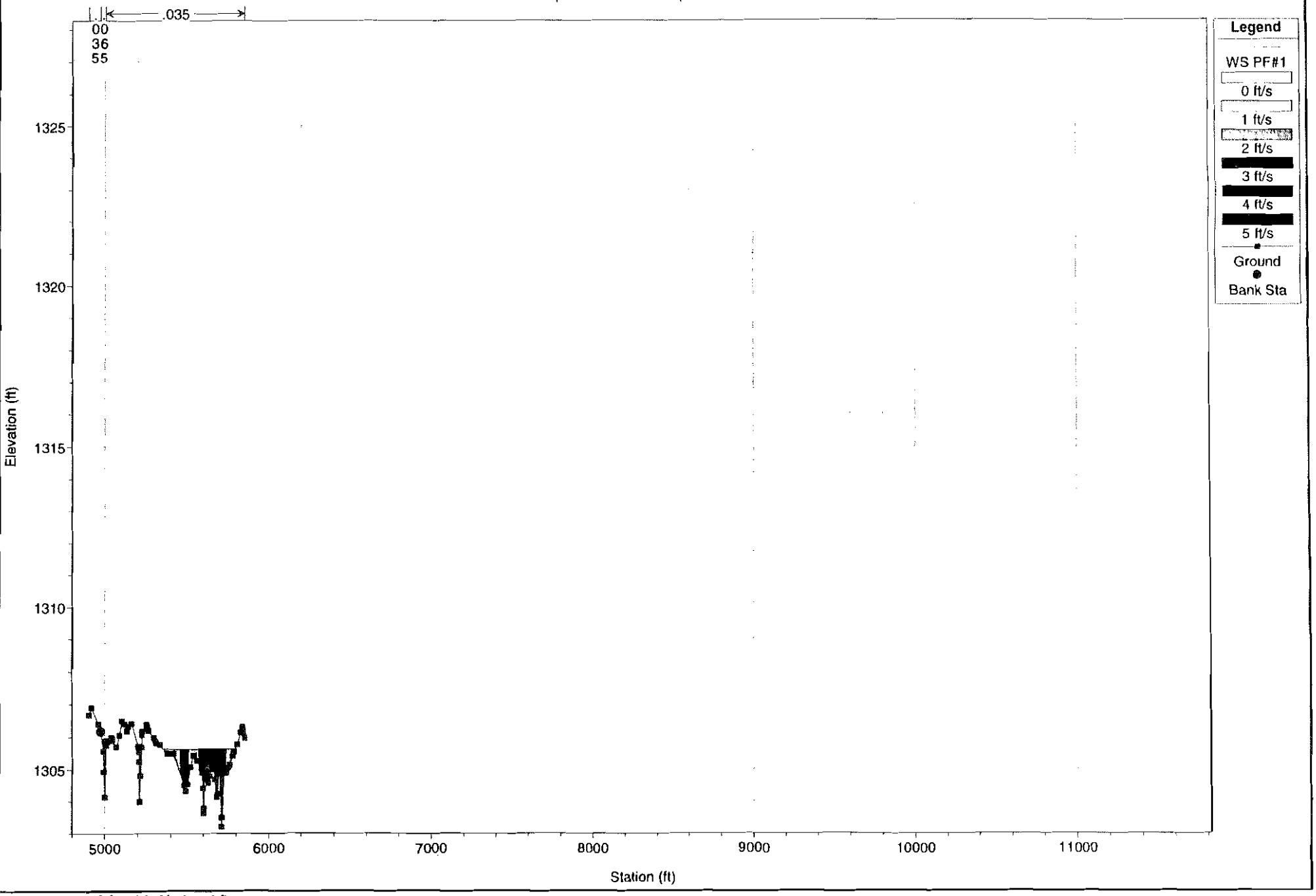
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

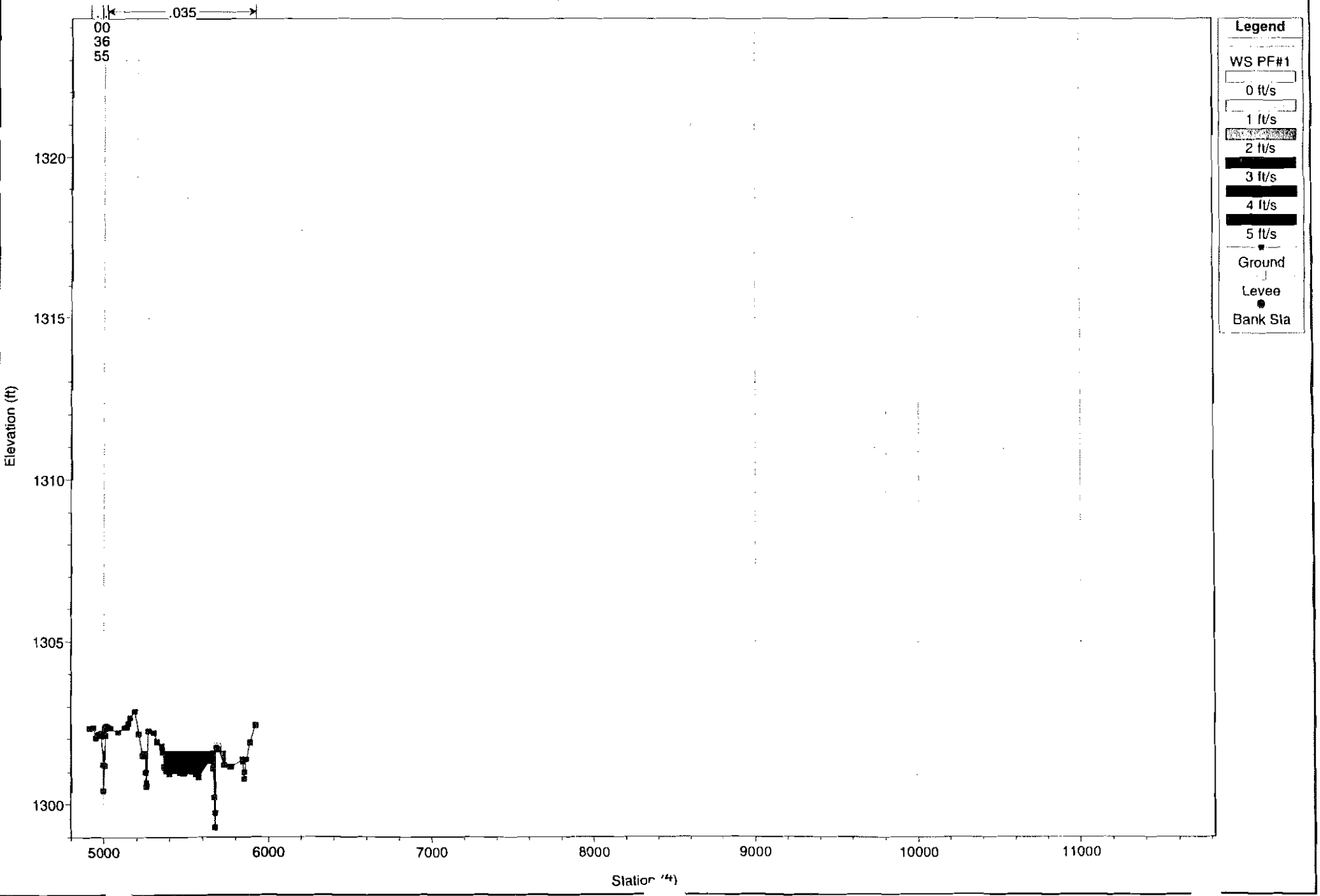
River = Harquahala Reach = Split 1B RS = 18.7744



1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

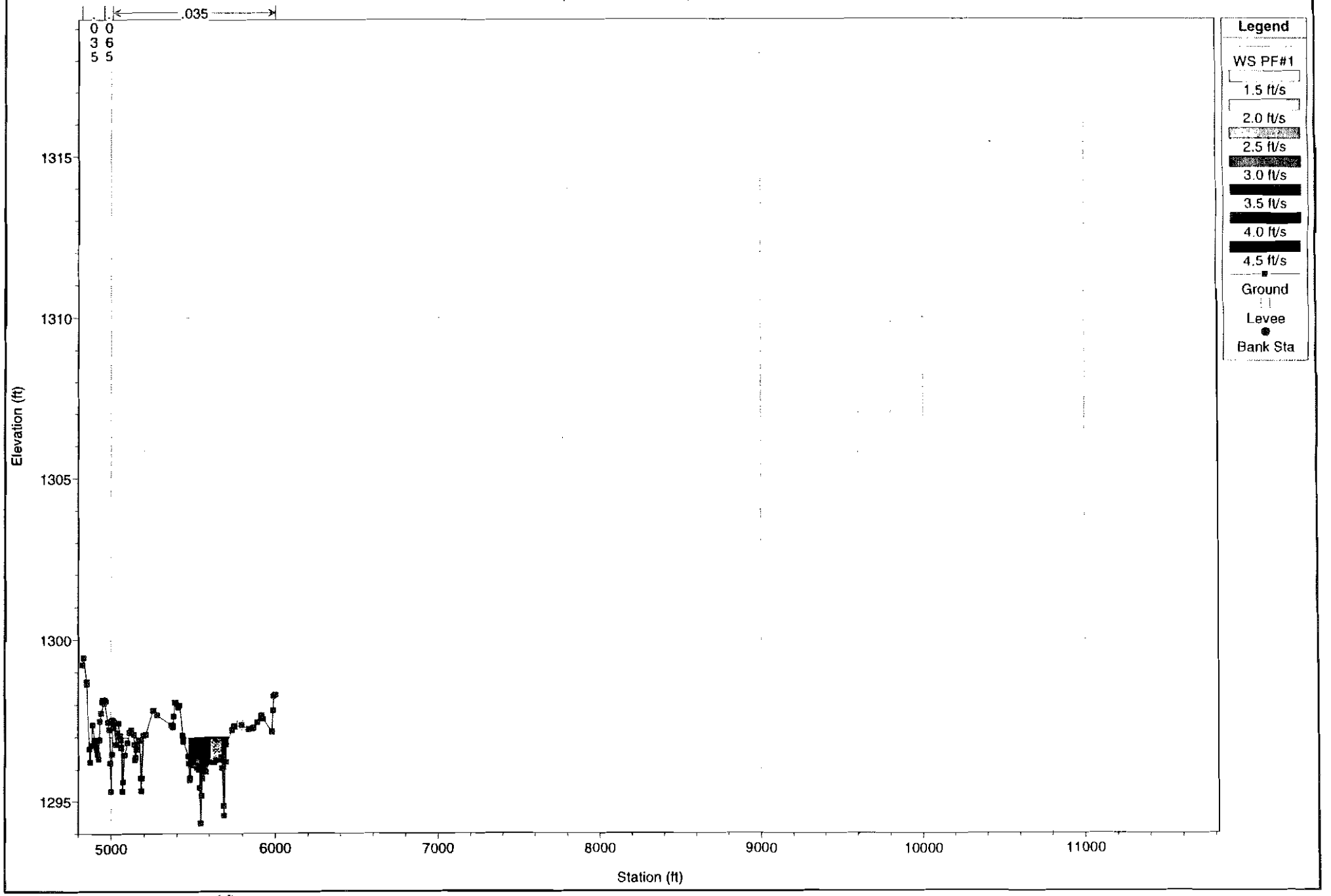
River = Harquahala Reach = Split 1B RS = 18.7184



1 in Horiz. = 800 n Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

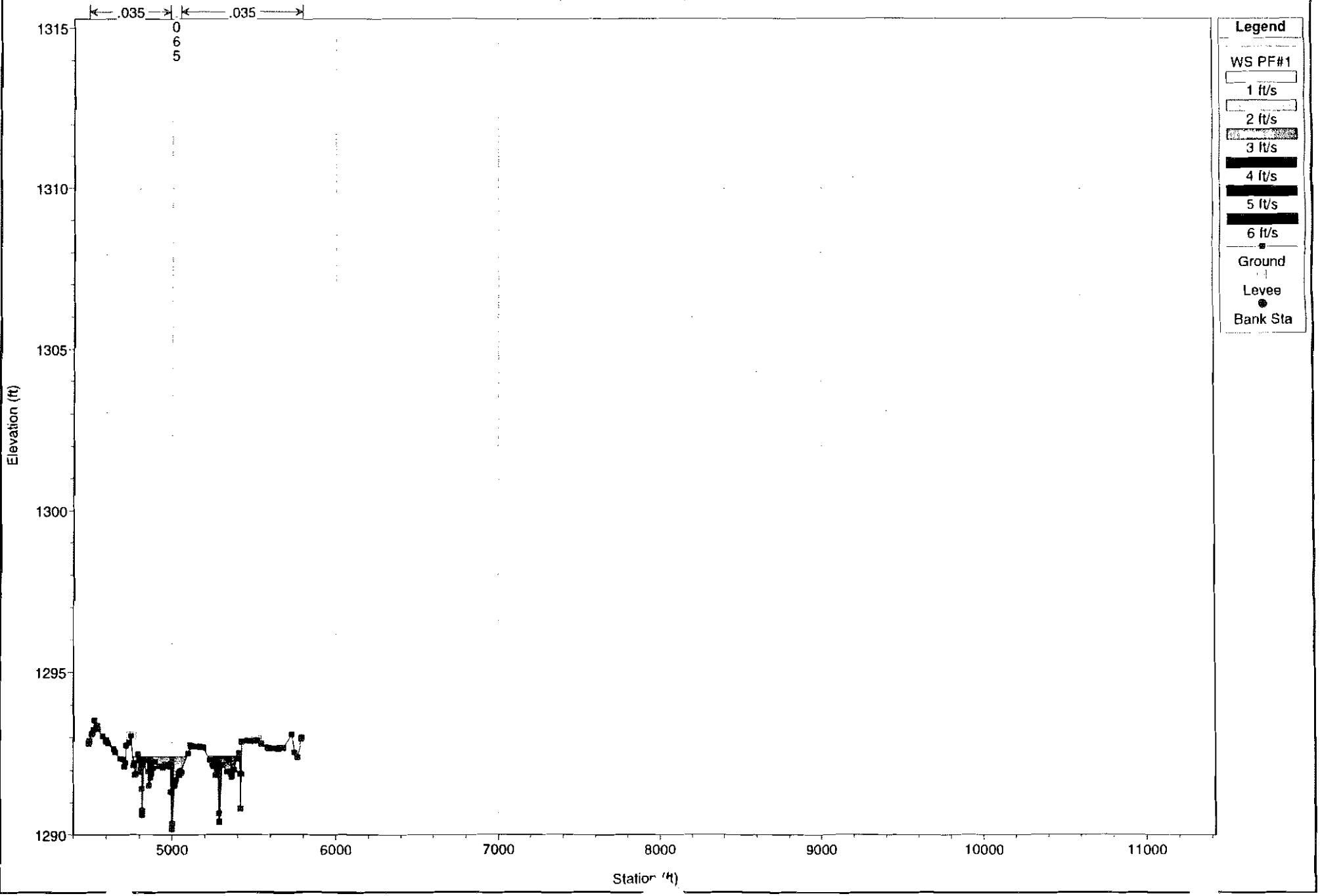
River = Harquahala Reach = Split 1B RS = 18.6384



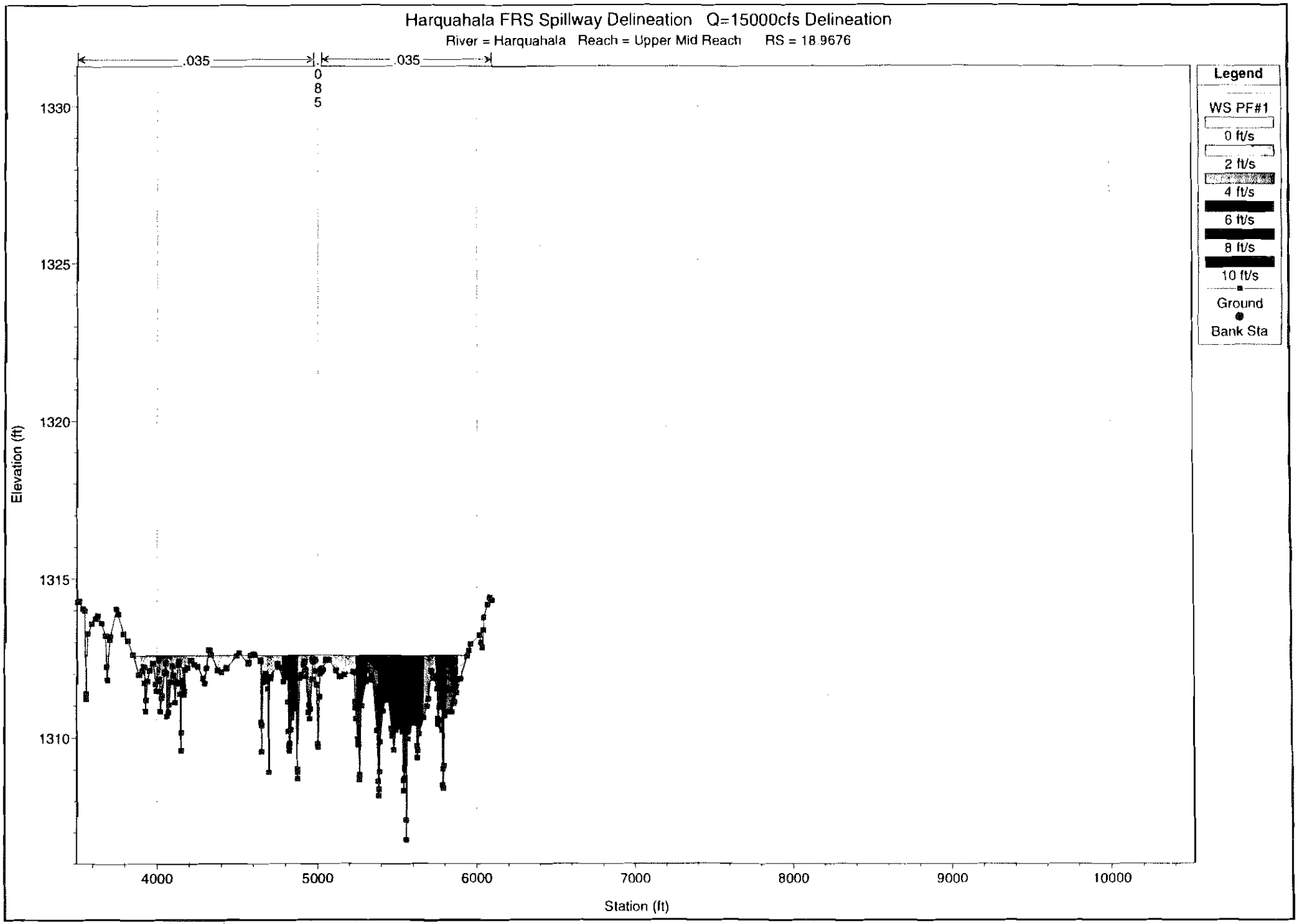
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

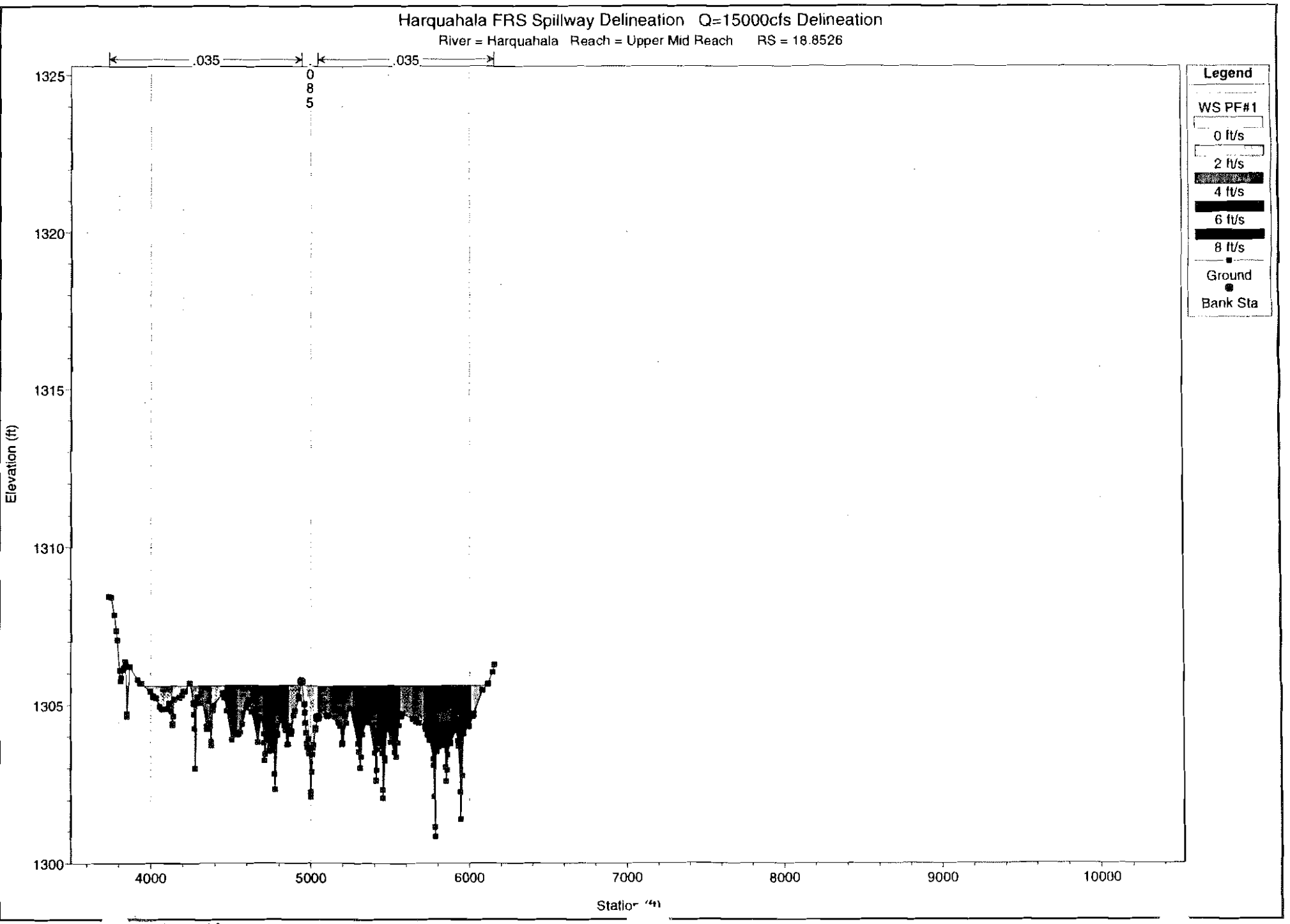
River = Harquahala Reach = Split 1B RS = 18.5485



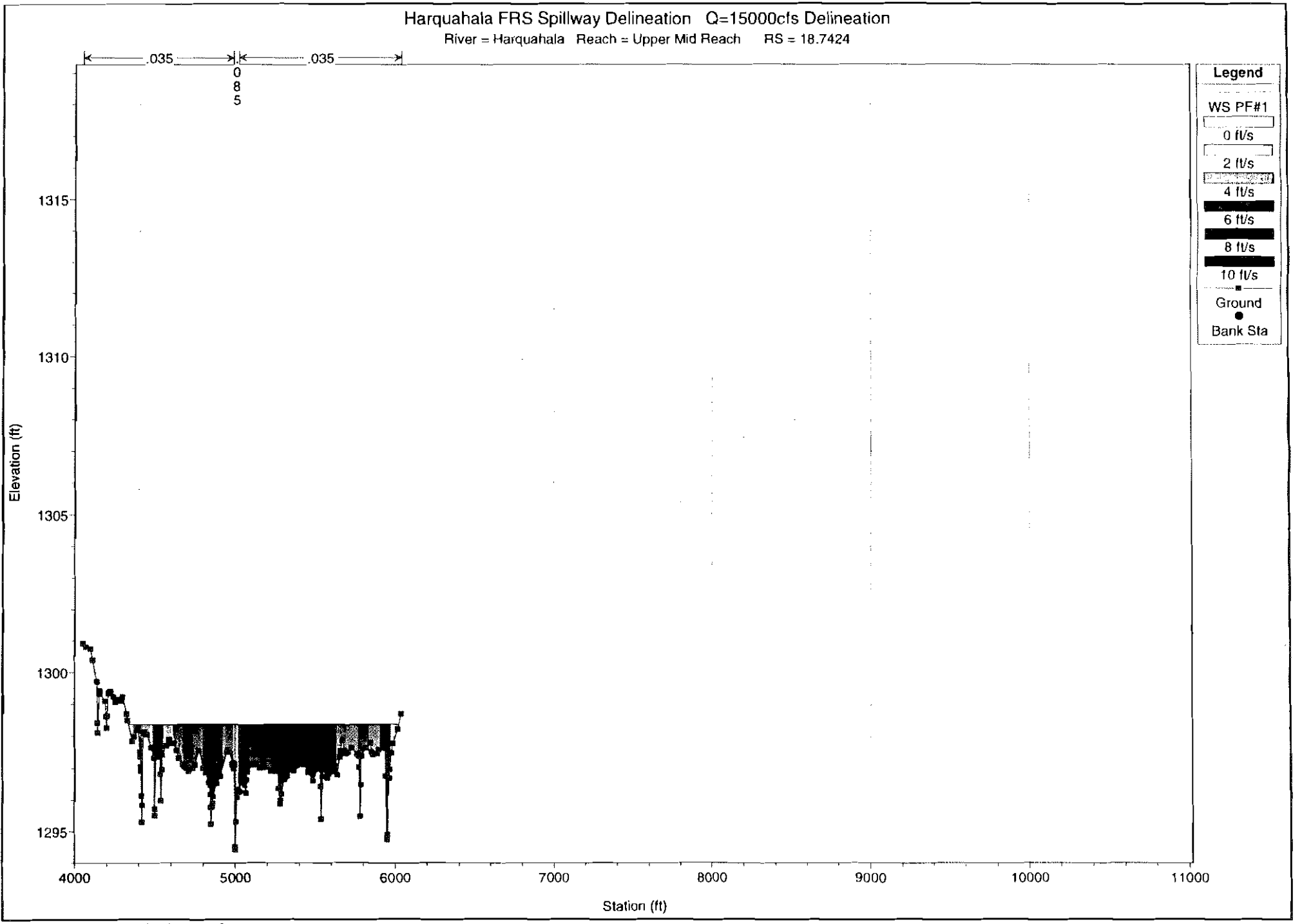
1 in Horiz. = 800 in Vert. = 4 ft



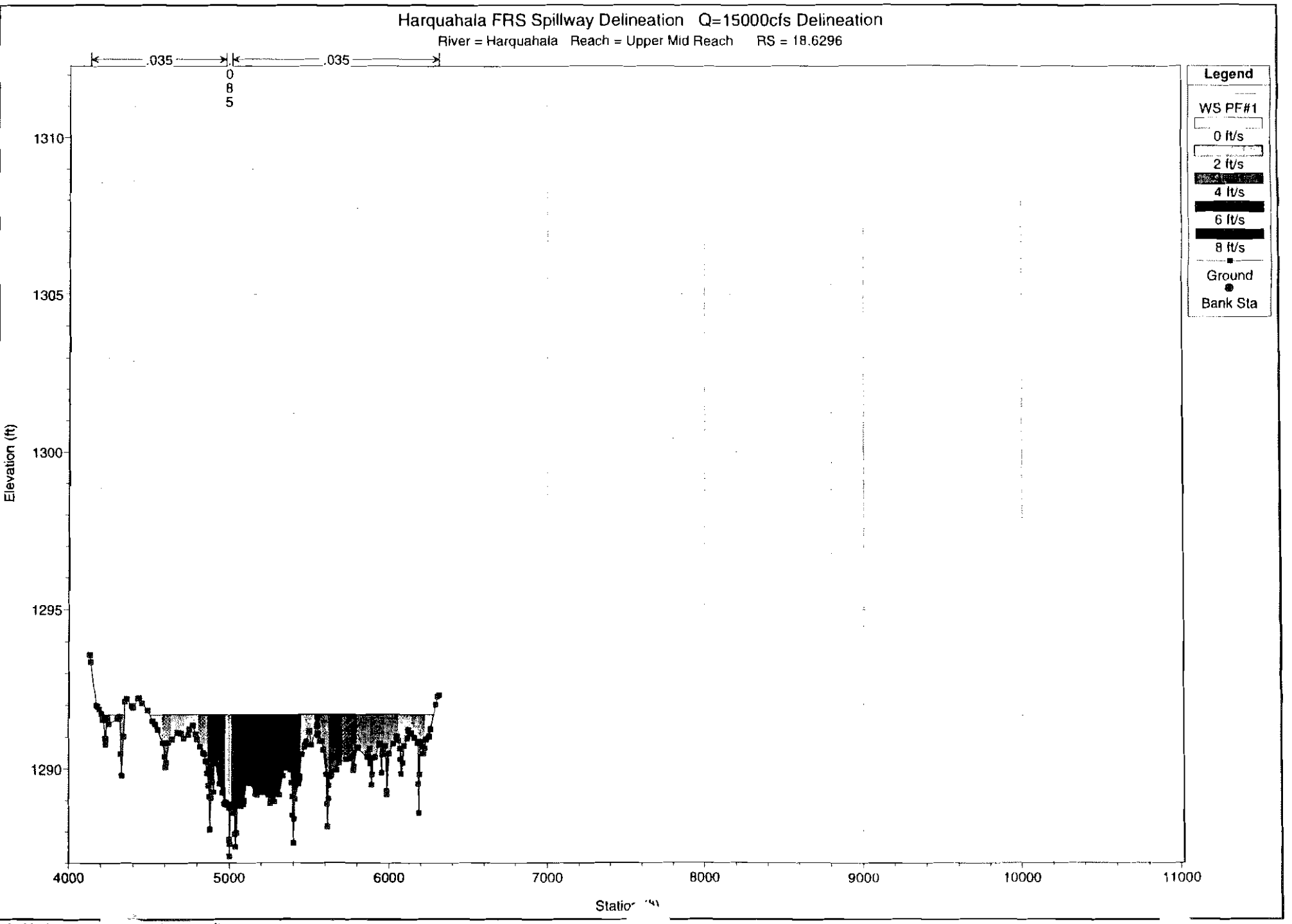
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



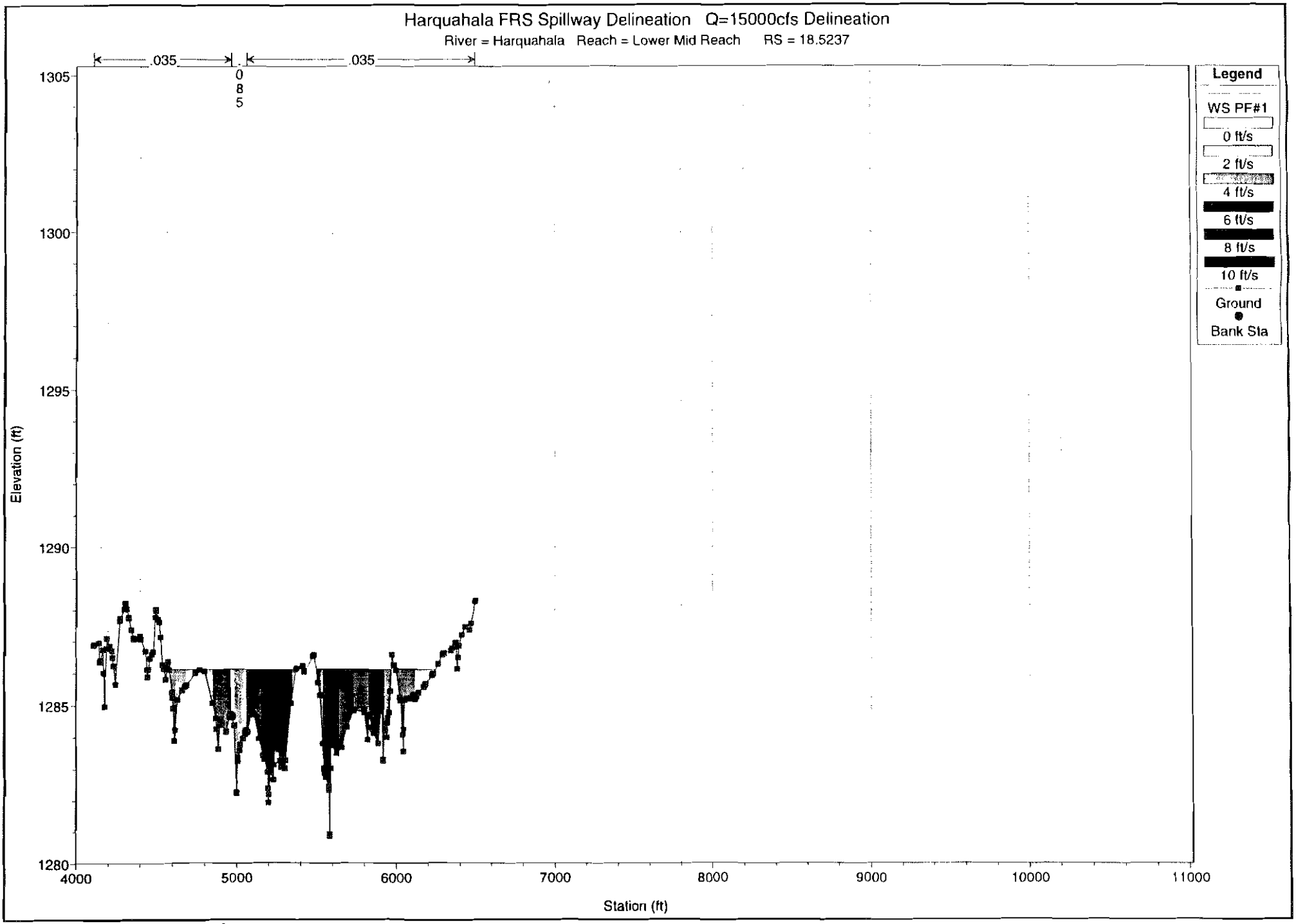
1 in Horiz. = 80C 1 Vert. = 4 ft



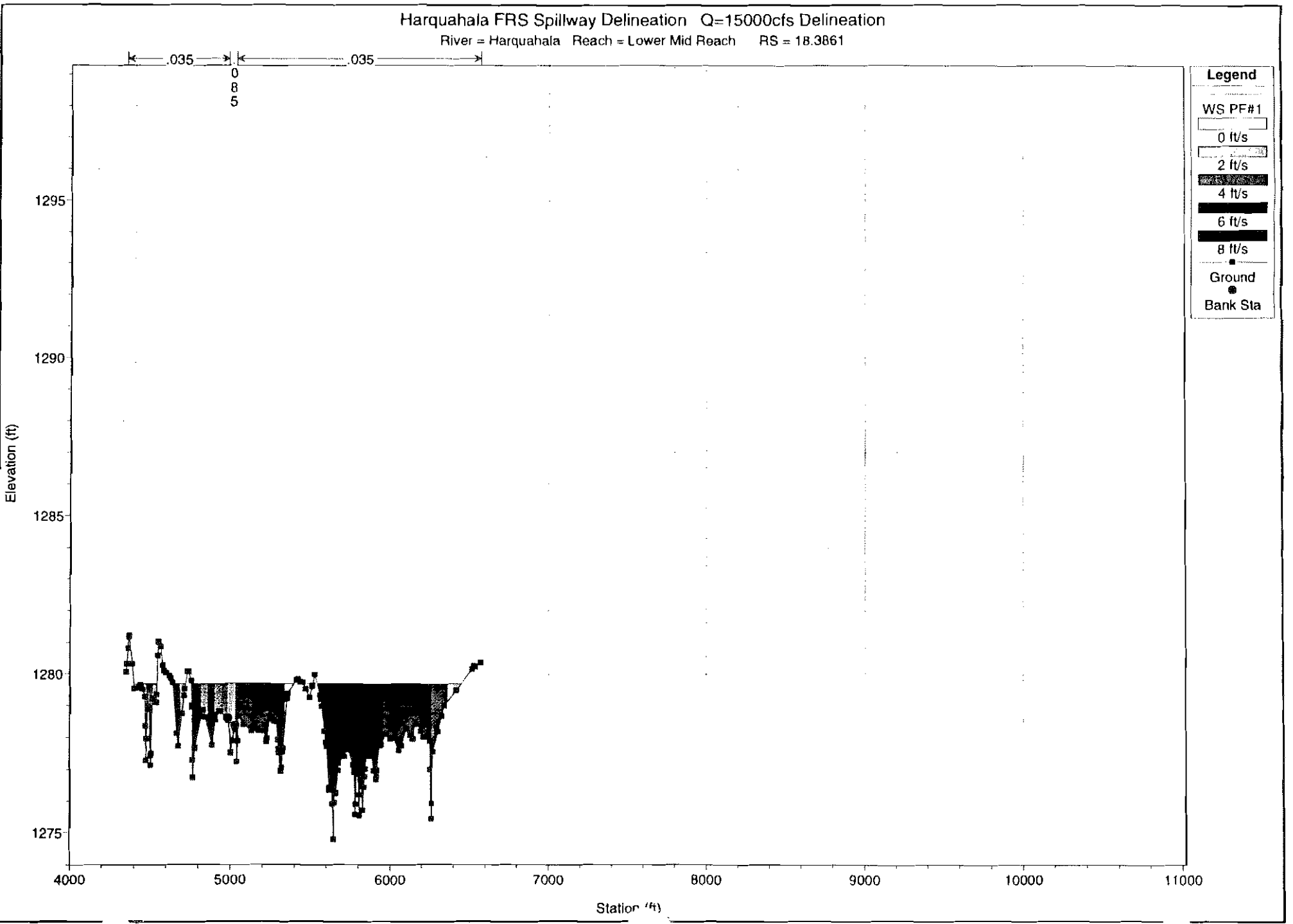
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



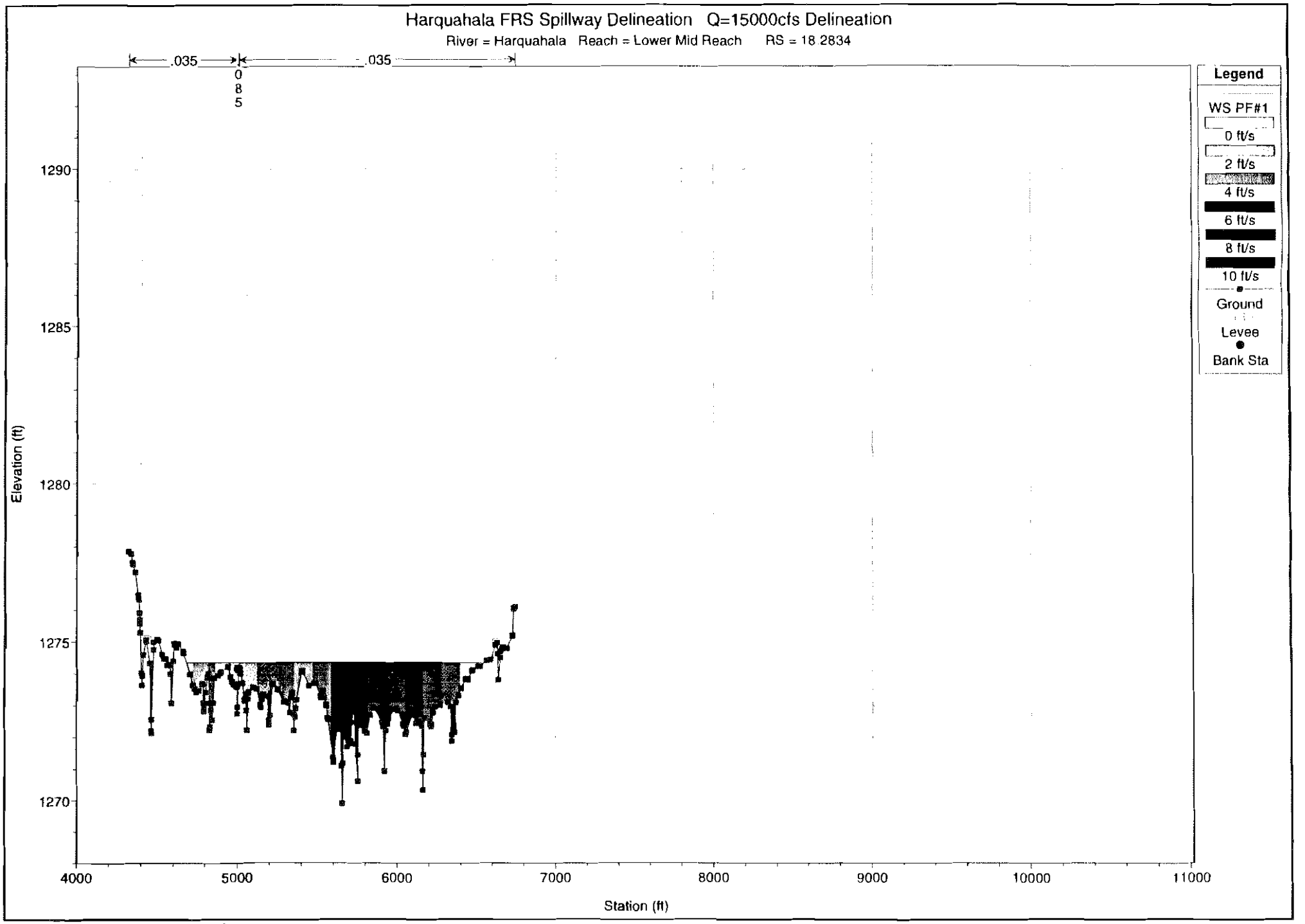
1 in Horiz. = 800 1 Vert. = 4 ft



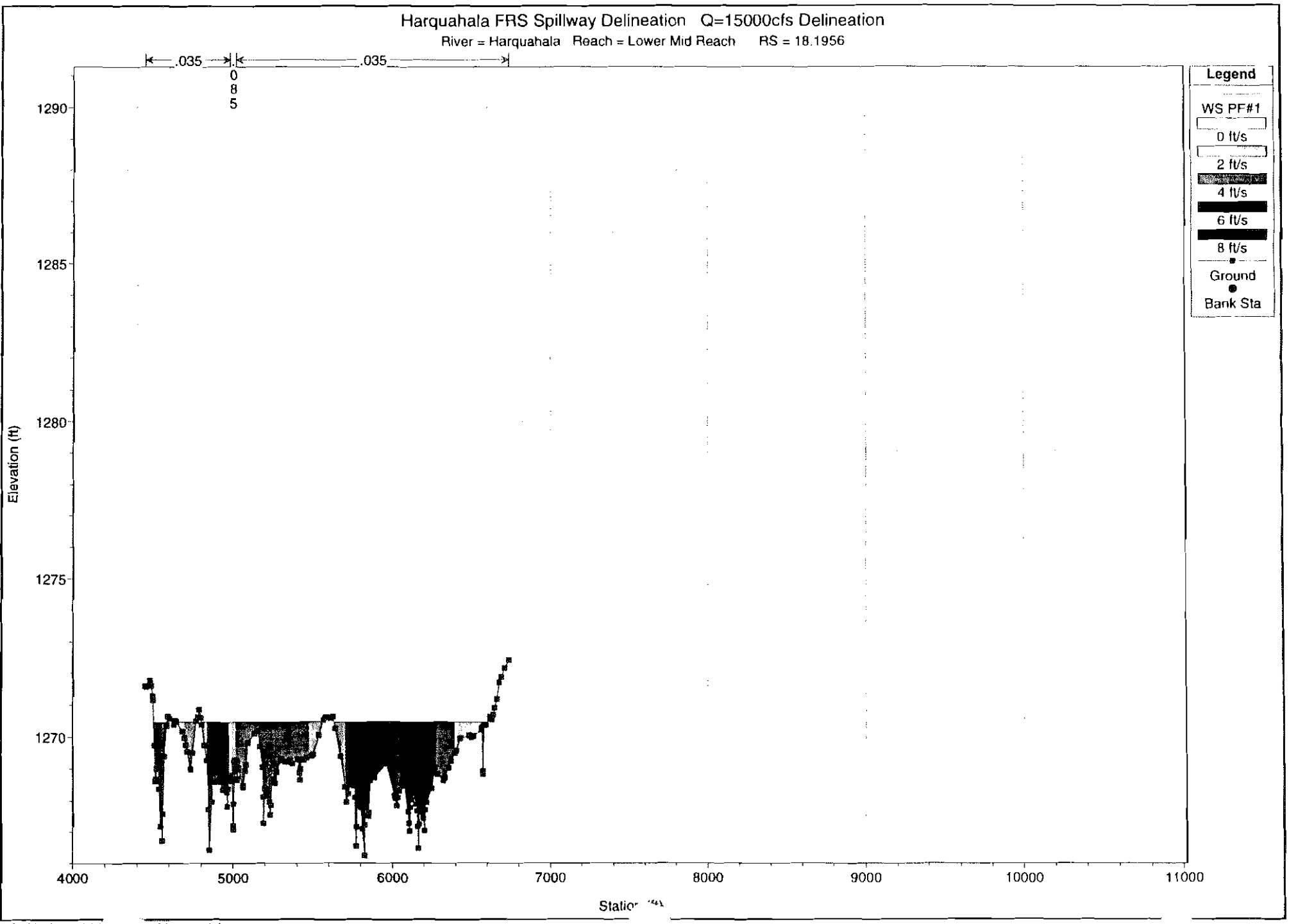
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



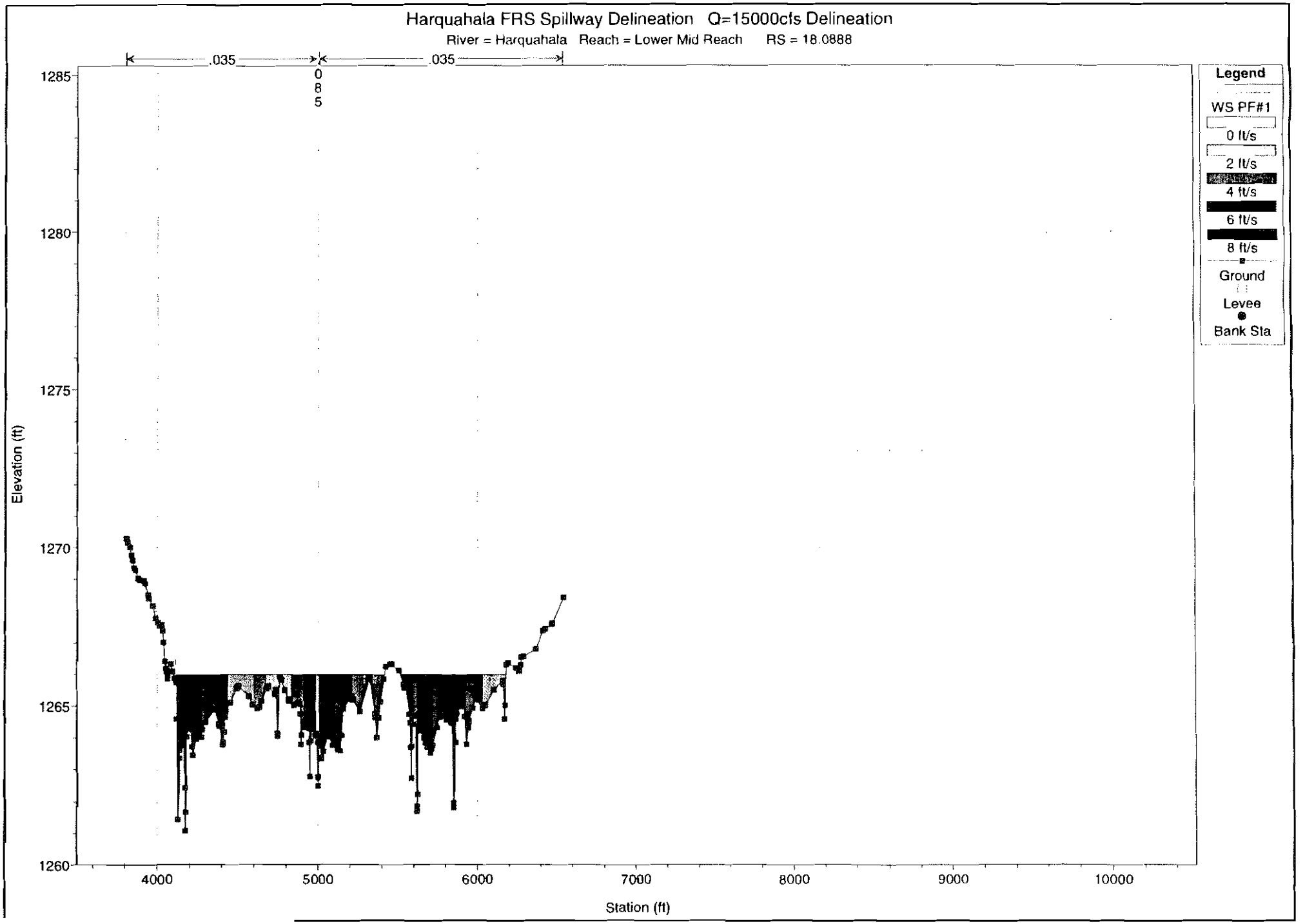
1 in Horiz. = 800 Vert. = 4 ft

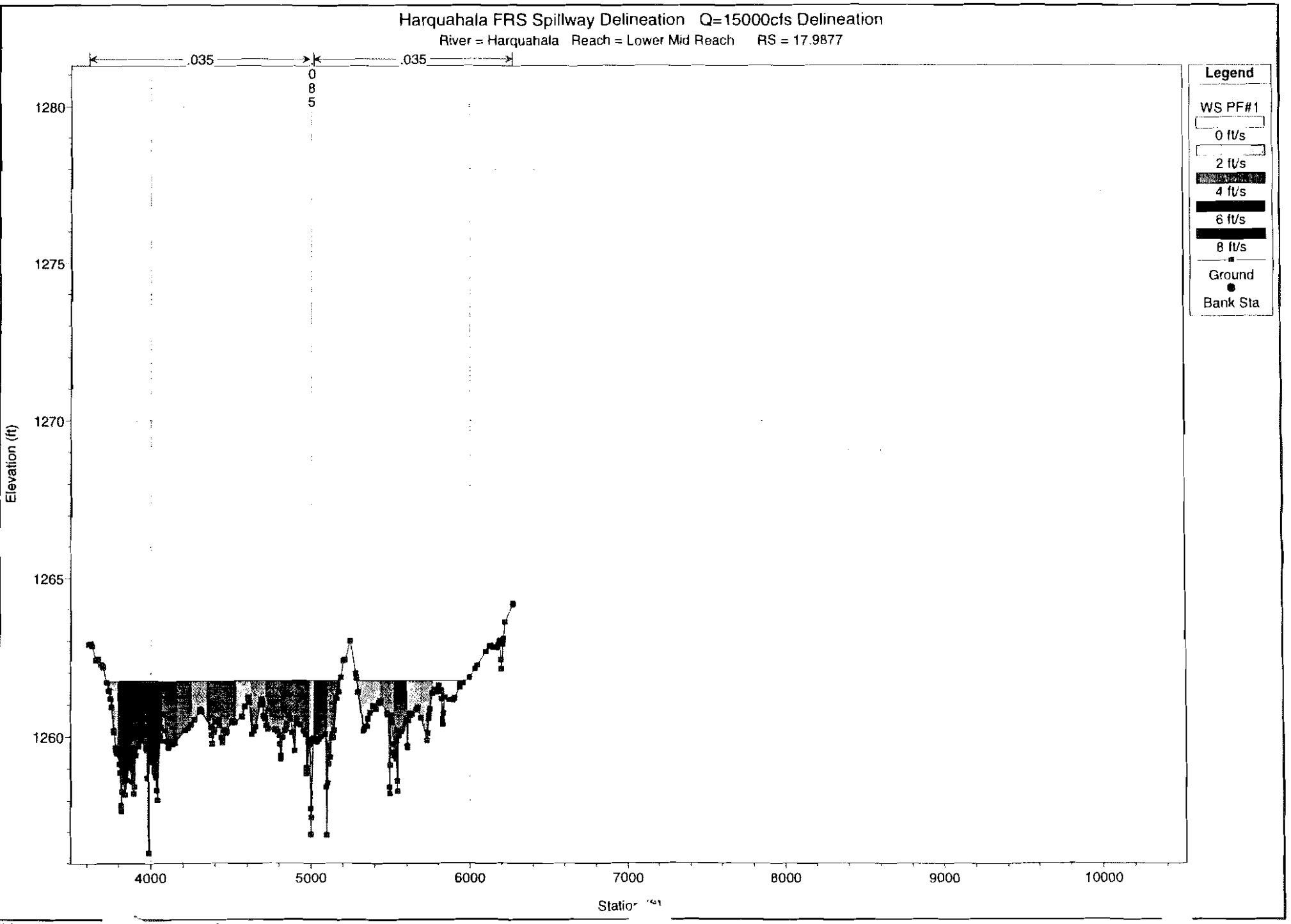


1 in Horiz. = 800 ft 1 in Vert. = 4 ft

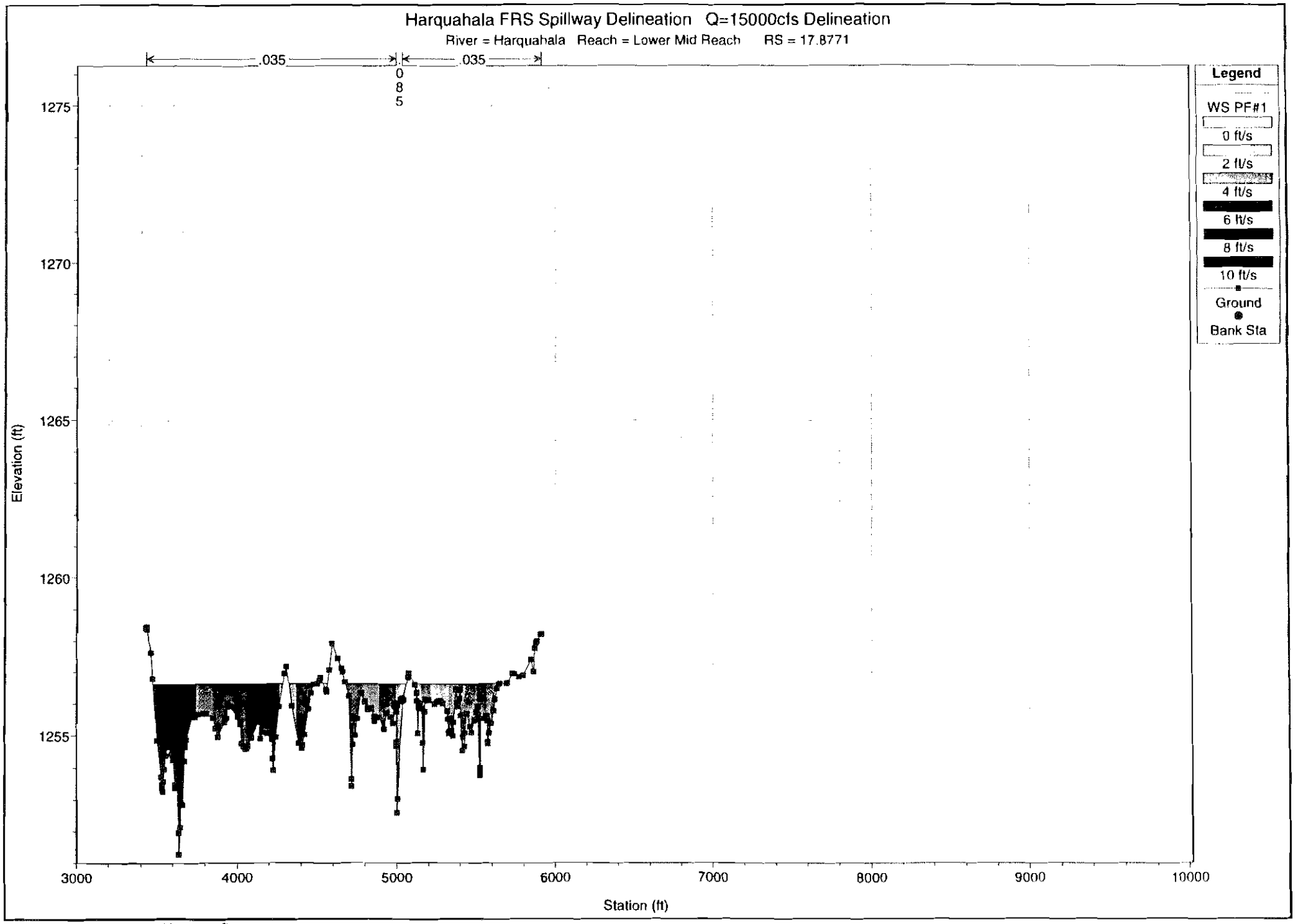


1 in Horiz. = 800 1 Vert. = 4 ft

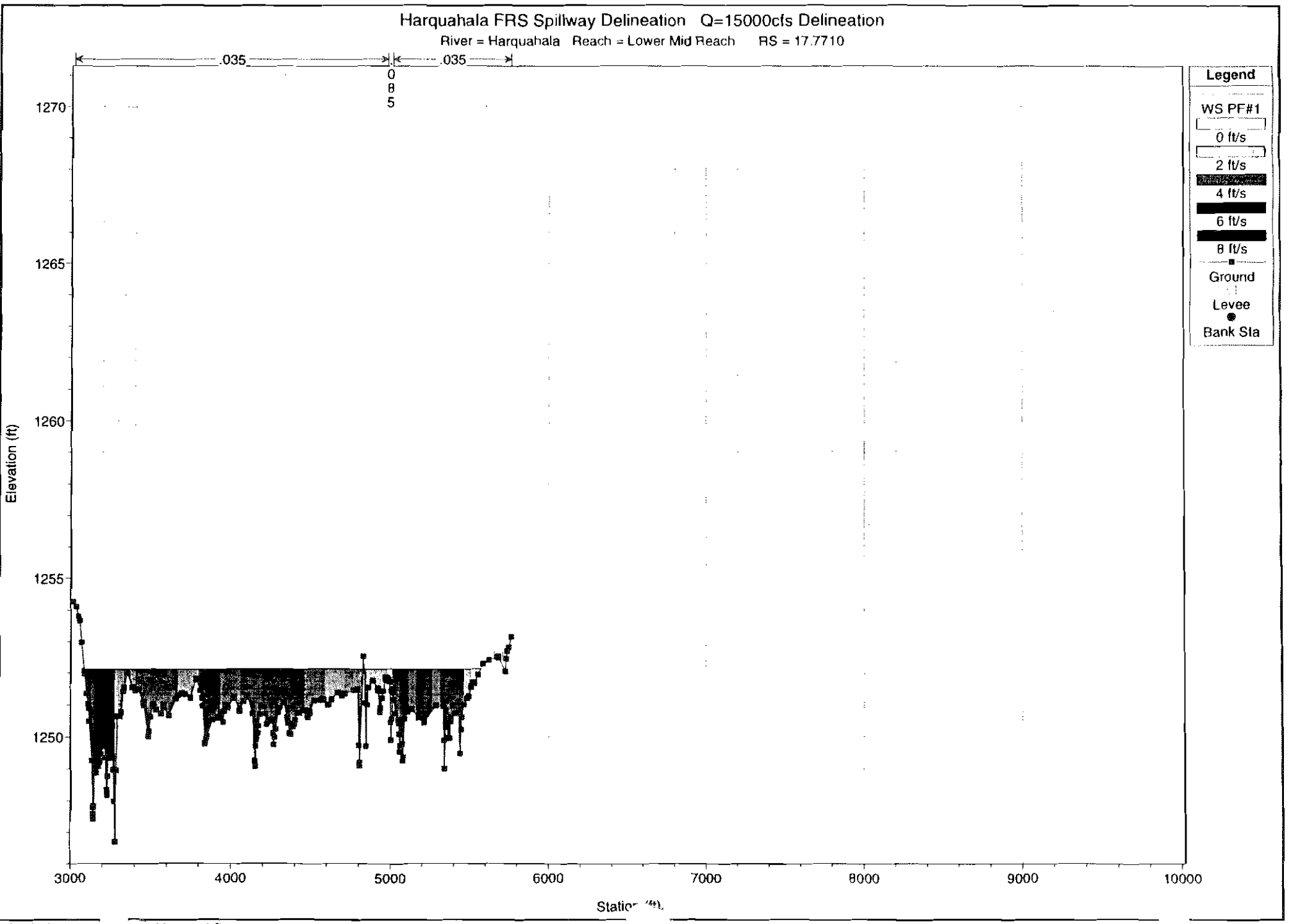

Harquahala FRS Spillway Delineation Q=15000cfs Delineation
River = Harquahala Reach = Lower Mid Reach RS = 18.0888
.035
.035
085
Legend
WS PF#1
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
Ground
Levee
Bank Sta
Elevation (ft)
1285
1280
1275
1270
1265
1260
4000
5000
6000
7000
8000
9000
10000
Station (ft)



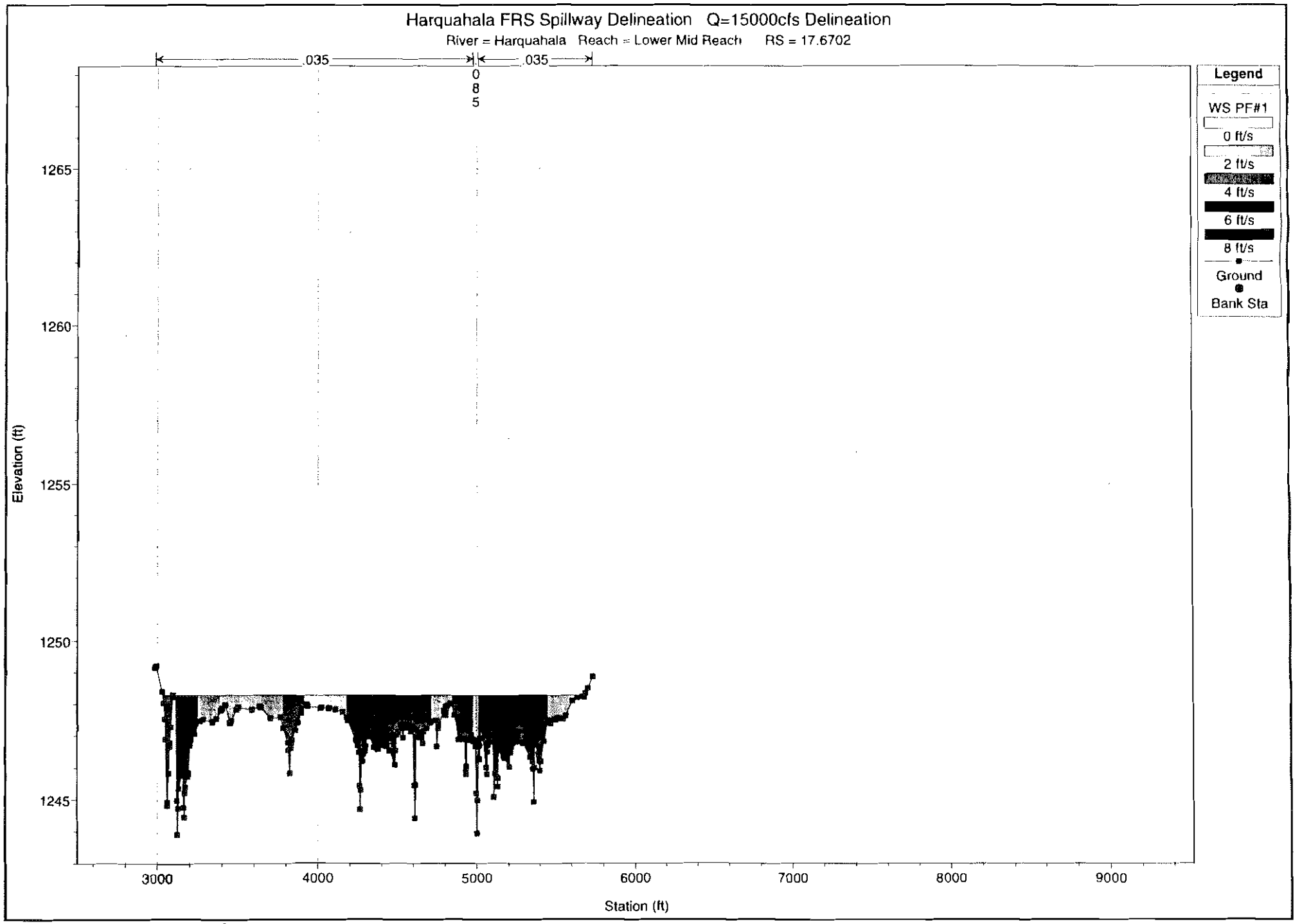
1 in Horiz. = 800) Vert. = 4 ft



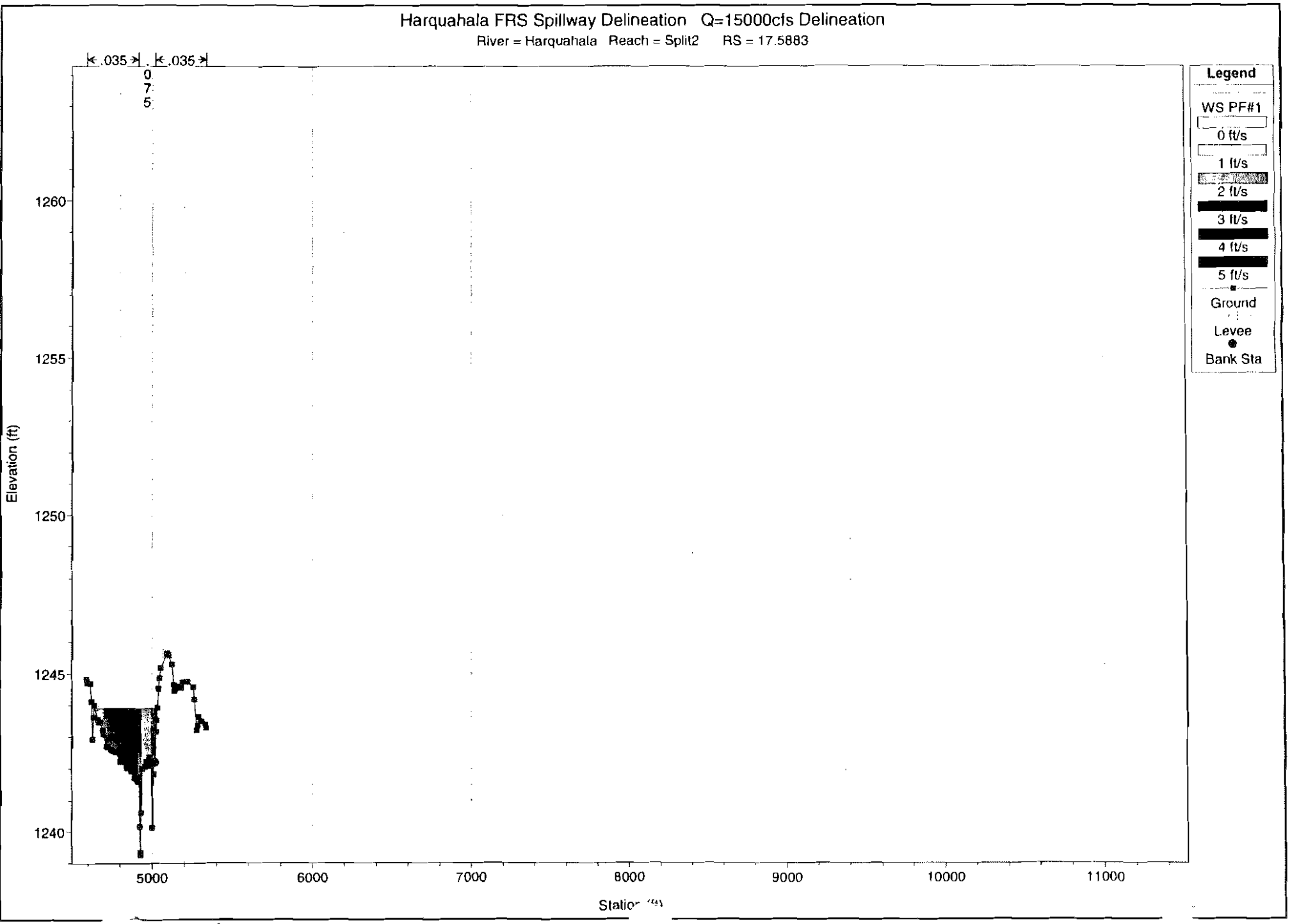
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 800 1 Vert. = 4 ft



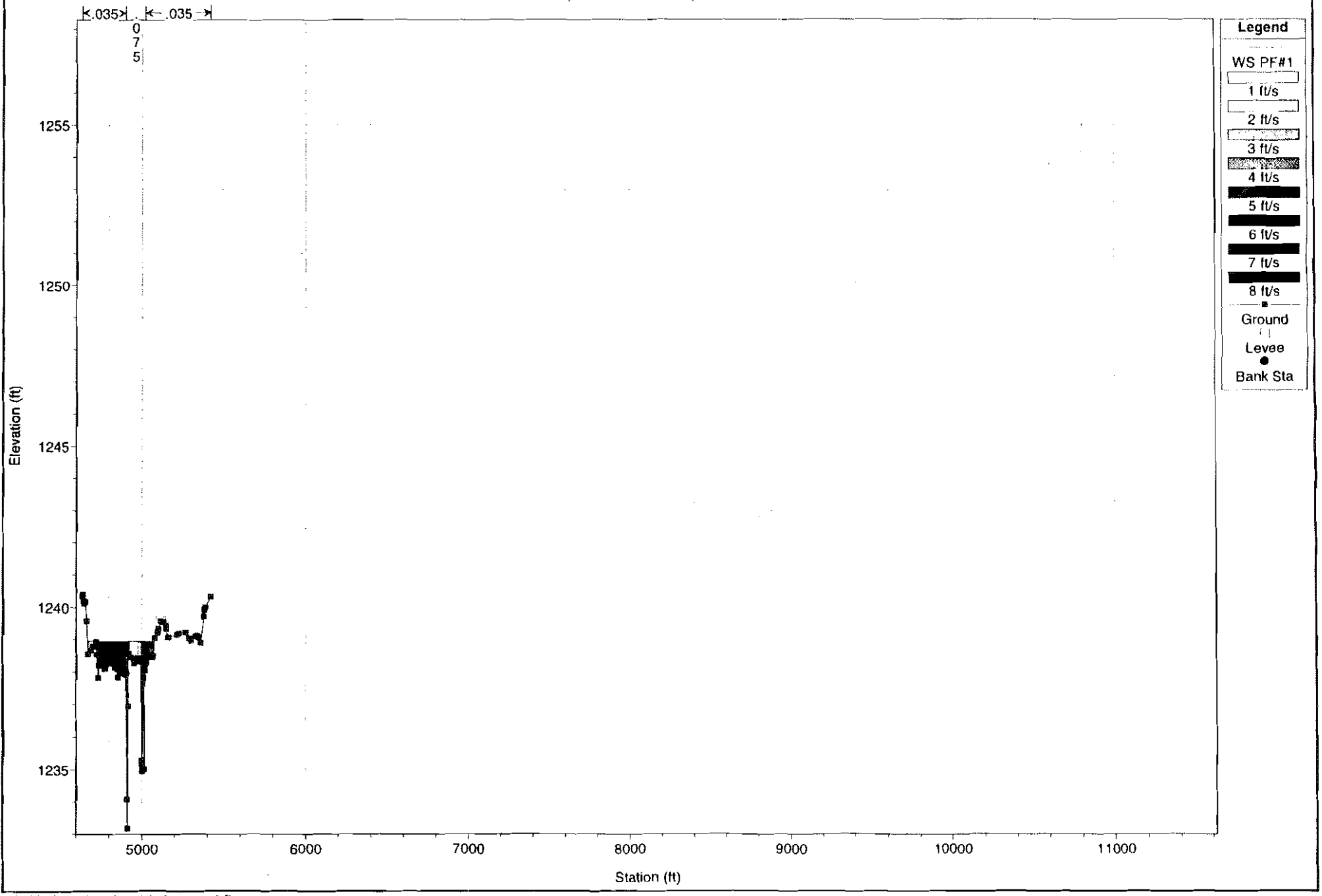
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



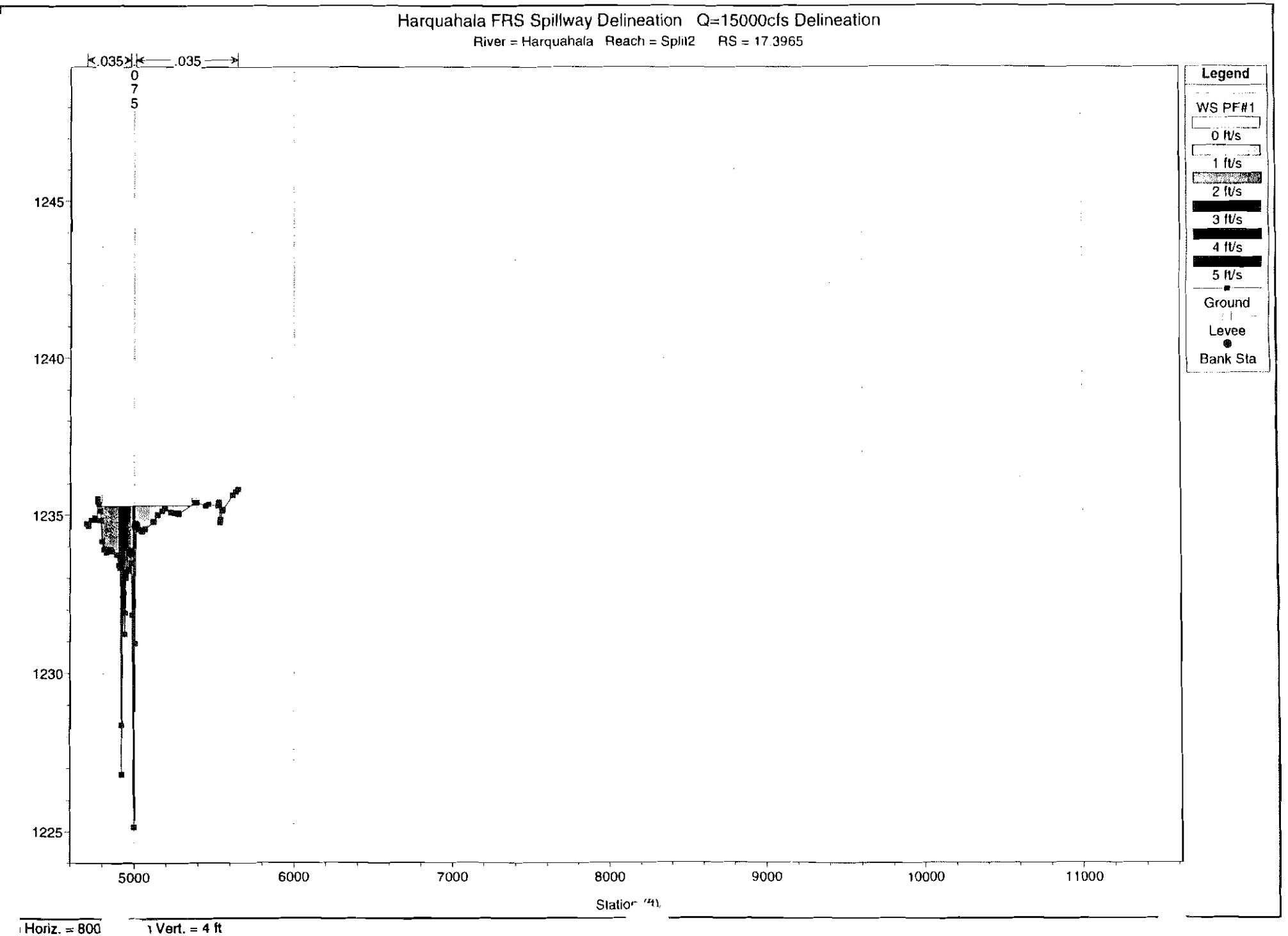
1 in Horiz. = 800 Vert. = 4 ft

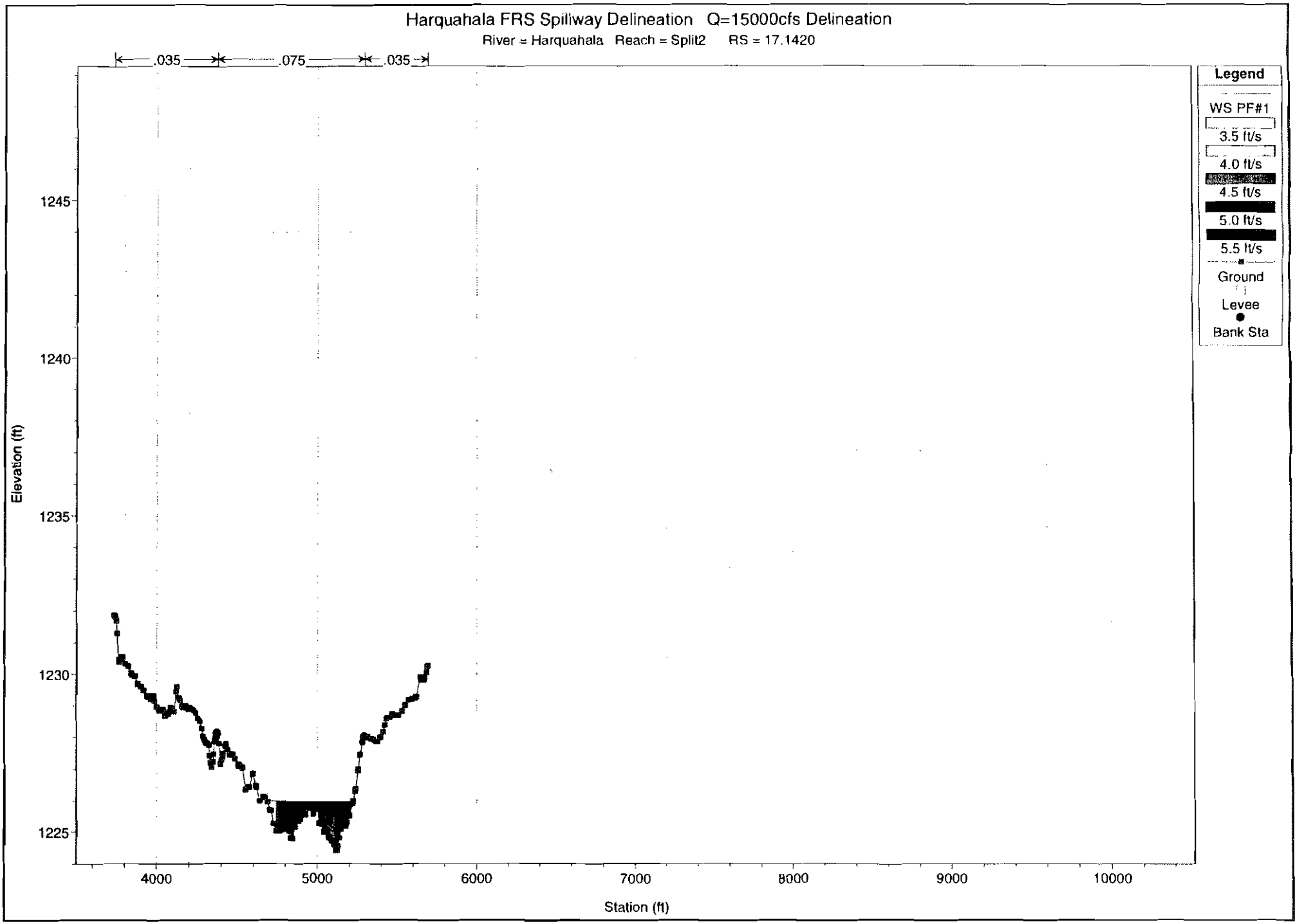
Harquahala FRS Spillway Delineation Q=15000cfs Delineation

River = Harquahala Reach = Split2 RS = 17.4913

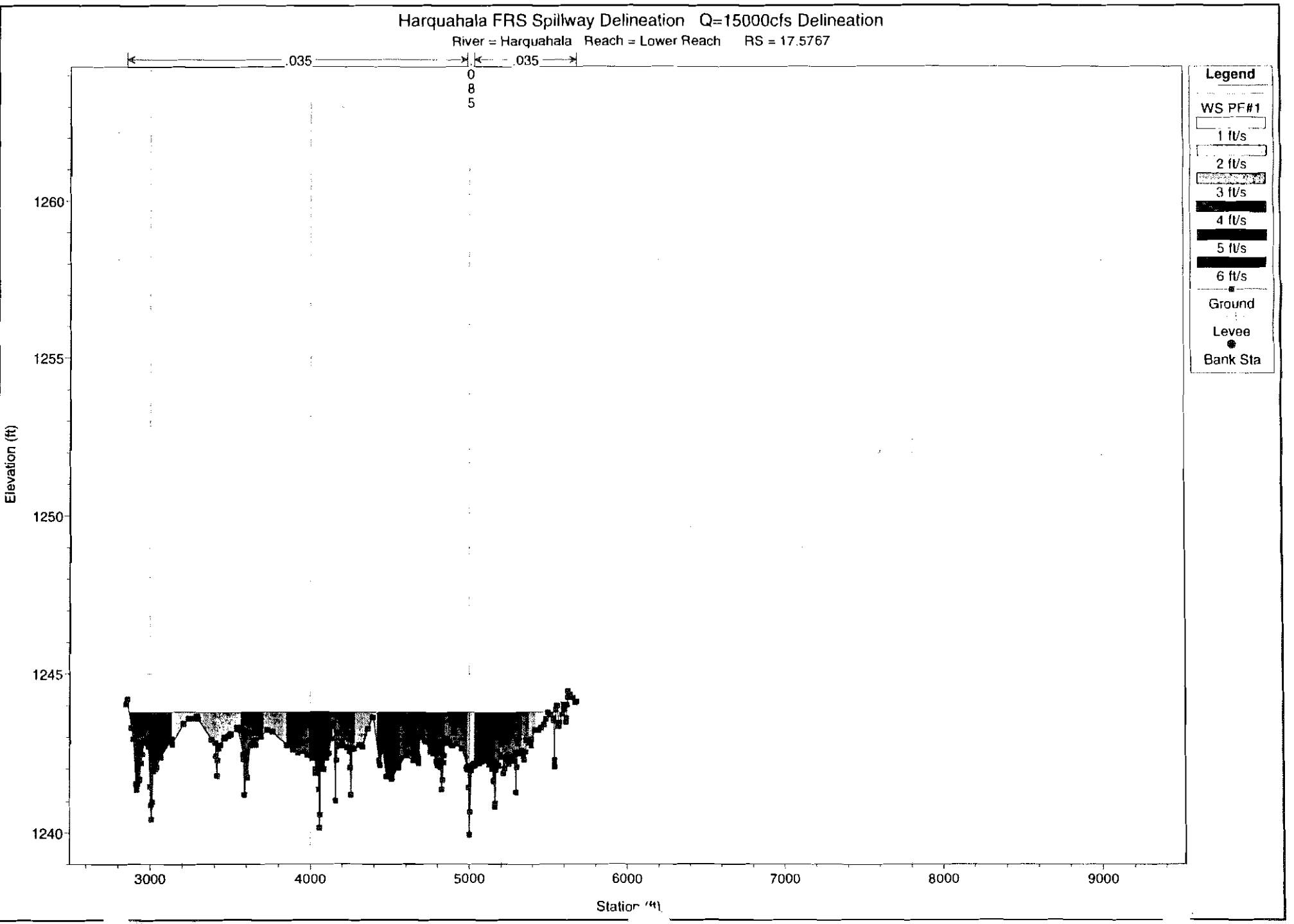


1 in Horiz. = 800 ft 1 in Vert. = 4 ft


Harquahala FRS Spillway Delineation Q=15000cfs Delineation
River = Harquahala Reach = Split2 RS = 17.3965
.035
.035
0
7
5
1245
1240
1235
1230
1225
5000
6000
7000
8000
9000
10000
11000
Legend
WS PF#1
0 ft/s
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
Ground
Levee
Bank Sta
Horiz. = 800
Vert. = 4 ft



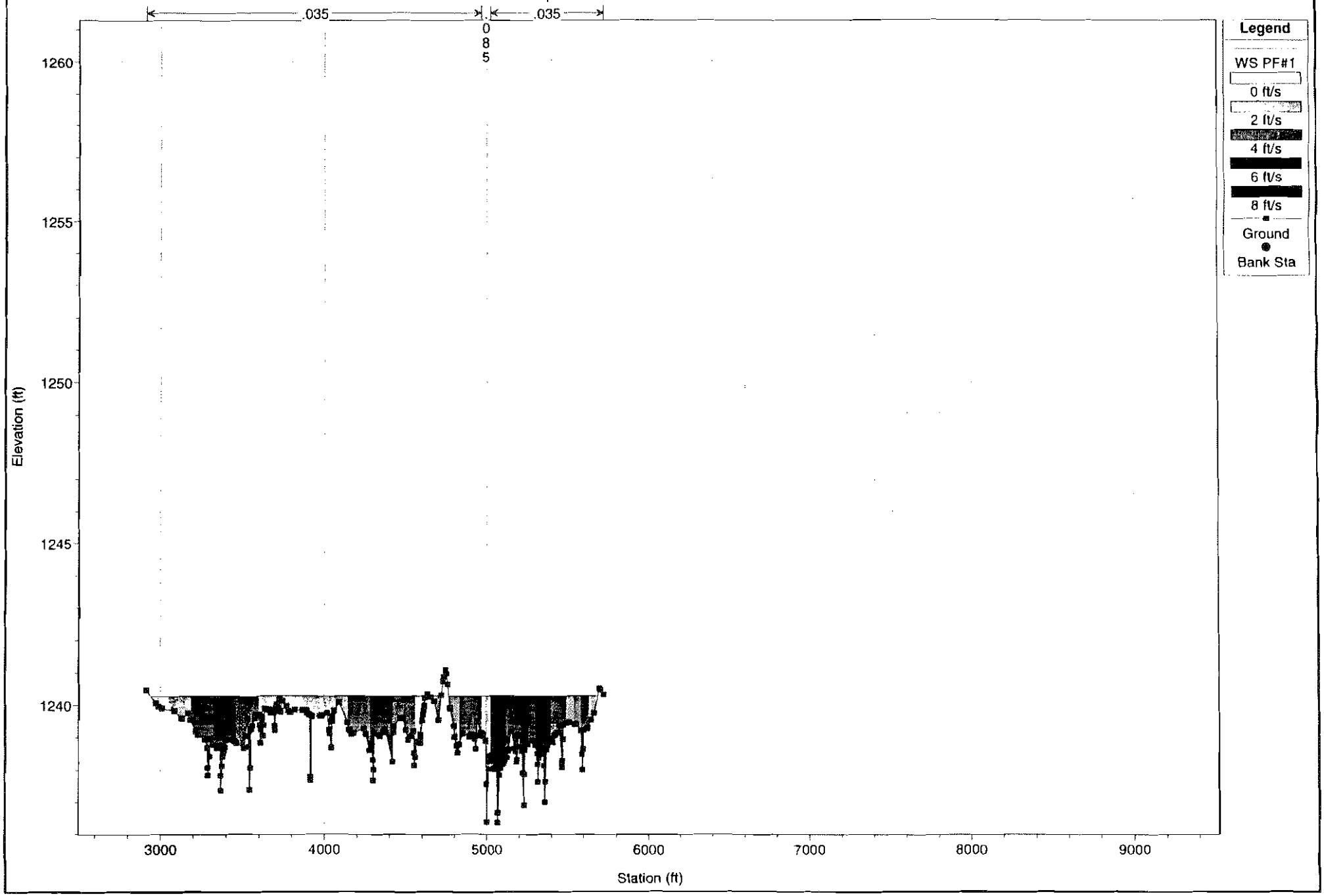
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



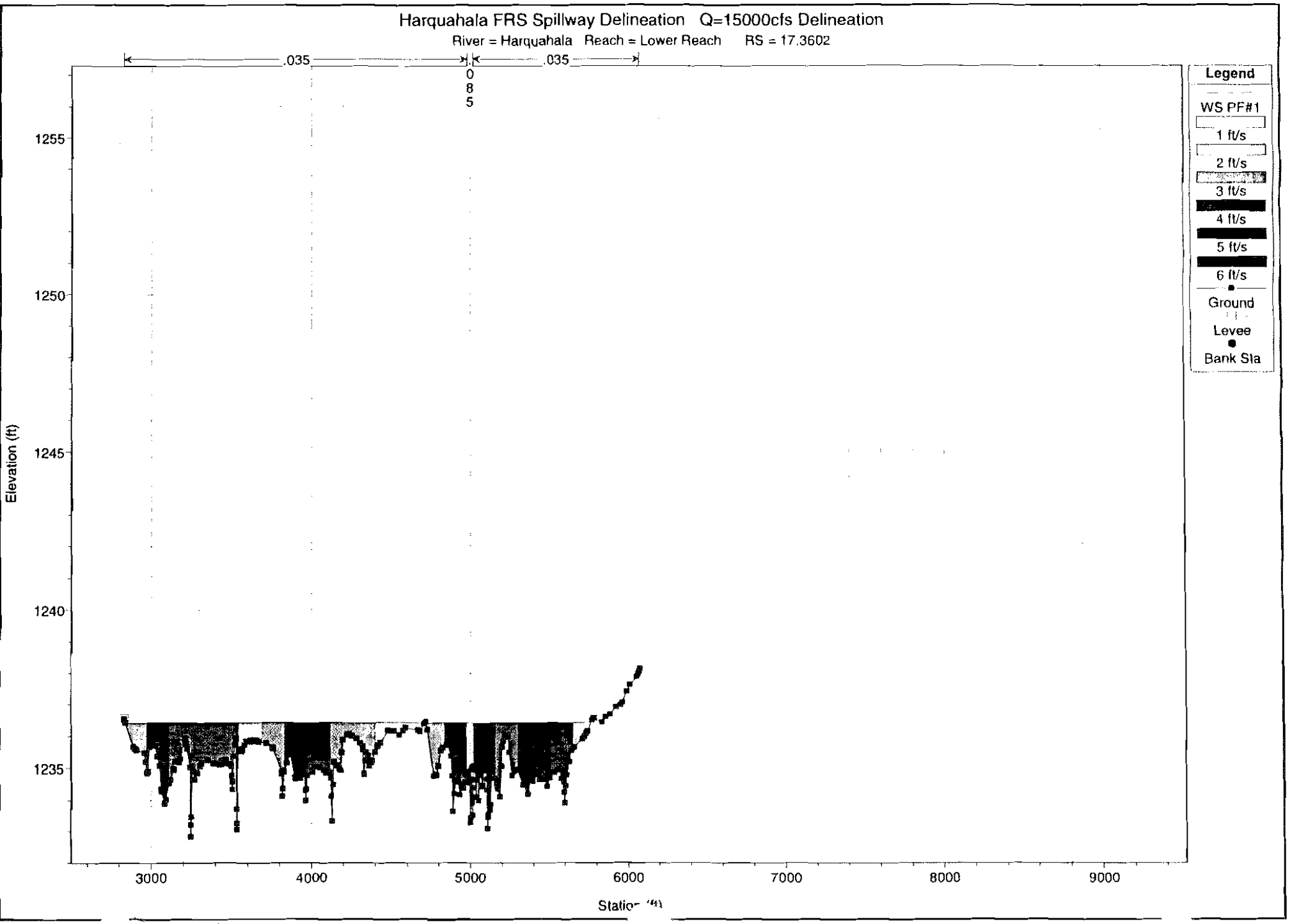
1 in Horiz. = 800 1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

River = Harquahala Reach = Lower Reach RS = 17.4734

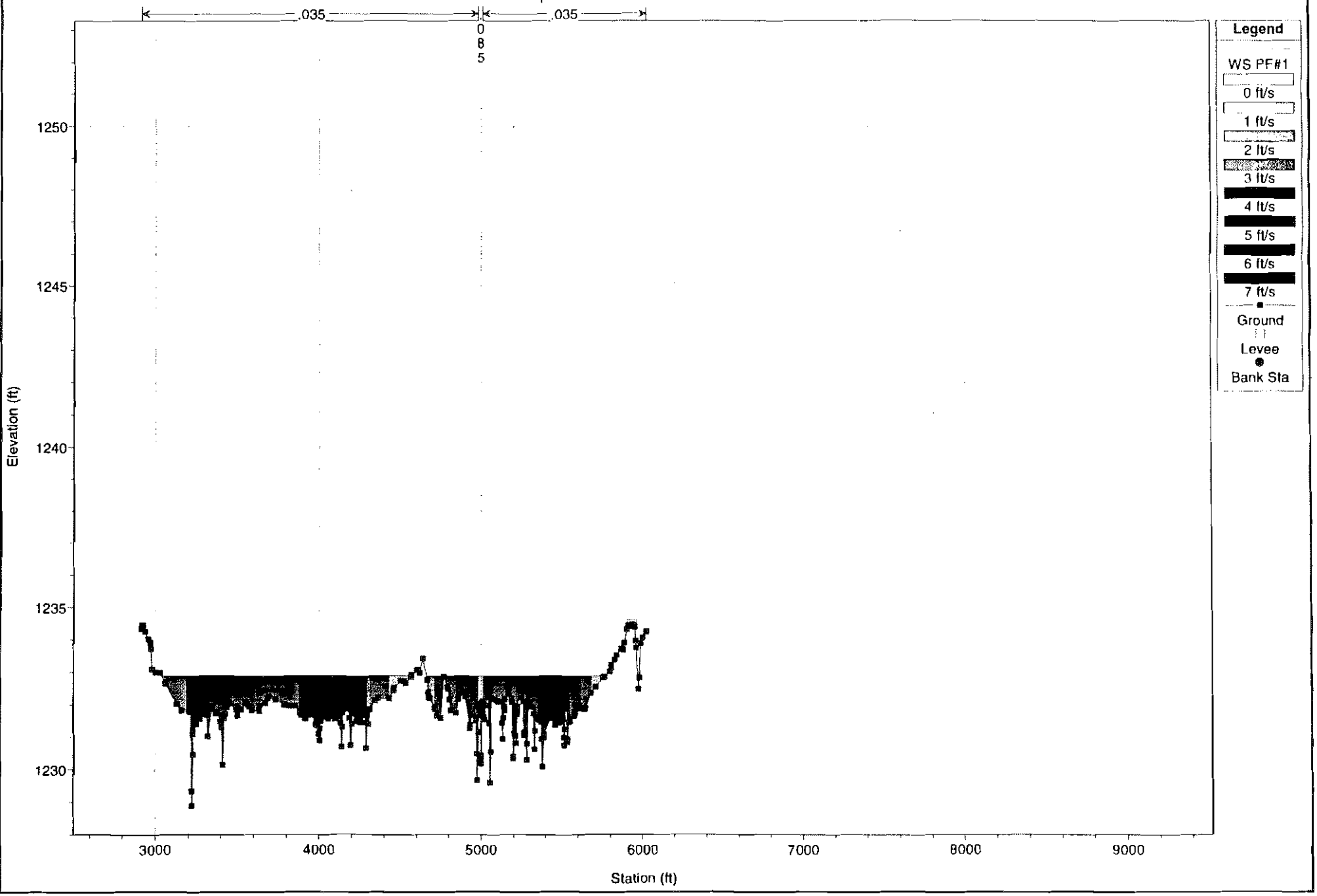


1 in Horiz. = 800 ft 1 in Vert. = 4 ft

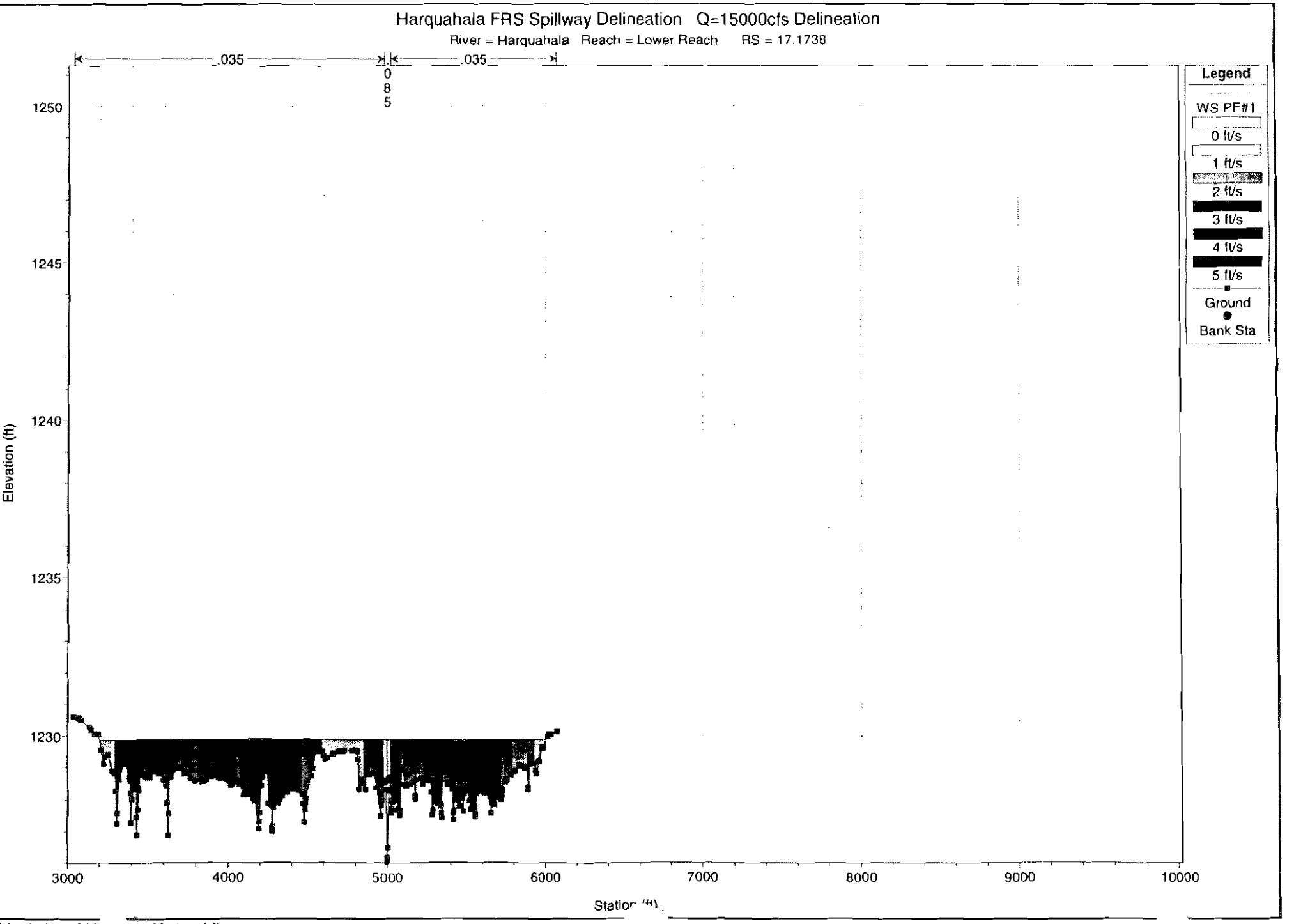

Harquahala FRS Spillway Delineation Q=15000cfs Delineation
River = Harquahala Reach = Lower Reach RS = 17.3602
.035
085
.035
Legend
WS PF#1
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Levee
Bank Sta
Elevation (ft)
1255
1250
1245
1240
1235
3000
4000
5000
6000
7000
8000
9000
1 in Horiz. = 800
1 Vert. = 4 ft

Harquahala FRS Spillway Delineation Q=15000cfs Delineation

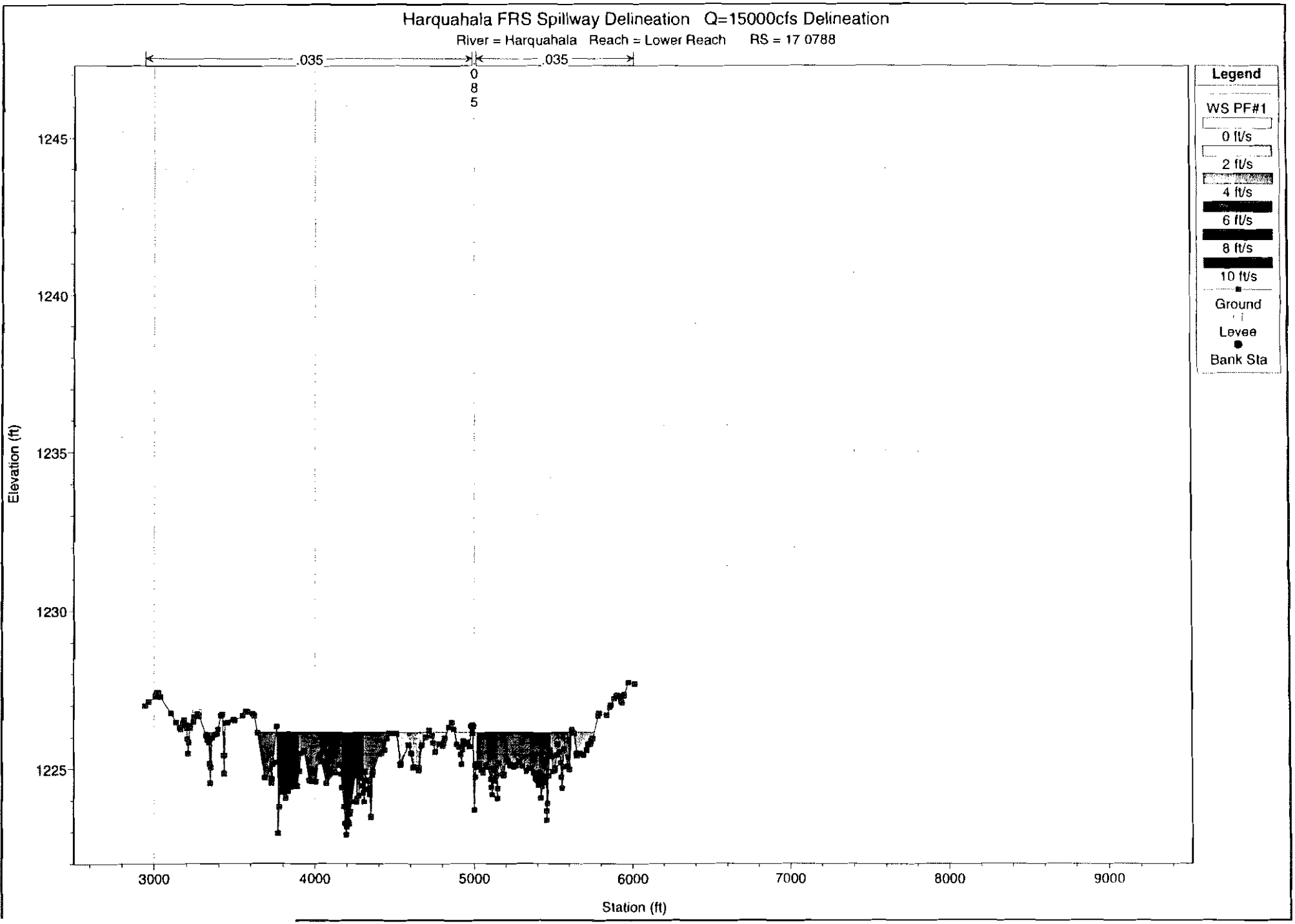
River = Harquahala Reach = Lower Reach RS = 17.2691

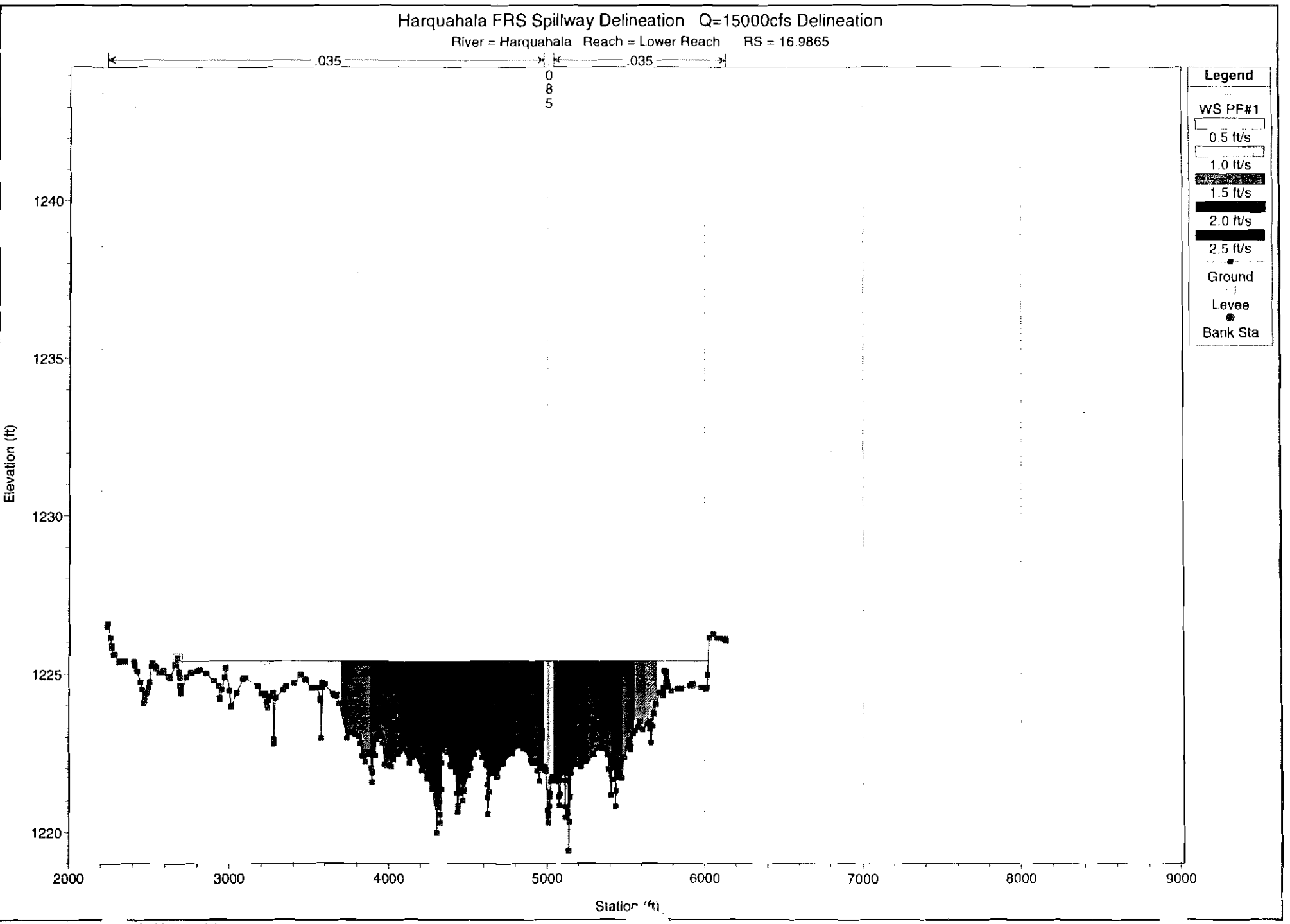


1 in Horiz. = 800 ft 1 in Vert. = 4 ft

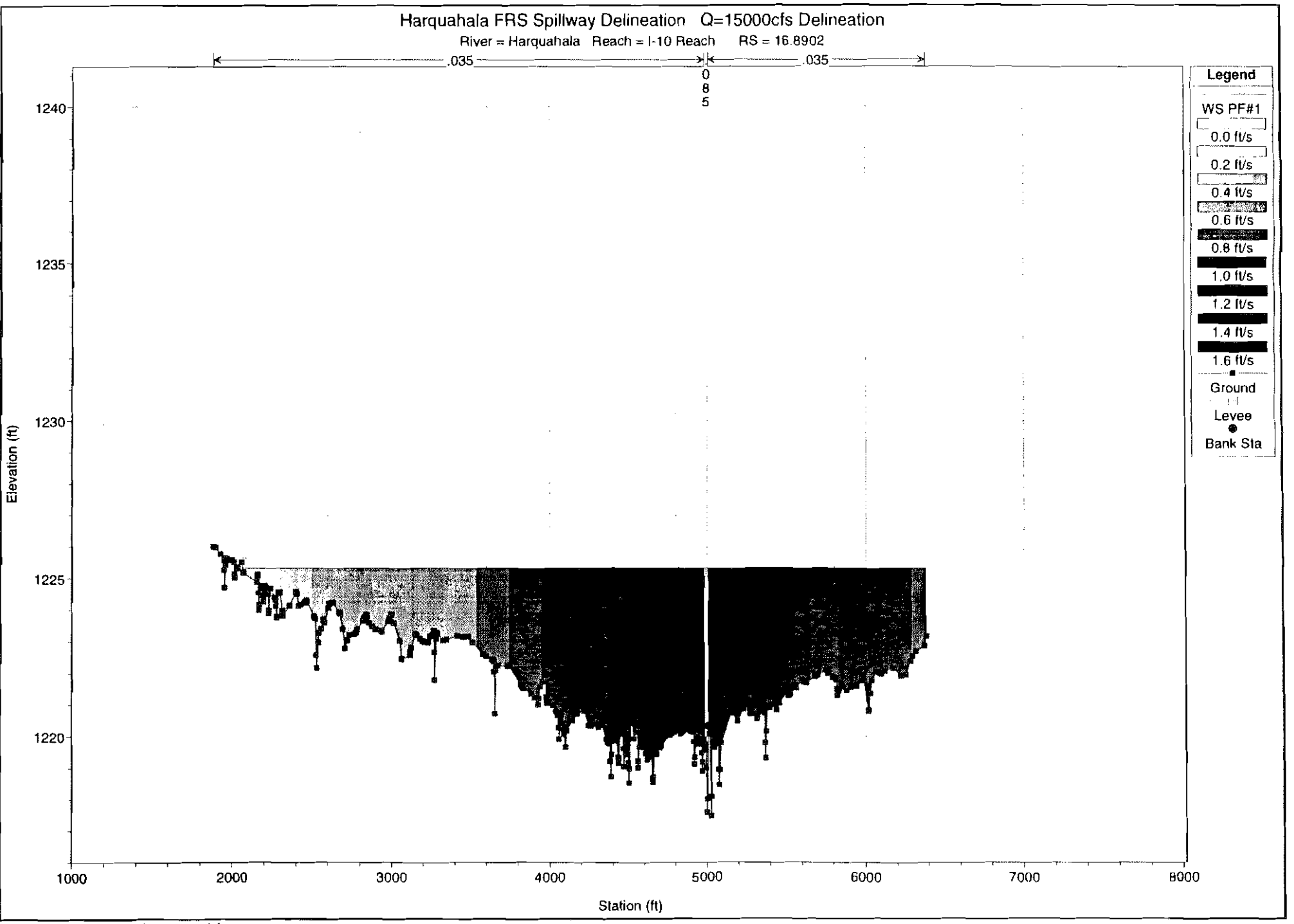


1 in Horiz. = 800 1 Vert. = 4 ft

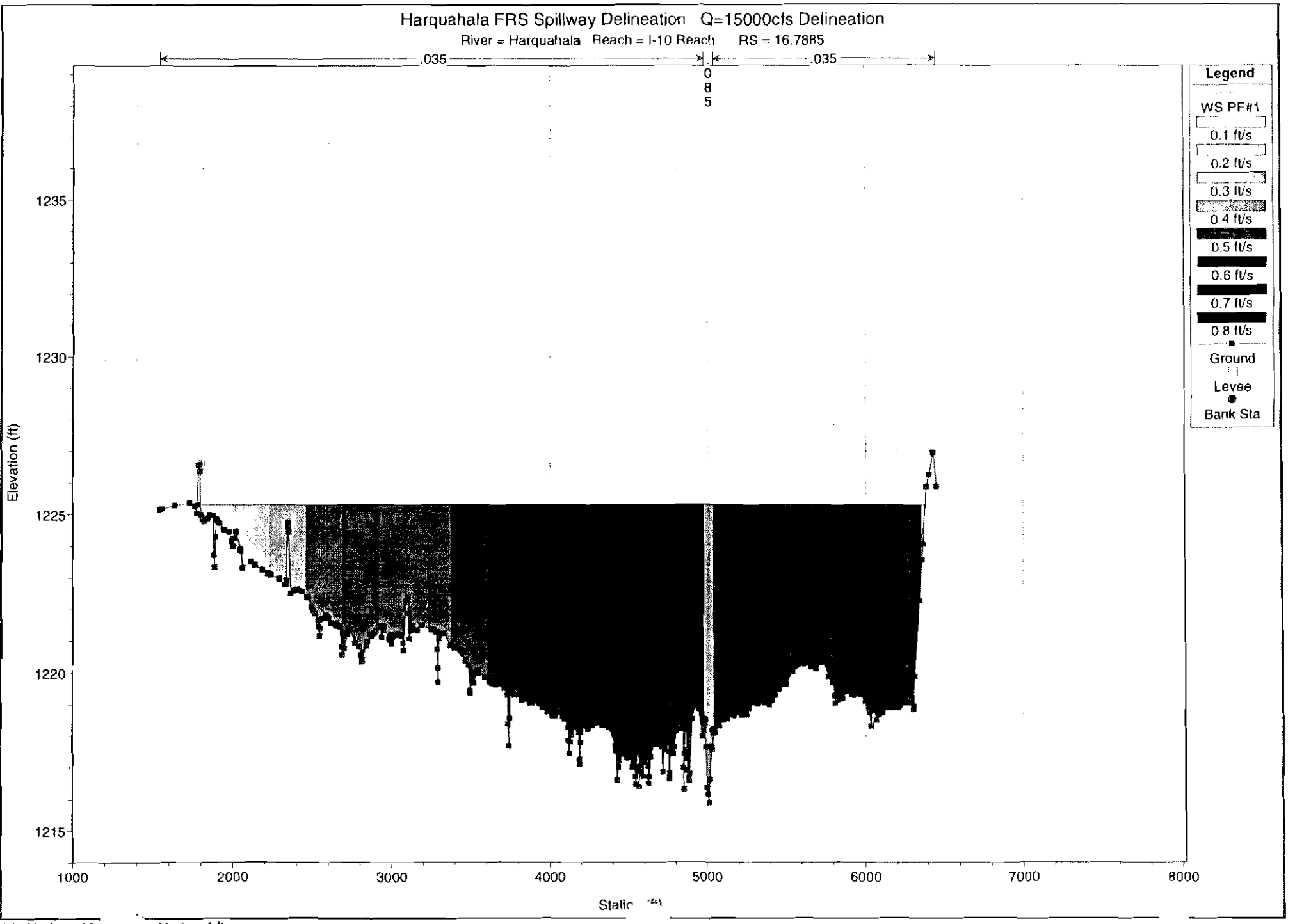

Harquahala FRS Spillway Delineation Q=15000cfs Delineation
River = Harquahala Reach = Lower Reach RS = 17 0788
.035
.035
0
8
5
Legend
WS PF#1
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Levee
Bank Sta
Elevation (ft)
1245
1240
1235
1230
1225
3000
4000
5000
6000
7000
8000
9000
Station (ft)



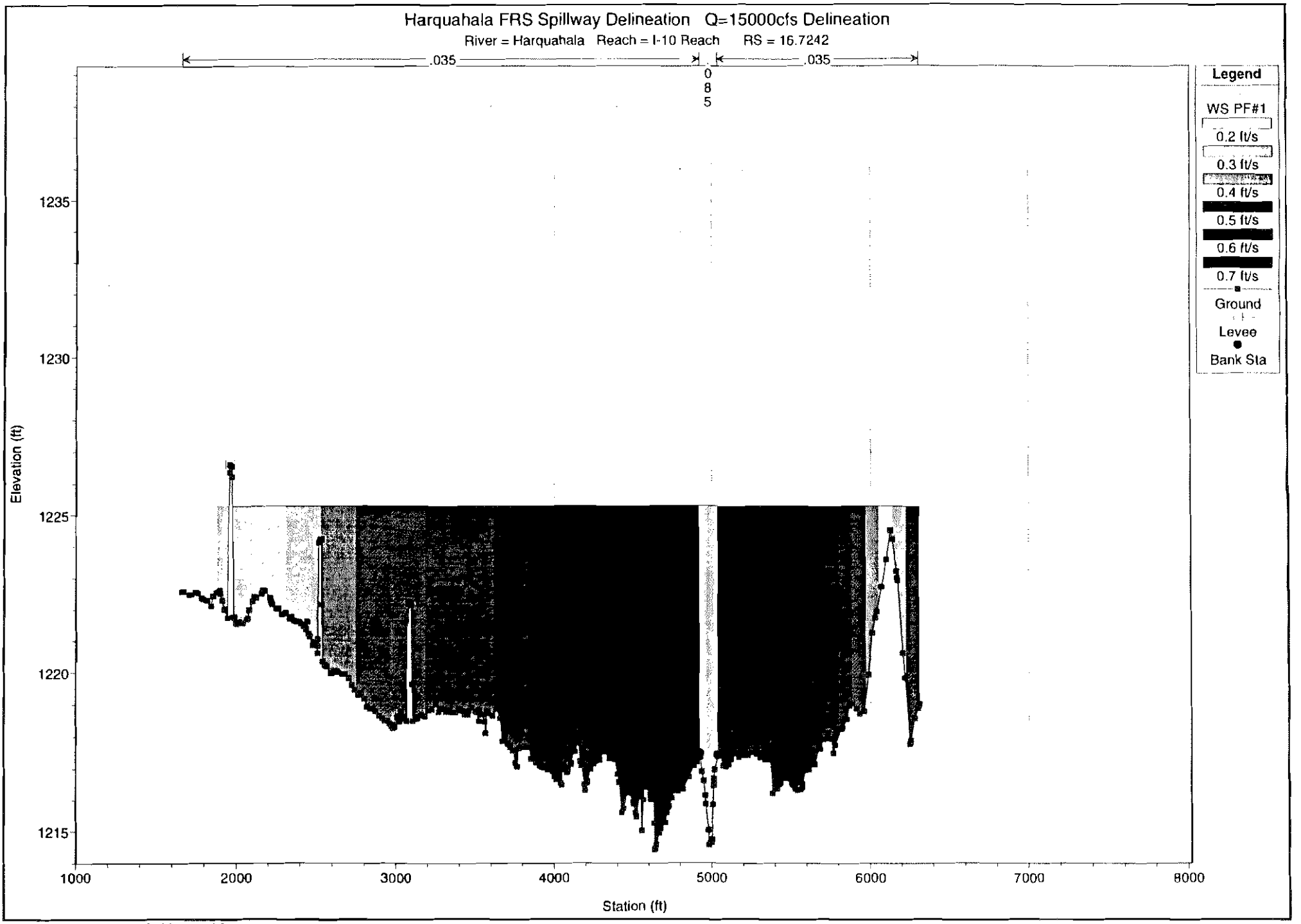
1 in Horiz. = 800 1 Vert. = 4 ft



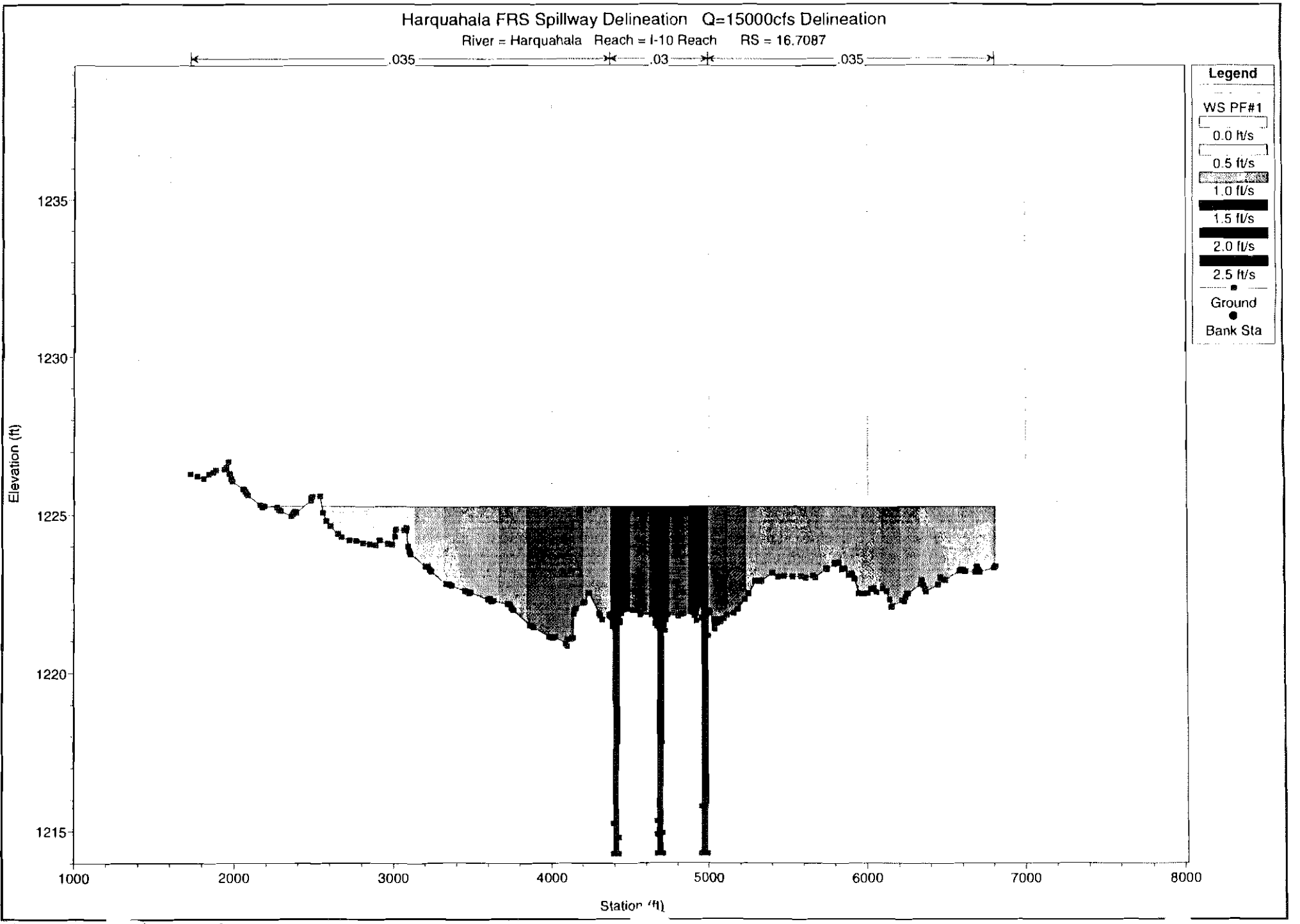
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



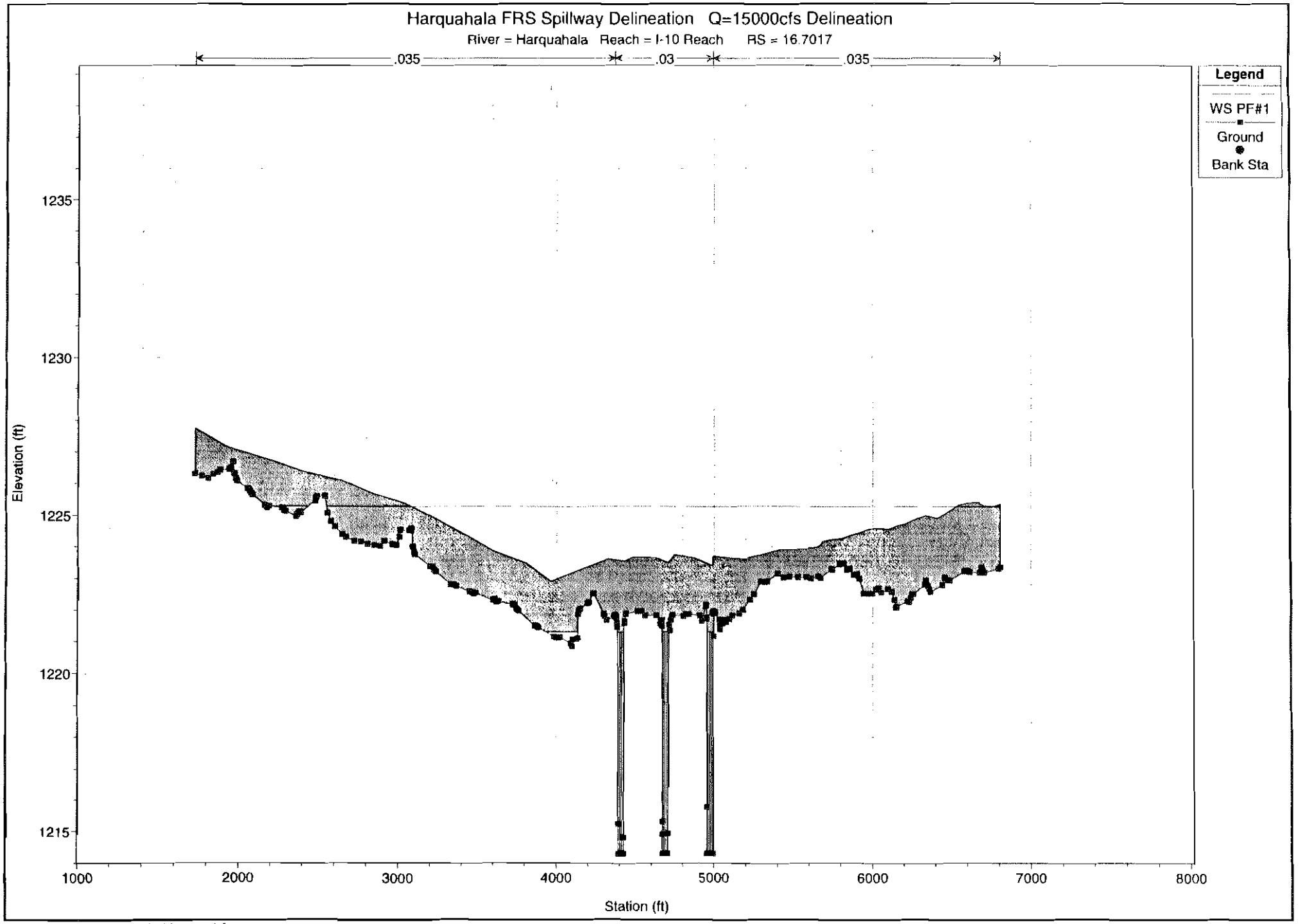
1 in Horiz. = 80( ) Vert. = 4 ft



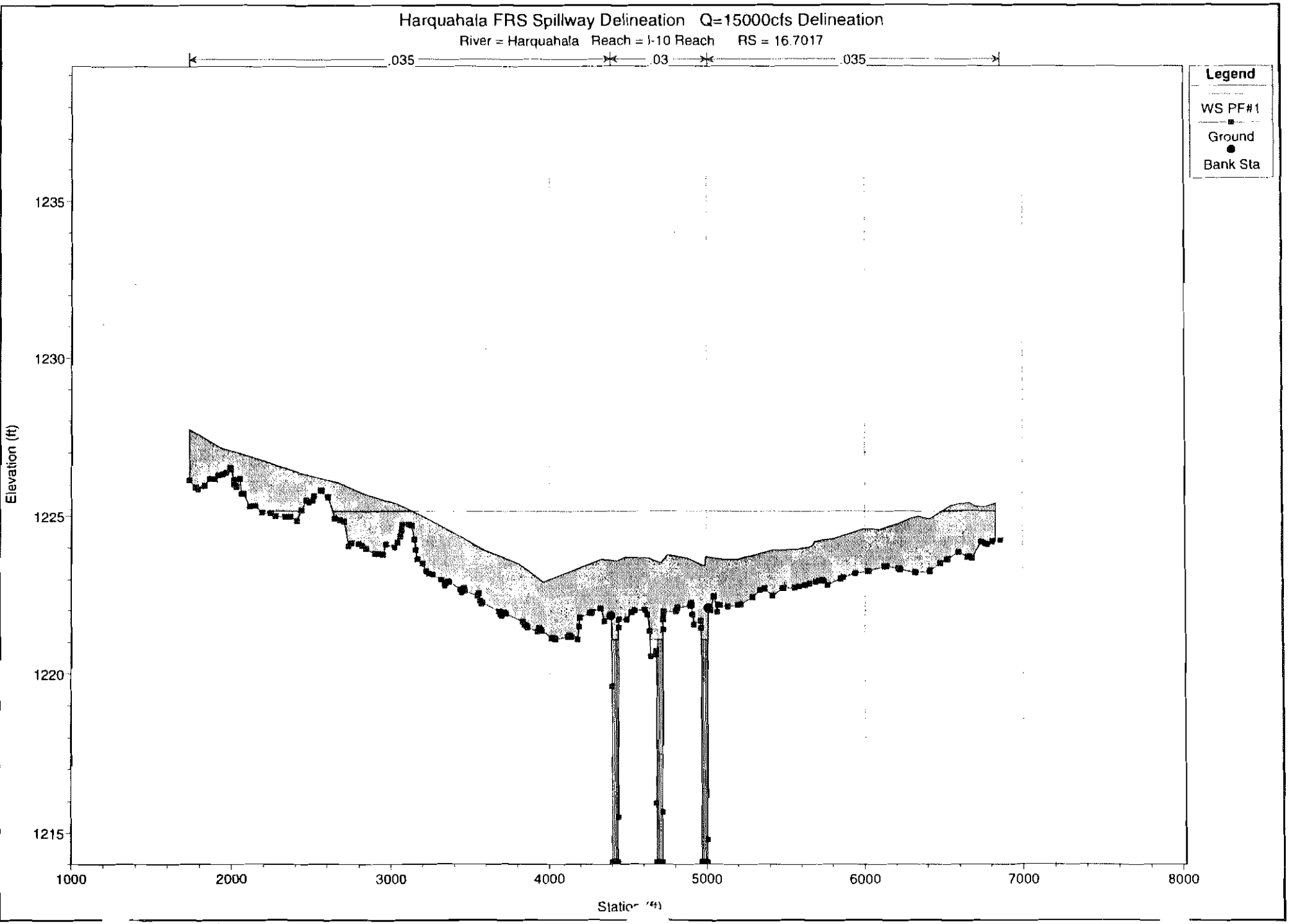
1 in Horiz. = 800 ft 1 in Vert. = 4 ft



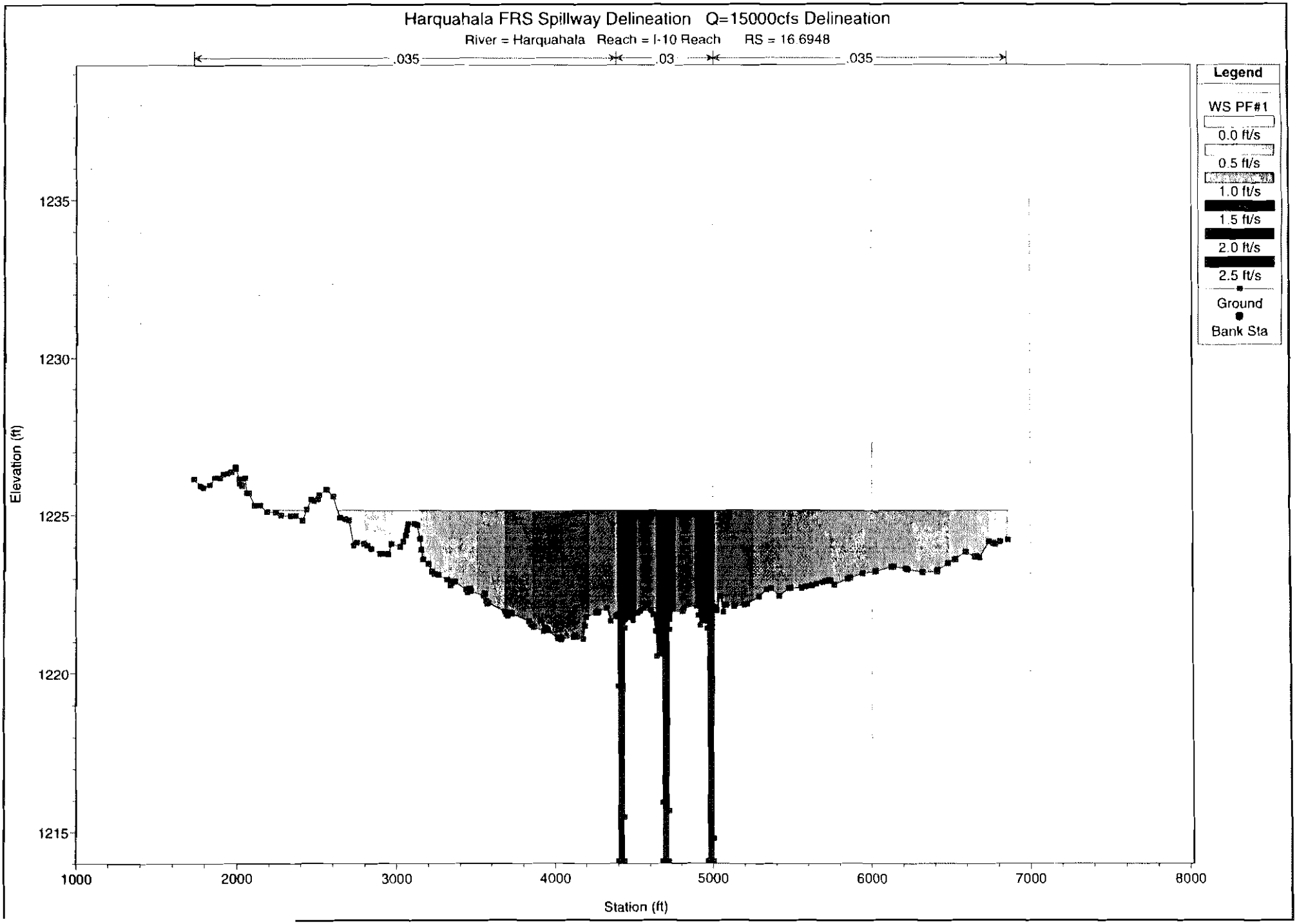
1 in Horiz. = 800 n Vert. = 4 ft

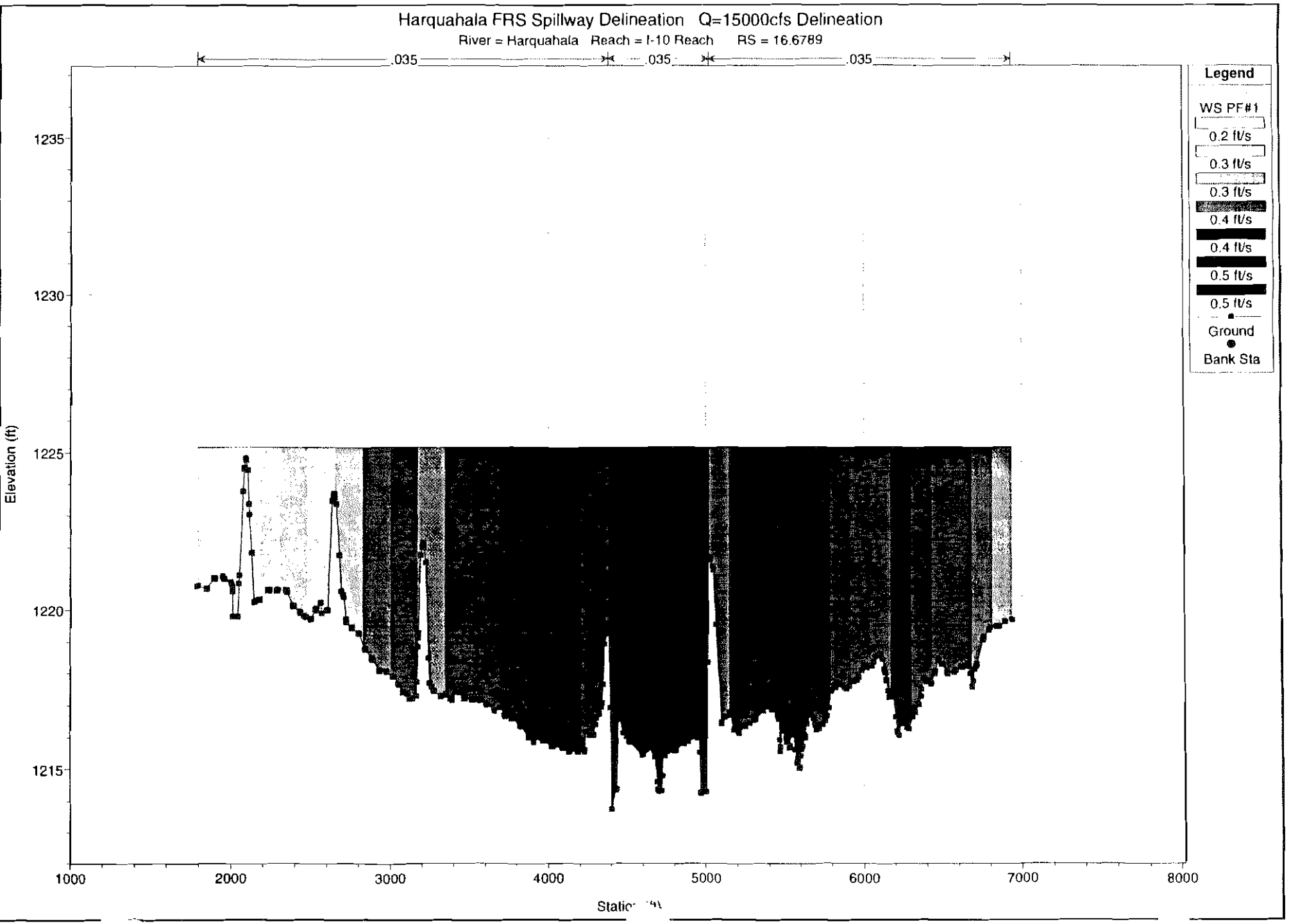


1 in Horiz. = 800 ft 1 in Vert. = 4 ft

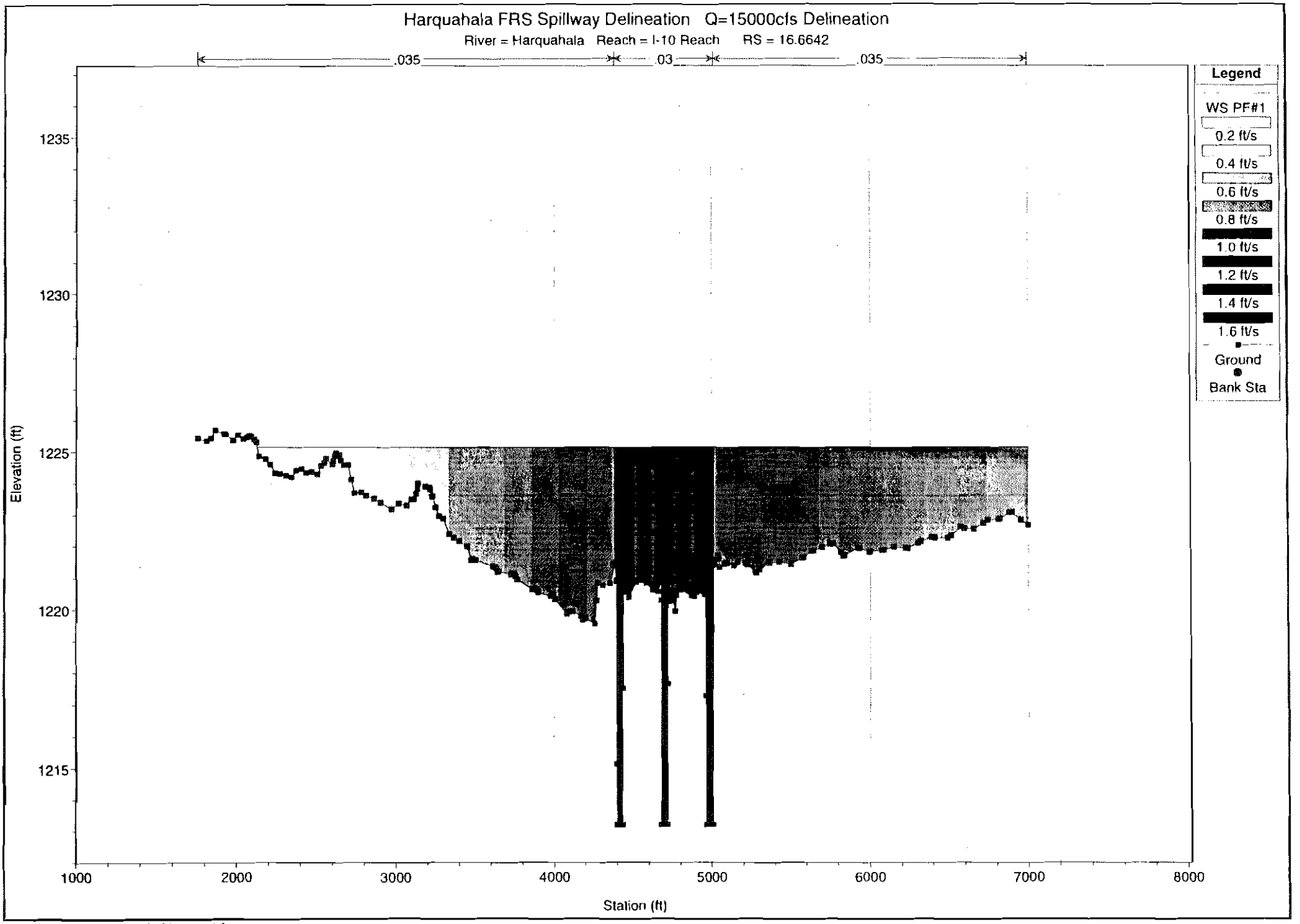


1 in Horiz. = 800 1 Vert. = 4 ft

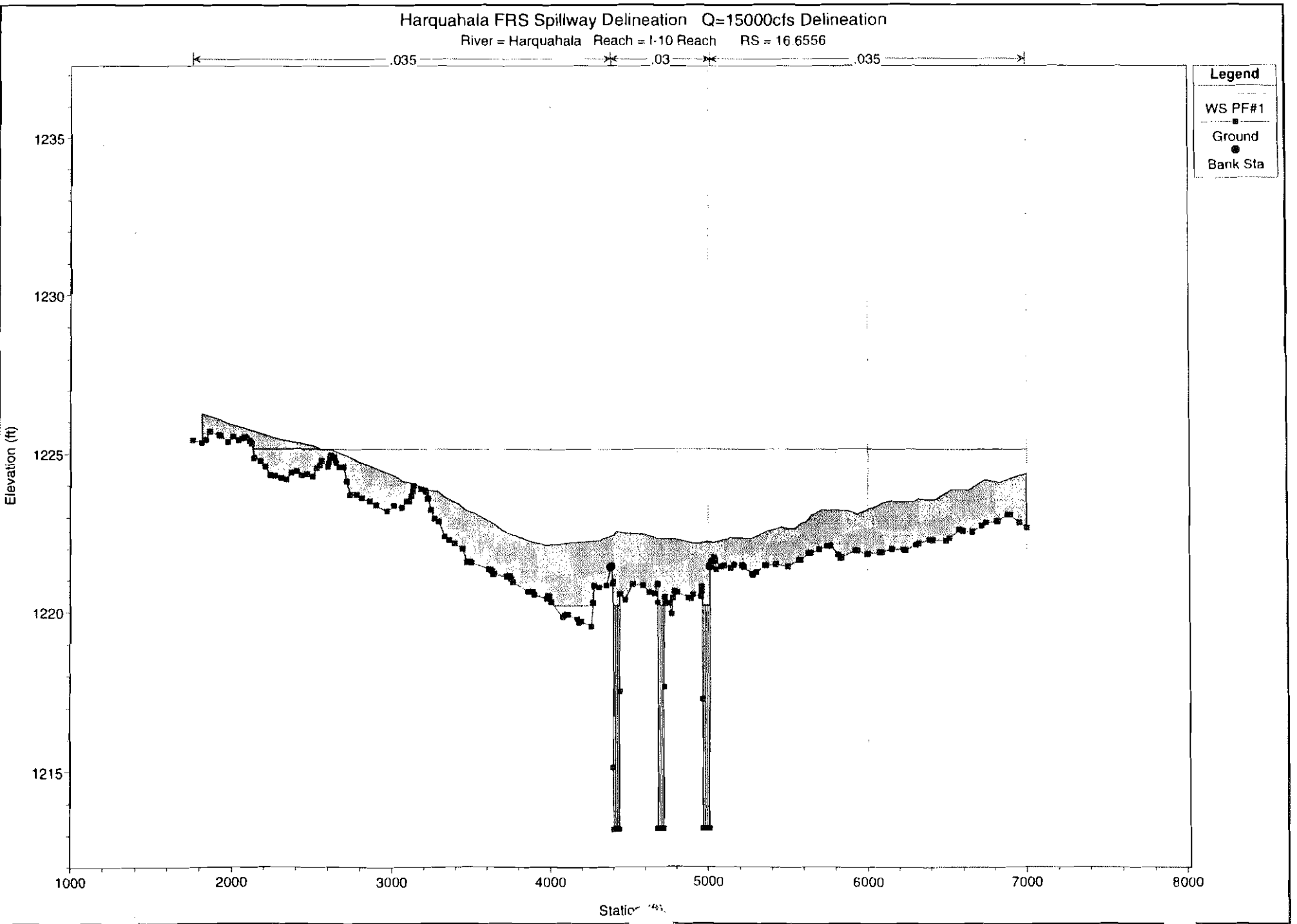

Harquahala FRS Spillway Delineation Q=15000cfs Delineation
River = Harquahala Reach = I-10 Reach RS = 16.6948
.035
.03
.035
Legend
WS PF#1
0.0 ft/s
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
Ground
Bank Sta
Elevation (ft)
1235
1230
1225
1220
1215
1000
2000
3000
4000
5000
6000
7000
8000
Station (ft)

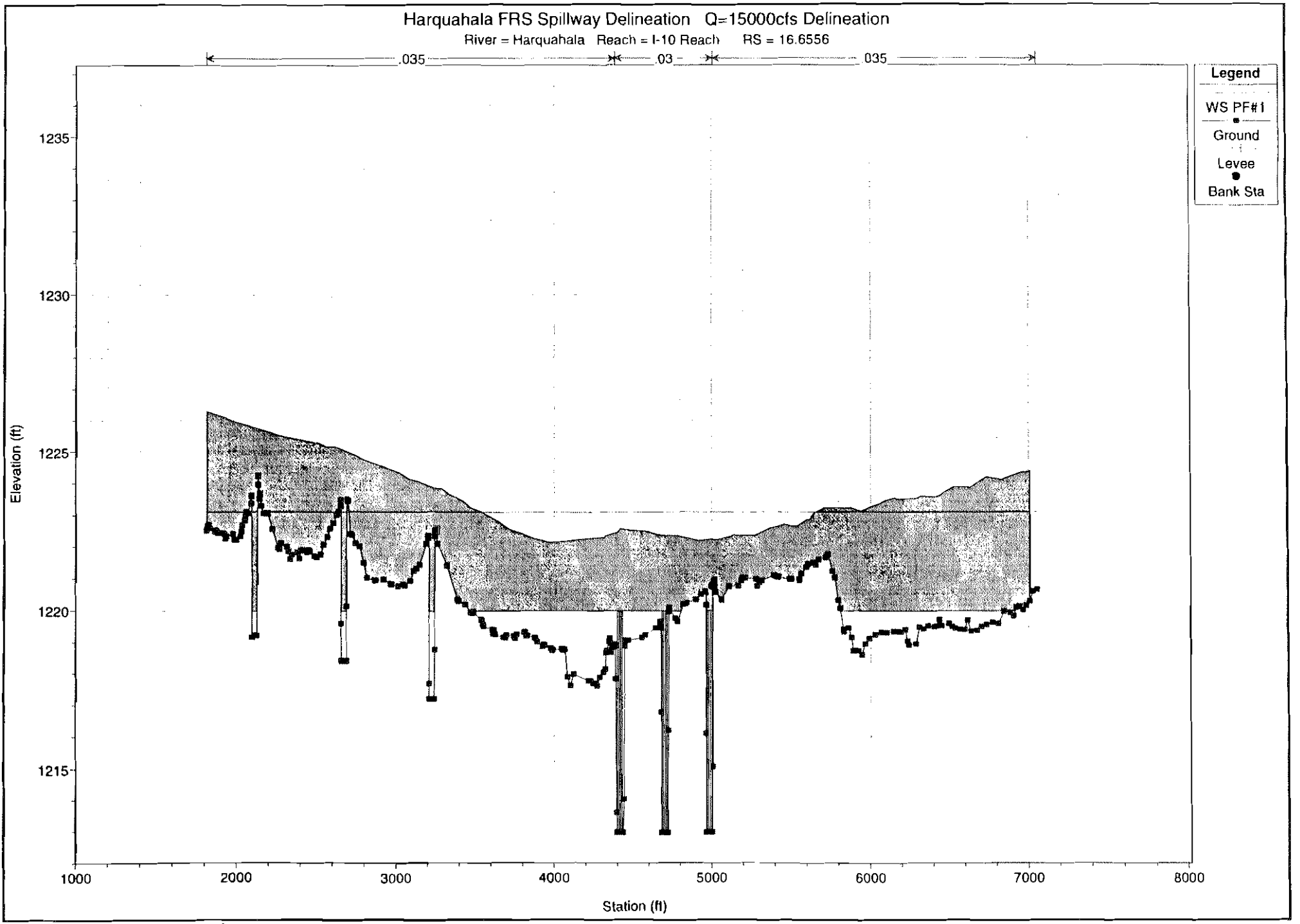


1 in Horiz. = 80C 1 Vert. = 4 ft

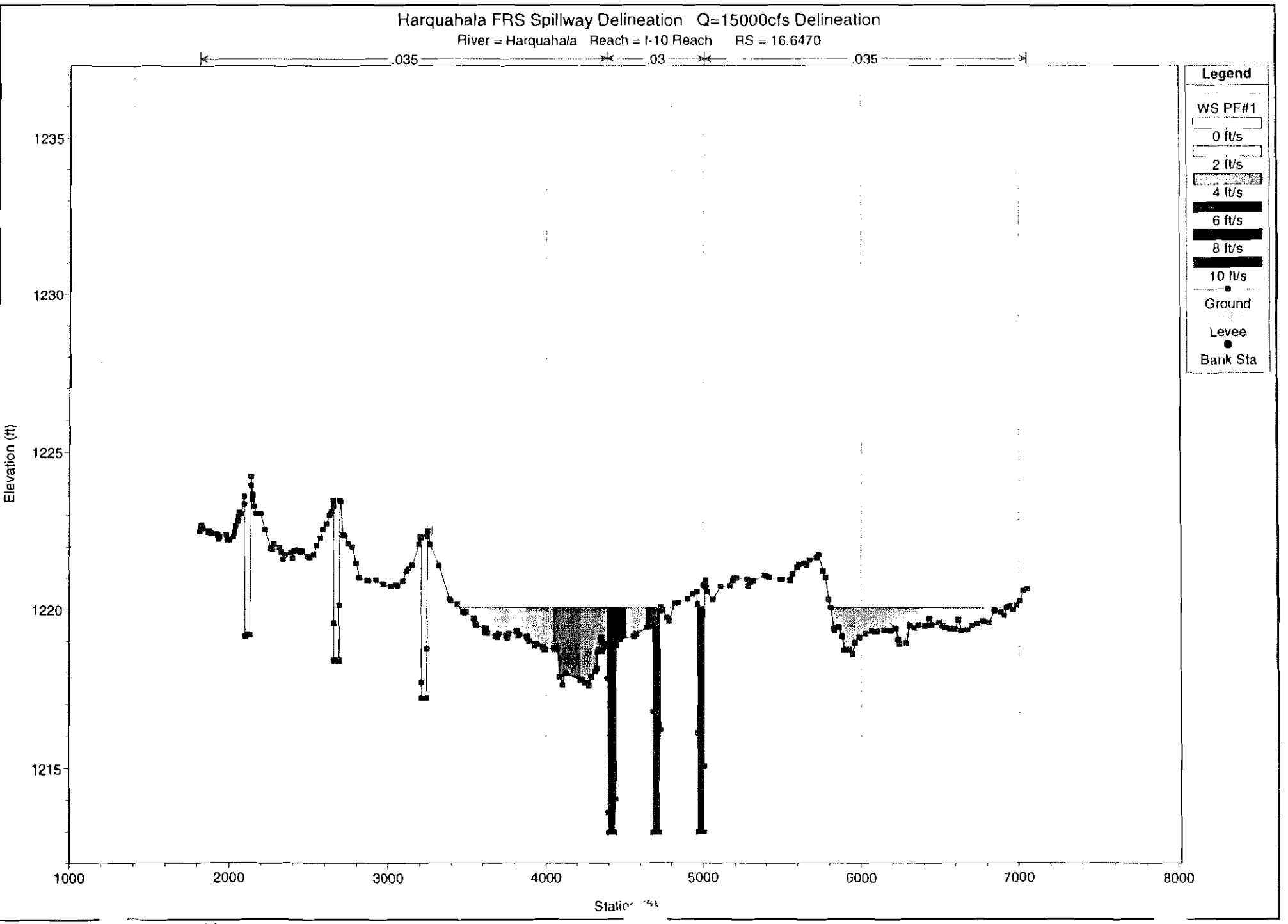


1 in Horiz. = 800 ft 1 in Vert. = 4 ft

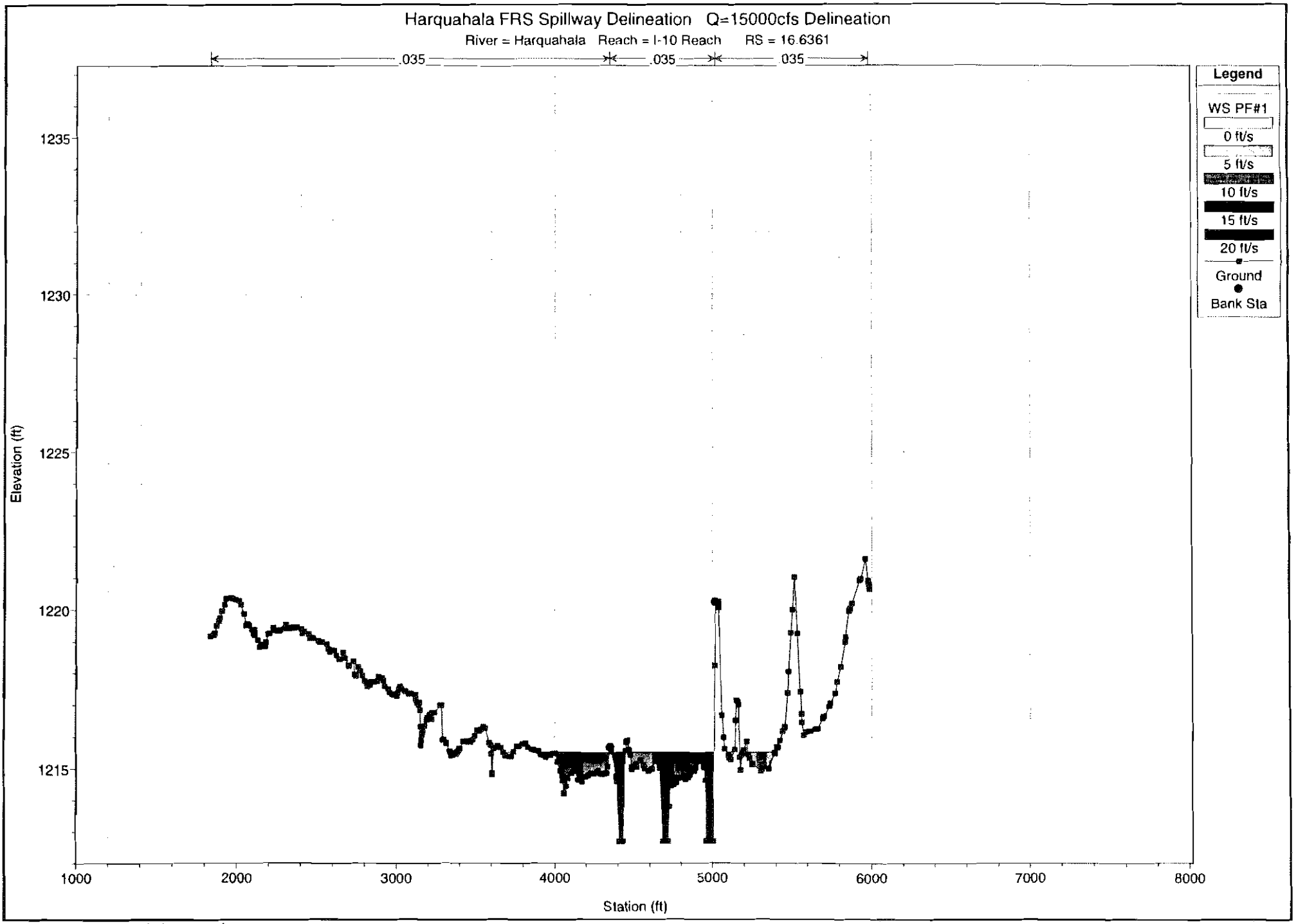

Harquahala FRS Spillway Delineation Q=15000cfs Delineation
River = Harquahala Reach = I-10 Reach RS = 16.6556
.035
.03
.035
Legend
WS PF#1
Ground
Bank Sta
Elevation (ft)
1235
1230
1225
1220
1215
1000
2000
3000
4000
5000
6000
7000
8000
Vert. = 4 ft



1 in Horiz. = 800 ft 1 in Vert. = 4 ft



1 in Horiz. = 800 1 Vert. = 4 ft



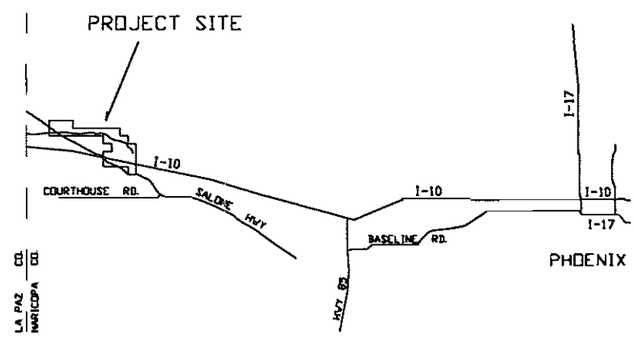
1 in Horiz. = 800 ft 1 in Vert. = 4 ft

Appendix E: Exhibits

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS EMERGENCY SPILLWAY

F.C.D. CONTRACT NO. FCD 97-16



DIBBLE & ASSOCIATES
CONSULTING ENGINEERS
Since 1962

DESIGN	BY JLM	DATE 05/98	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DESIGN CHK.	BJF	05/98	RECOMMENDED BY: DATE
PLANS	JLM	05/98	APPROVED BY: DATE
PLANS CHK.	BJF	05/98	CHIEF ENGINEER AND GENERAL MANAGER
SUBMITTED BY: DATE:			SHEET 1 OF 19

Filename: J:\9721\ACAD\SHEET01 Last Revised: 05/29/1998, 11:46:58 Plotted: 05/29/1998, 11:46:58
Cross References: PLSN=9721pls2

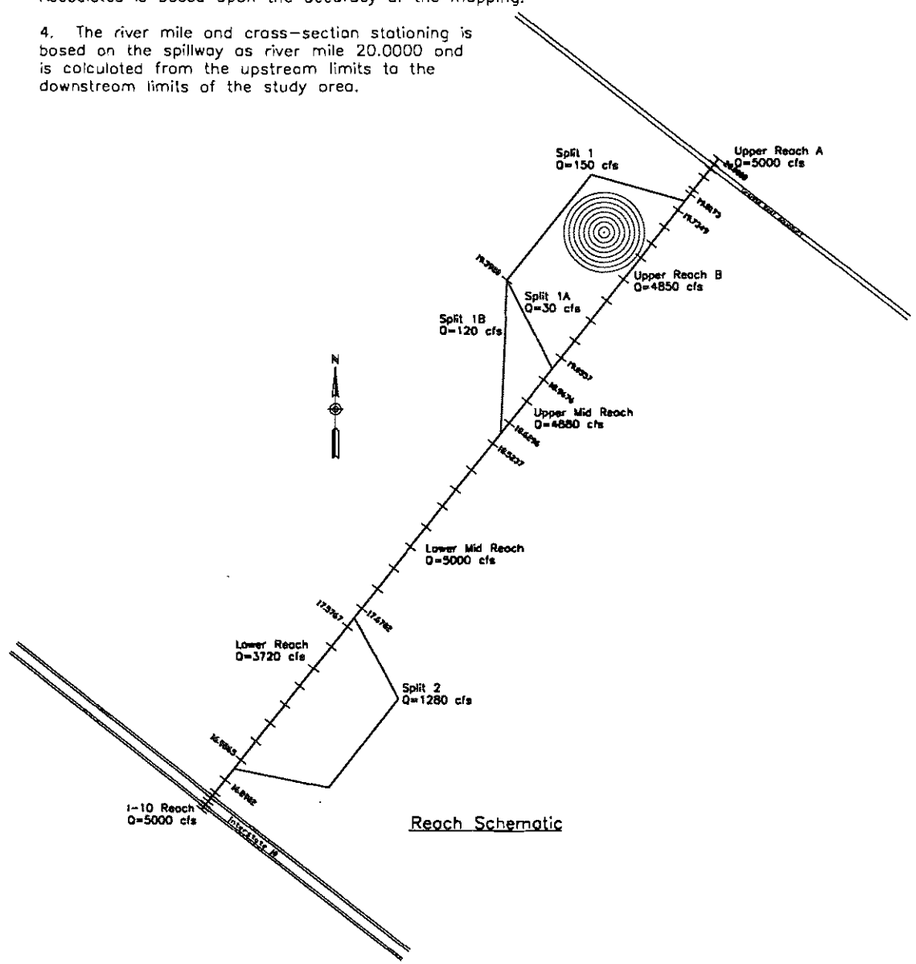
NOTES:

1. Travel time is calculated from the emergency spillway to the downstream limit of study, and is based on the average velocity of the entire cross section.

2. Maximum velocity is selected from the highest velocity output from the main channel and overbanks. The maximum depth pertains to the maximum channel depth rather than the maximum depth at any point along the cross-section. Therefore, the maximum velocity and maximum depth may pertain to only a very short segment of the full cross section. For more information on velocity and depth distribution across the cross section, see the detailed HEC-RAS auput.

3. The mapping for this study was furnished by the Flood Control District of Maricopa County. The aerial mapping was flown on March 9, 1996 (FCD 93-51). The original topographic mapping was prepared at a scale of 1 inch equals 200 feet. The accuracy of the analysis performed by Dibble and Associates is based upon the accuracy of the mapping.

4. The river mile and cross-section stationing is based on the spillway as river mile 20.0000 and is calculated from the upstream limits to the downstream limits of the study area.



Reach Schematic

HYDRAULIC DATA

REACH	X-SEC	Q(cfs)	CWSEL(ft)	TRAVEL TIME(hrs)	MAX VELOCITY (fps)	MAX DEPTH (ft)
UPPER REACH A	20.0000	5000	1413.63	0.00	10.29	3.27
UPPER REACH A	19.9735	5000	1391.25	0.00	34.00	1.16
UPPER REACH A	19.9458	5000	1393.86	0.00	9.64	4.81
UPPER REACH A	19.9052	5000	1388.80	0.01	8.91	9.70
UPPER REACH A	19.8387	5000	1382.00	0.02	6.52	7.70
UPPER REACH A	19.8173	5000	1378.30	0.03	7.07	5.75
UPPER REACH B	19.7349	4850	1371.06	0.05	7.48	4.73
UPPER REACH B	19.6465	4850	1364.84	0.07	7.85	4.99
UPPER REACH B	19.5602	4850	1356.78	0.09	8.01	3.20
UPPER REACH B	19.4887	4850	1350.93	0.10	7.33	3.60
UPPER REACH B	19.3761	4850	1342.31	0.13	6.63	3.27
UPPER REACH B	19.2665	4850	1333.91	0.16	5.22	5.28
UPPER REACH B	19.1607	4850	1325.53	0.18	5.65	4.76
UPPER REACH B	19.0557	4850	1317.85	0.21	5.51	3.54
UPPER MID REACH	18.9676	4880	1311.65	0.23	6.42	4.90
UPPER MID REACH	18.8526	4880	1304.87	0.26	4.07	4.04
UPPER MID REACH	18.7424	4880	1297.69	0.29	4.81	3.28
UPPER MID REACH	18.6296	4880	1290.68	0.32	4.60	3.47
LOWER MID REACH	18.5237	5000	1285.14	0.36	4.95	4.29
LOWER MID REACH	18.3861	5000	1278.70	0.40	4.34	3.91
LOWER MID REACH	18.2834	5000	1273.54	0.43	4.46	3.64
LOWER MID REACH	18.1956	5000	1269.43	0.46	4.24	3.19
LOWER MID REACH	18.0888	5000	1265.24	0.49	3.95	4.17
LOWER MID REACH	17.9877	5000	1260.77	0.53	3.82	4.44
LOWER MID REACH	17.8771	5000	1255.95	0.57	4.19	4.68
LOWER MID REACH	17.7710	5000	1251.21	0.60	4.39	4.52
LOWER MID REACH	17.6702	5000	1247.66	0.63	3.57	3.75
LOWER REACH	17.5767	3720	1243.00	0.67	3.91	3.09
LOWER REACH	17.4734	3720	1239.69	0.71	2.95	3.33
LOWER REACH	17.3602	3720	1235.40	0.76	3.99	2.57
LOWER REACH	17.2691	3720	1232.45	0.80	2.42	3.57
LOWER REACH	17.1738	3720	1228.80	0.84	3.97	2.76
LOWER REACH	17.0788	3720	1225.76	0.88	2.73	2.87
LOWER REACH	16.9865	3720	1222.54	0.94	4.68	3.14
I-10 REACH	16.8902	5000	1222.48	0.94	1.31	5.01
I-10 REACH	16.7885	5000	1222.47	1.09	0.44	6.61
I-10 REACH	16.7242	5000	1222.47	1.34	0.31	8.04
I-10 REACH	16.7087	5000	1222.28	1.36	3.49	7.98
I-10 REACH	16.6948	5000	1221.02	1.36	5.67	6.95
I-10 REACH	16.6789	5000	1221.36	1.37	0.59	7.53
I-10 REACH	16.6642	5000	1221.22	1.38	3.14	8.02
I-10 REACH	16.6470	5000	1216.59	1.39	10.35	3.52
I-10 REACH	16.6361	5000	1215.04	1.39	11.65	2.34
SPLIT 1	19.6872	150	1374.06	0.05	2.01	2.05
SPLIT 1	19.6513	150	1370.94	0.07	2.97	1.77
SPLIT 1	19.5997	150	1367.25	0.10	1.95	2.12
SPLIT 1	19.5616	150	1365.42	0.13	2.56	2.15
SPLIT 1	19.5223	150	1363.05	0.15	1.82	2.37
SPLIT 1	19.4869	150	1360.08	0.18	2.58	2.77
SPLIT 1	19.3980	150	1353.55	0.24	1.96	1.45
SPLIT 1A	19.3216	30	1347.47	0.29	1.31	0.71
SPLIT 1A	19.2398	30	1341.99	0.36	2.13	0.98
SPLIT 1A	19.1676	30	1336.95	0.43	1.31	1.69
SPLIT 1A	19.0811	30	1328.86	0.49	2.92	0.90
SPLIT 1A	18.9967	30	1322.52	0.54	1.33	1.31
SPLIT 1A	18.9165	30	1315.38	0.58	3.30	1.15
SPLIT 1B	19.3158	120	1347.60	0.29	2.12	1.32
SPLIT 1B	19.2400	120	1341.69	0.36	1.14	2.35
SPLIT 1B	19.1631	120	1335.76	0.39	5.02	1.64
SPLIT 1B	19.0836	120	1327.17	0.41	6.12	2.26
SPLIT 1B	19.0153	120	1321.78	0.44	3.10	1.86
SPLIT 1B	18.9337	120	1316.16	0.47	4.19	1.92
SPLIT 1B	18.8560	120	1311.73	0.50	5.04	2.59
SPLIT 1B	18.7744	120	1306.29	0.53	1.83	3.09
SPLIT 1B	18.7184	120	1302.33	0.56	3.74	3.03
SPLIT 1B	18.6384	120	1297.39	0.59	5.27	3.08
SPLIT 1B	18.5485	120	1291.83	0.61	4.20	1.66
SPLIT 2	17.5883	1280	1243.25	0.67	3.93	3.98
SPLIT 2	17.4913	1280	1239.12	0.71	3.52	5.93
SPLIT 2	17.3965	1280	1233.44	0.74	6.61	8.29
SPLIT 2	17.1420	1280	1226.89	0.83	1.31	2.48
SPLIT 2	16.9865	1280	1225.34	0.91	2.17	2.56
SPLIT 2	16.8902	1280	1223.70	0.94	4.37	1.52

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

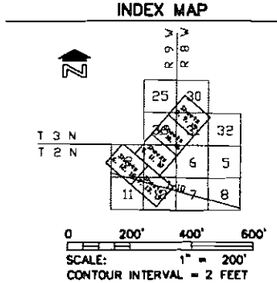
DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 5,000 cfs (1/3 discharge)

INDEX MAP



DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JLM	05/98
DESIGN CHK.	BJF	05/98
PLANS	JLM	05/98
PLANS CHK.	BJF	05/98

SUBMITTED BY: DATE:

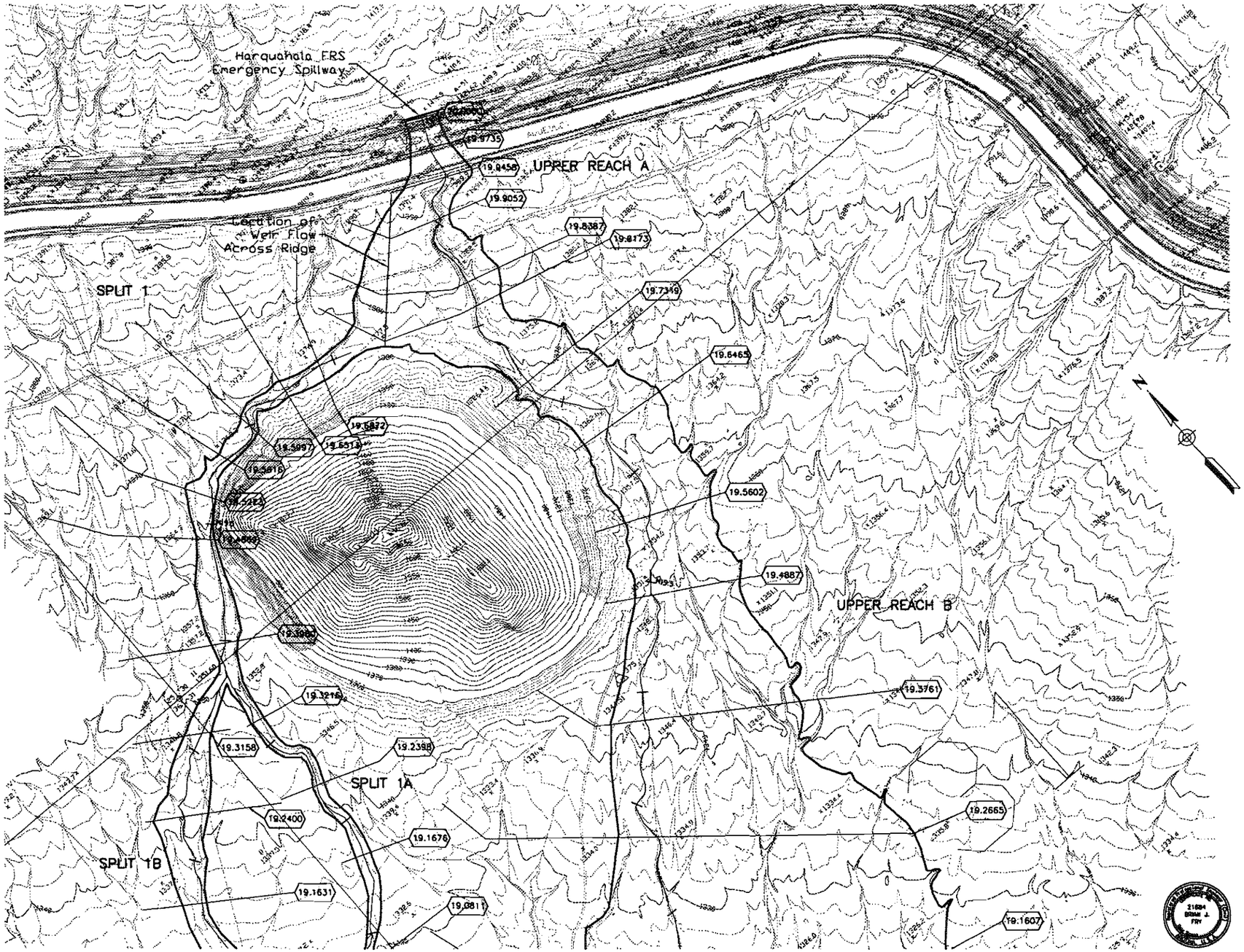
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 2 of 19



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 5,000 cfs (1/3 Discharge)
NOTE: SEE SHEET 2 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

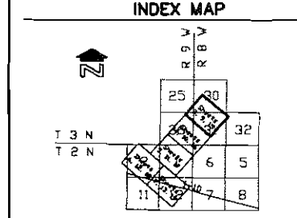
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
11	1351.60	Section Cor. for sec's 25, 30, 31 & 36, T. 3 N. Rs. 6 & 5 W., monumented with a 2 inc iron post 0.8 ft. above ground surface, firmly set with the 6.0 brass cap property mkd
213	1399.59	Bench Mark, monumented with a USDA - SCS brass cap in concrete, flush with ground surface, mkd "B-30 2-84", located Rt. of Sta 928+83.
375	1344.31	Set 1/2 x 18 inc. rebar flush with ground surface located approximately 4075 ft. north and 1481 ft. east from the SW corner of section 31, T. 3 N., R. 5 W.
A-30	1421.91	Bench Mark, monumented with a USDA - SCS brass cap in concrete, 0.3 ft. below ground surface, mkd. "A-30 2-84", located Rt. of sta 929+83.
A-31	1421.68	Bench Mark, monumented with a USDA - SCS brass cap in concrete, 0.4 ft. below ground surface, mkd. "A-31 2-84", located Rt. of sta 930+19.
A-32	1421.43	Bench Mark, monumented with a USDA - SCS brass cap in concrete, 0.7 ft. below ground surface, mkd. "A-32 2-84", located Rt. of sta 948+66.
A-34	1421.78	Bench Mark, monumented with a USDA - SCS brass cap in concrete, 0.3 ft. below ground surface, mkd. "A-34 2-84", located Rt. of sta 970+87.

INDEX MAP



SCALE: 1" = 200'
CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JLM	05/98
DESIGN CHK.	BJF	05/98
PLANS	JLM	05/98
PLANS CHK.	BJF	05/98

SUBMITTED BY: DATE:

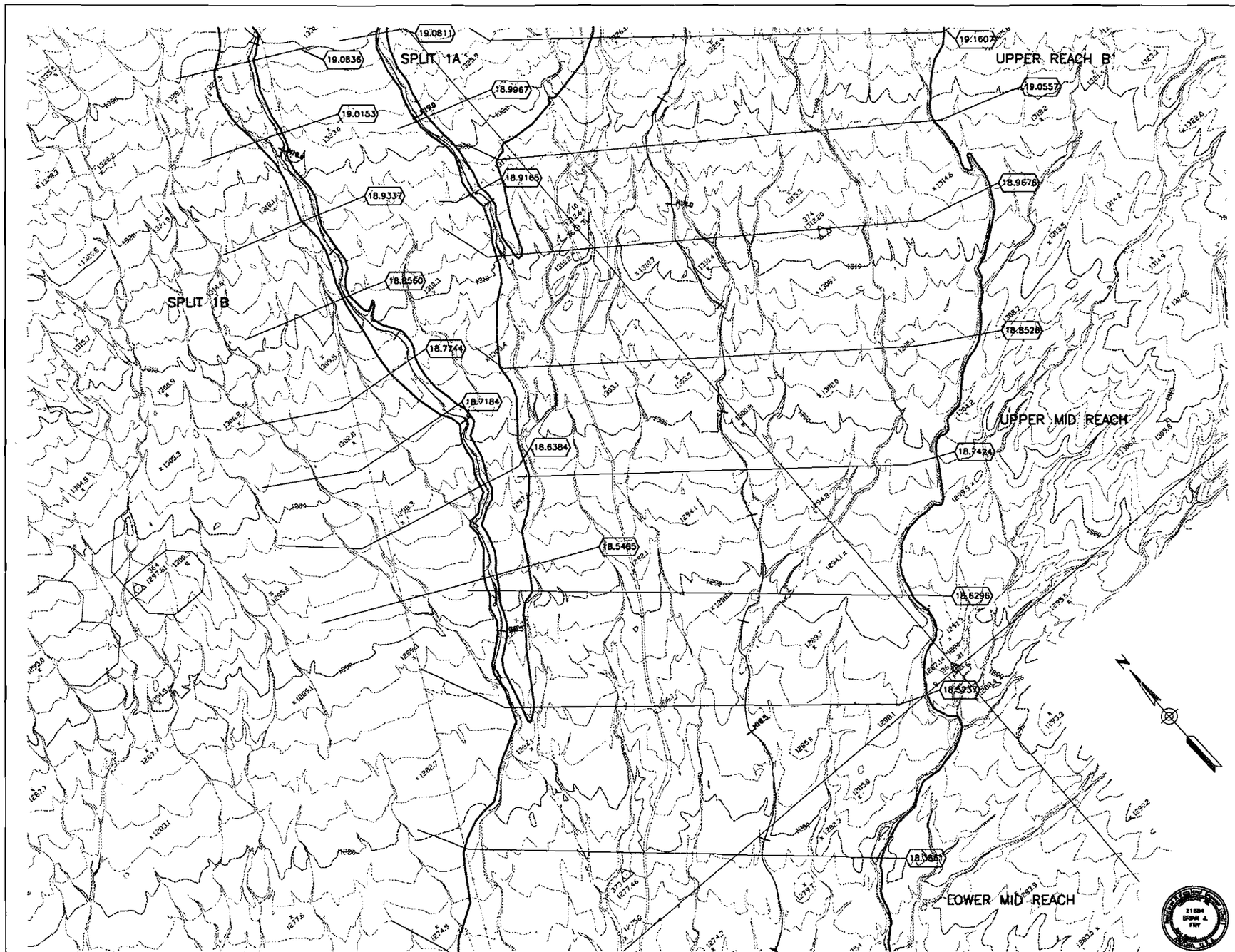
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 3 OF 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1" = 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McCAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING

Filename: J:\9721\ACAD\SHEET03 Last Revised: 05/29/1998, 11:48:00 Plotted: 05/29/1998, 11:48:04
Cross References: PLSH=J:\9721\acad\9721plsh.dwg, QS30=J:\9721\acad\QS30.dwg, QS36=J:\9721\acad\QS36.dwg, QS31=J:\9721\acad\QS31.dwg, FLOD=flood01, CHAL=8721chnl



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 5000 cfs (1/3 discharge)
NOTE: SEE SHEET 2 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 — M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	BRK3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

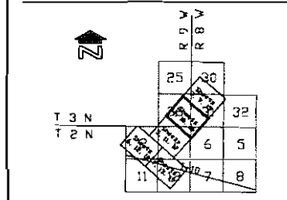
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
0	1411.38	Township cor. for Tps. 2 & 3 N., Rs. 8 & 9 W., monumented with a 3 ins. iron post 0.7 ft. above ground surface, firmly set with the GLO brass cap property mkd. (Also sec's. 1, 6, 31 & 36).
10	1318.54	Quarter cor. for sec's. 31 & 36, T. 3 N., Rs. 8 & 9 W., monumented with 1 in. iron post 0.7 ft. above ground surface, firmly set with the GLO brass cap property mkd.
364	1297.81	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 2683 ft. north and 2549 ft. west from the SE corner of section 36, T. 3 N., R. 9 W.
373	1277.46	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 874 ft. north and 1376 ft. west from the SE corner of section 36, T. 3 N., R. 9 W.
374	1312.20	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 1892 ft. north and 859 ft. east from the SW corner of section 31, T. 3 N., R. 8 W.

INDEX MAP



0 200' 400' 600'
SCALE: 1" = 200'
CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JLM	05/98
DESIGN CHK.	BJF	05/98
PLANS	JLM	05/98
PLANS CHK.	BJF	05/98
SUBMITTED BY:		DATE:

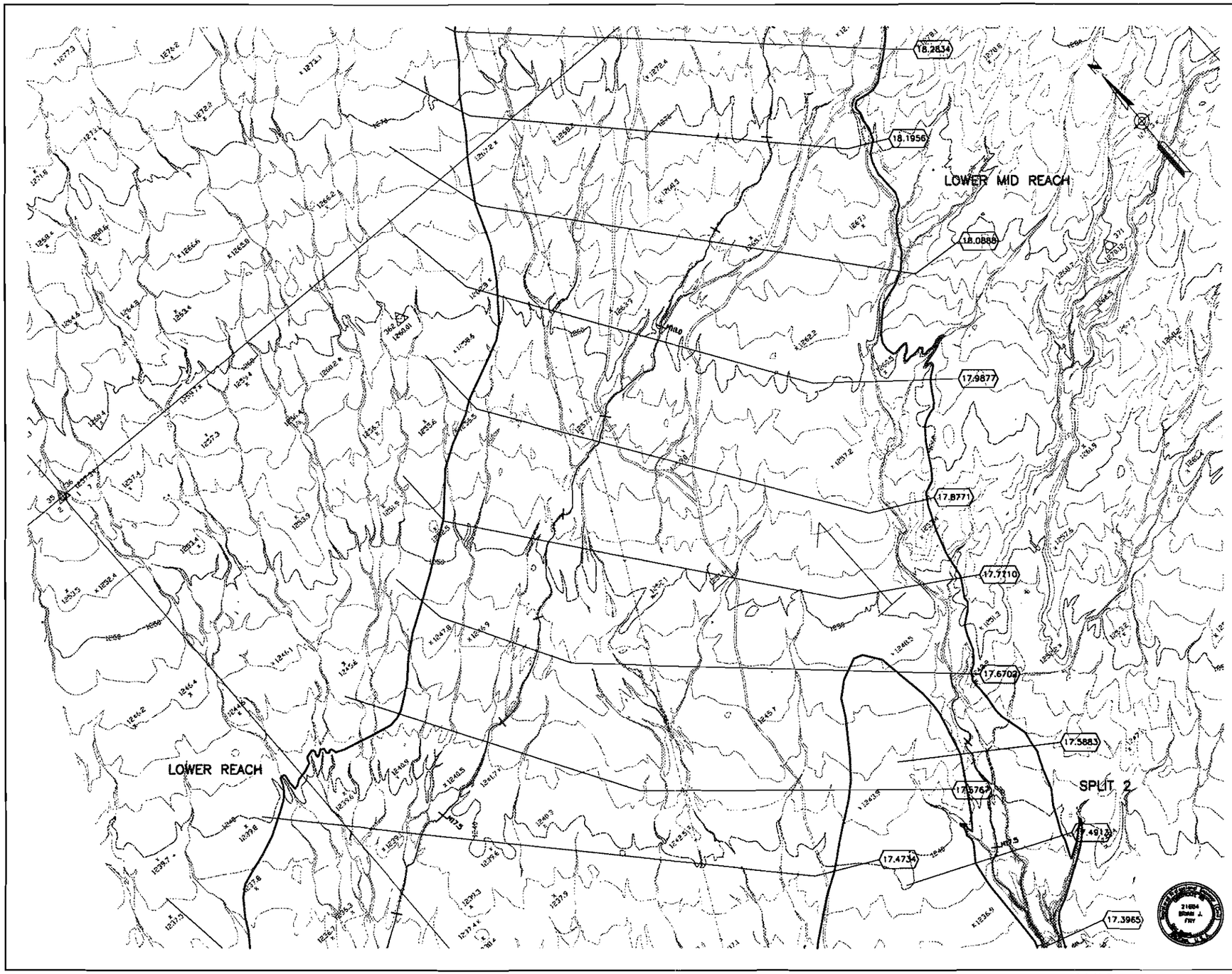
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 4 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING.

Filename: J:\9721\ACAD\SHEET04 Last Revised: 03/29/1998, 11:49:31 Plotted: 05/29/1998, 11:49:35
Cross References: PLSH=J:\9721\acad\8721plan.dwg, 0536=J:\9721\acad\0536.dwg, 0531=J:\9721\acad\0531.dwg, 0501=J:\9721\acad\0501.dwg, FLOD=flood01, CHK=8721chkl



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 5000 cfs (1/3 discharge)
NOTE: SEE SHEET 2 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERMG X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

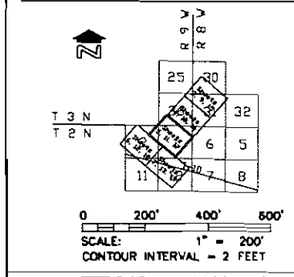
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
7	1257.34	Section cor. for sec's. 1, 2, 35 & 36, Tps. 2 & 3 N., R. 8 W., monumented with a 2 ins. iron post 0.5 ft. above ground surface, firmly set with the GLO brass cap properly mkd.
362	1260.01	Set 60d nail flush with ground surface located approximately 385 ft. south and 1625 ft. east from the NW corner of section 1, T. 2 N., R. 8 W.
367	1236.36	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 407 ft. north and 2946 ft. east from the SW corner of section 1, T. 3 N., R. 8 W.
371	1270.12	Set 60d nail flush with ground surface located approximately 2164 ft. south and 858 ft. east of the NE corner from section 1, T. 3 N., R. 8 W.

INDEX MAP



DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JLM	05/98
DESIGN CHK.	BJF	05/98
PLANS	JLM	05/98
PLANS CHK.	BJF	05/98

SUBMITTED BY: DATE:

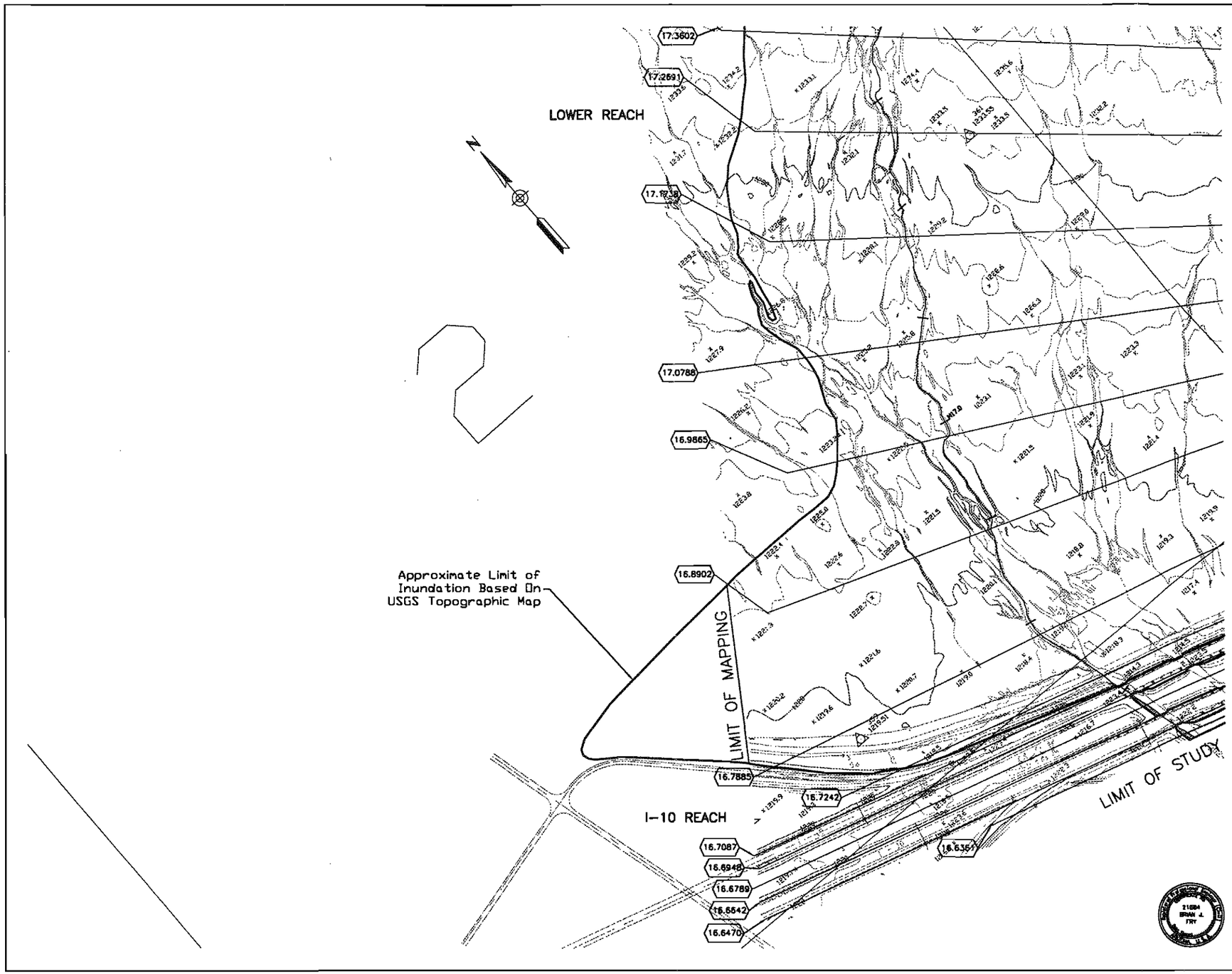
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 5 of 12

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1" = 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-5)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING.

Filename: J:\9721\ACAD\SHEET05 Last Revised: 05/29/1998, 11:50:44 Plotted: 05/29/1998, 11:50:47
Cross References: PLSH=J:\9721\acad\9721plsh.dwg, QS36=J:\9721\acad\QS36.dwg, QS01=J:\9721\acad\QS01.dwg, QS02=J:\9721\acad\QS02.dwg, FLOD=flood01, CHNL=9721chnl



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 5000 cfs (1/3 discharge)
NOTE: SEE SHEET 2 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 — M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

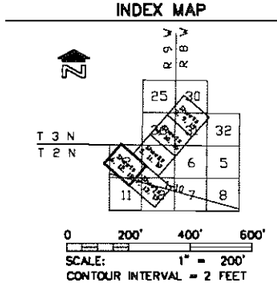
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
358	1210.51	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 400 ft. north and 2387 ft. west from the SE corner of section 2, T. 2 N., R. 8 W..
361	1233.55	Set 60d nail flush with ground surface located approximately 3143 ft. south and 374 ft. west from the NE corner of section 2, T. 2 N., R. 9 W.

INDEX MAP



DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

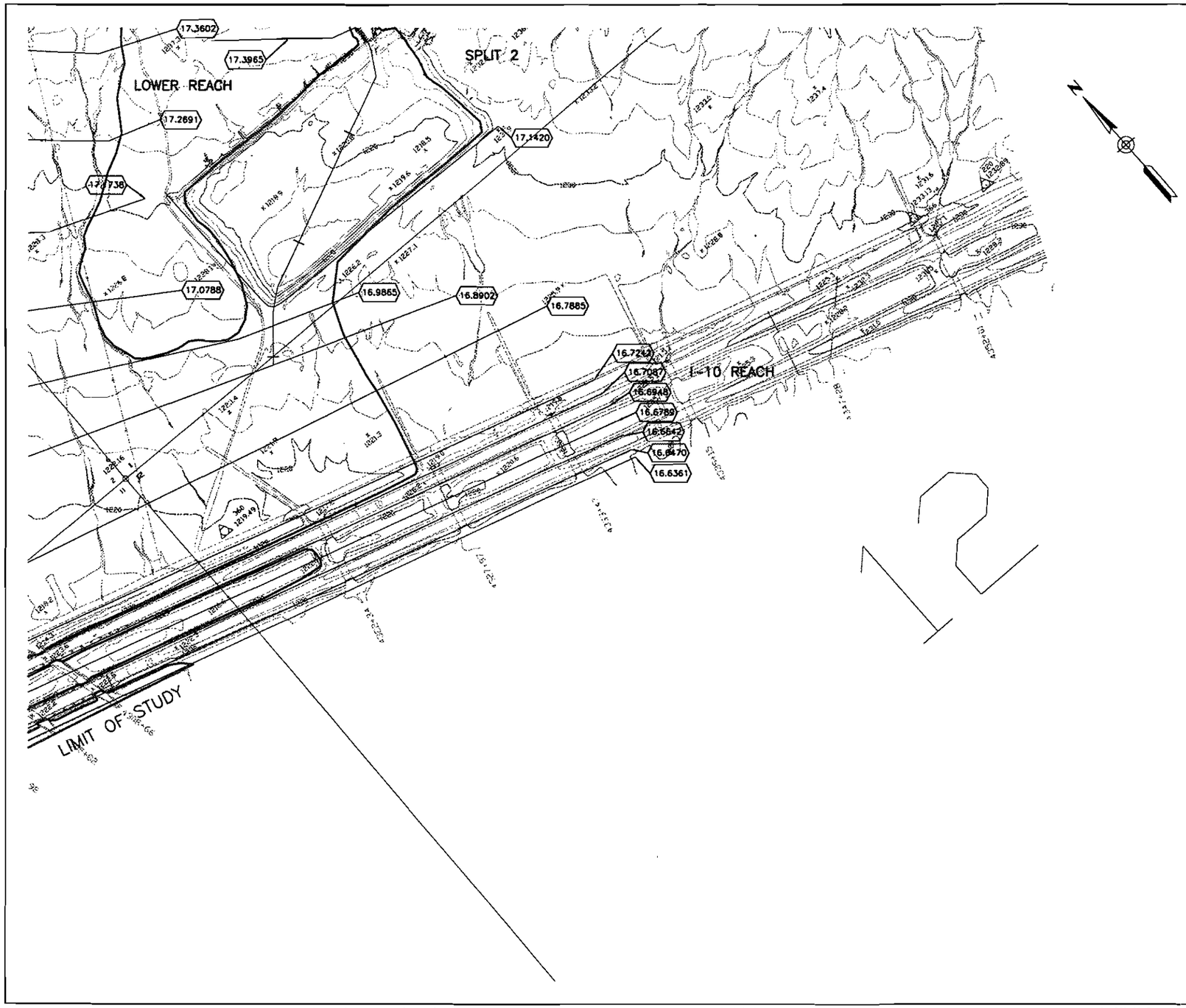
	BY	DATE
DESIGN	JLM	05/98
DESIGN CHK.	BJF	05/98
PLANS	JLM	05/98
PLANS CHK.	BJF	05/98

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER
SUBMITTED BY: DATE
SHEET 6 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING.

Filename: J:\9721\ACAD\SHEET06 Last Revised: 05/29/1998, 11:51:37 Plotted: 05/29/1998, 11:51:37
Cross References: PLSH=J:\9721\acad\9721plsh.dwg, QS01=J:\9721\acad\QS01.dwg, QS02=J:\9721\acad\QS02.dwg, QS11=J:\9721\acad\QS11.dwg, QS12=J:\9721\acad\QS12.dwg, FLOD=flood01, CHNL=9721chnl



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 5000 cfs (1/3 discharge)
NOTE: SEE SHEET 2 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

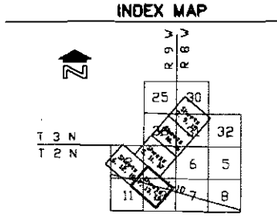
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88
(NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
6	1222.16	Section cor. for sec's. 1, 2, 11 & 12. T. 2 N., R. 8 W., monumented with a 2 ins. iron post 0.8 ft. above ground surface, firmly set with the GLO brass cap properly mkd.
220	1232.88	R/W point, monumented with a ADOT brass cap in concrete 0.3 ft. above ground surface, mkd. "POT 4335+00 1989", located approximately 1484 ft. south and 3688 ft. east from the NW corner of section 12, T. 2 N., R. 8 W.
360	1219.49	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 437 ft. south and 170 ft. east from the NW corner of section 12, T. 2 N., R. 8 W.
368	1233.13	Set 60d nail flush with ground surface located approximately 1380 ft. south and 3354 ft. east from the NW corner of section 12, T. 2 N., R. 8 W.

INDEX MAP



0 200' 400' 600'
SCALE: 1" = 200'
CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JLM	05/98
DESIGN CHK.	BJF	05/98
PLANS	JLM	05/98
PLANS CHK.	BJF	05/98
SUBMITTED BY:		DATE

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 7 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 90-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING

Filename: J:\9721\ACAD\SHEET07 Last Revised: 05/29/1998, 11:52:18 Plotted: 05/29/1998, 11:53:19
Cross References: PLSH=J:\9721\acad\9721plsh.dwg, QS01=J:\9721\acad\QS01.dwg, QS02=J:\9721\acad\QS02.dwg, QS11=J:\9721\acad\QS11.dwg, QS12=J:\9721\acad\QS12.dwg, FLOD=flood01, CHNL=9721chnl

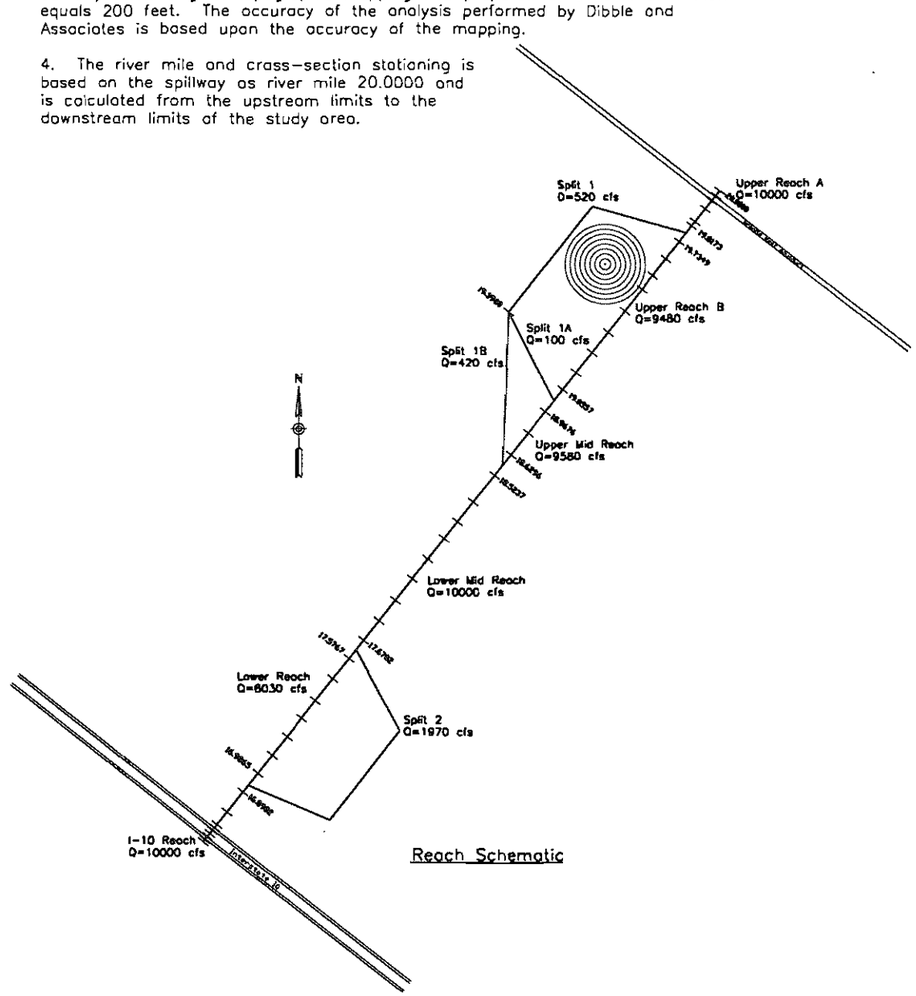
NOTES:

1. Travel time is calculated from the emergency spillway to the downstream limit of study, and is based on the average velocity of the entire cross section.

2. Maximum velocity is selected from the highest velocity output from the main channel and overbanks. The maximum depth pertains to the maximum channel depth rather than the maximum depth at any point along the cross-section. Therefore, the maximum velocity and maximum depth may pertain to only a very short segment of the full cross section. For more information on velocity and depth distribution across the cross section, see the detailed HEC-RAS ouput.

3. The mapping for this study was furnished by the Flood Control District of Maricopa County. The aerial mapping was flown on March 9, 1996 (FCD 93-51). The original topographic mapping was prepared at a scale of 1 inch equals 200 feet. The accuracy of the analysis performed by Dibble and Associates is based upon the accuracy of the mapping.

4. The river mile and cross-section stationing is based on the spillway as river mile 20.0000 and is calculated from the upstream limits to the downstream limits of the study area.



Reach Schematic

HYDRAULIC DATA

REACH	X-SEC	Q(cfs)	CWSEL(ft)	TRAVEL TIME(hrs)	MAX VELOCITY (fps)	MAX DEPTH (ft)
UPPER REACH A	20.0000	10000	1415.54	0.00	12.95	5.18
UPPER REACH A	19.9735	10000	1392.00	0.01	36.61	1.90
UPPER REACH A	19.9458	10000	1394.74	0.01	12.45	5.69
UPPER REACH A	19.9052	10000	1389.84	0.01	9.85	10.74
UPPER REACH A	19.8387	10000	1382.58	0.02	8.17	8.28
UPPER REACH A	19.8173	10000	1378.97	0.03	8.66	6.43
UPPER REACH B	19.7349	9480	1372.36	0.04	8.29	6.03
UPPER REACH B	19.6465	9480	1365.74	0.06	9.14	5.89
UPPER REACH B	19.5602	9480	1357.84	0.07	9.42	4.25
UPPER REACH B	19.4887	9480	1351.58	0.09	9.99	4.25
UPPER REACH B	19.3761	9480	1342.97	0.11	6.26	3.93
UPPER REACH B	19.2665	9480	1333.32	0.13	10.11	4.68
UPPER REACH B	19.1607	9480	1326.12	0.15	4.87	5.35
UPPER REACH B	19.0557	9480	1317.79	0.17	11.33	3.48
UPPER MID REACH	18.9676	9580	1312.27	0.19	6.40	5.52
UPPER MID REACH	18.8526	9580	1305.33	0.22	5.00	4.50
UPPER MID REACH	18.7424	9580	1298.07	0.24	6.07	3.66
UPPER MID REACH	18.6296	9580	1291.32	0.27	4.78	4.11
LOWER MID REACH	18.5237	10000	1285.66	0.30	6.36	4.81
LOWER MID REACH	18.3861	10000	1279.30	0.34	5.12	4.51
LOWER MID REACH	18.2834	10000	1273.98	0.36	5.67	4.08
LOWER MID REACH	18.1956	10000	1270.10	0.39	4.67	3.86
LOWER MID REACH	18.0888	10000	1265.66	0.41	5.27	4.59
LOWER MID REACH	17.9877	10000	1261.40	0.45	4.19	5.07
LOWER MID REACH	17.8771	10000	1256.29	0.48	5.85	5.02
LOWER MID REACH	17.7710	10000	1251.80	0.50	4.12	5.11
LOWER MID REACH	17.6702	10000	1248.05	0.54	5.23	4.14
LOWER REACH	17.5767	8030	1243.55	0.57	3.97	3.63
LOWER REACH	17.4734	8030	1239.98	0.60	4.61	3.62
LOWER REACH	17.3602	8030	1236.06	0.64	3.72	3.24
LOWER REACH	17.2691	8030	1232.61	0.68	4.21	3.72
LOWER REACH	17.1738	8030	1229.54	0.71	3.22	3.50
LOWER REACH	17.0788	8030	1225.81	0.74	5.47	2.92
LOWER REACH	16.9865	8030	1224.58	0.78	1.72	5.18
I-10 REACH	16.8902	10000	1224.51	0.89	0.94	7.04
I-10 REACH	16.7885	10000	1224.50	1.07	0.52	8.54
I-10 REACH	16.7242	10000	1224.49	1.28	0.42	10.07
I-10 REACH	16.7087	10000	1224.46	1.28	1.73	10.16
I-10 REACH	16.6948	10000	1223.02	1.31	4.10	8.95
I-10 REACH	16.6789	10000	1223.15	1.33	0.44	9.42
I-10 REACH	16.6642	10000	1223.10	1.35	2.13	9.90
I-10 REACH	16.6470	10000	1219.67	1.36	6.34	6.70
I-10 REACH	16.6361	10000	1215.24	1.36	16.50	2.54
SPLIT 1	19.6872	520	1373.39	0.04	17.96	1.39
SPLIT 1	19.6513	520	1371.45	0.04	3.82	2.28
SPLIT 1	19.5997	520	1368.47	0.07	2.39	3.33
SPLIT 1	19.5616	520	1366.39	0.08	4.54	3.13
SPLIT 1	19.5223	520	1363.81	0.10	2.63	3.13
SPLIT 1	19.4869	520	1360.81	0.11	4.46	3.51
SPLIT 1	19.3980	520	1354.51	0.15	2.91	2.40
SPLIT 1A	19.3216	100	1348.08	0.18	1.91	1.32
SPLIT 1A	19.2398	100	1342.16	0.24	2.49	1.15
SPLIT 1A	19.1676	100	1336.38	0.28	2.46	1.12
SPLIT 1A	19.0811	100	1329.46	0.32	3.48	1.50
SPLIT 1A	18.9967	100	1322.72	0.37	2.16	1.50
SPLIT 1A	18.9165	100	1315.81	0.40	3.48	1.57
SPLIT 1B	19.3158	420	1347.89	0.18	4.59	2.15
SPLIT 1B	19.2400	420	1341.85	0.21	2.78	2.52
SPLIT 1B	19.1631	420	1335.86	0.25	4.07	1.75
SPLIT 1B	19.0836	420	1328.34	0.29	2.14	3.43
SPLIT 1B	19.0153	420	1322.13	0.32	5.16	2.20
SPLIT 1B	18.9337	420	1316.29	0.35	2.39	2.05
SPLIT 1B	18.8560	420	1310.88	0.38	5.00	1.74
SPLIT 1B	18.7744	420	1305.25	0.42	2.48	2.05
SPLIT 1B	18.7184	420	1301.34	0.44	3.46	2.04
SPLIT 1B	18.6384	420	1296.56	0.48	2.46	2.25
SPLIT 1B	18.5485	420	1292.20	0.50	3.83	2.03
SPLIT 2	17.5883	1970	1243.39	0.57	3.62	4.66
SPLIT 2	17.4913	1970	1238.96	0.60	6.23	5.78
SPLIT 2	17.3965	1970	1235.31	0.63	3.39	10.16
SPLIT 2	17.1420	1970	1225.98	0.81	4.95	1.57

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

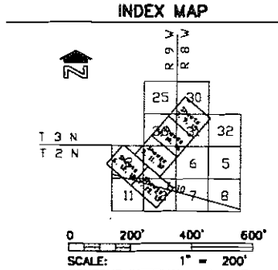
DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 10,000 cfs (2/3 discharge)

INDEX MAP



DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JLM	05/98
DESIGN CHK.	BJF	05/98
PLANS	JLM	05/98
PLANS CHK.	BJF	05/98

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

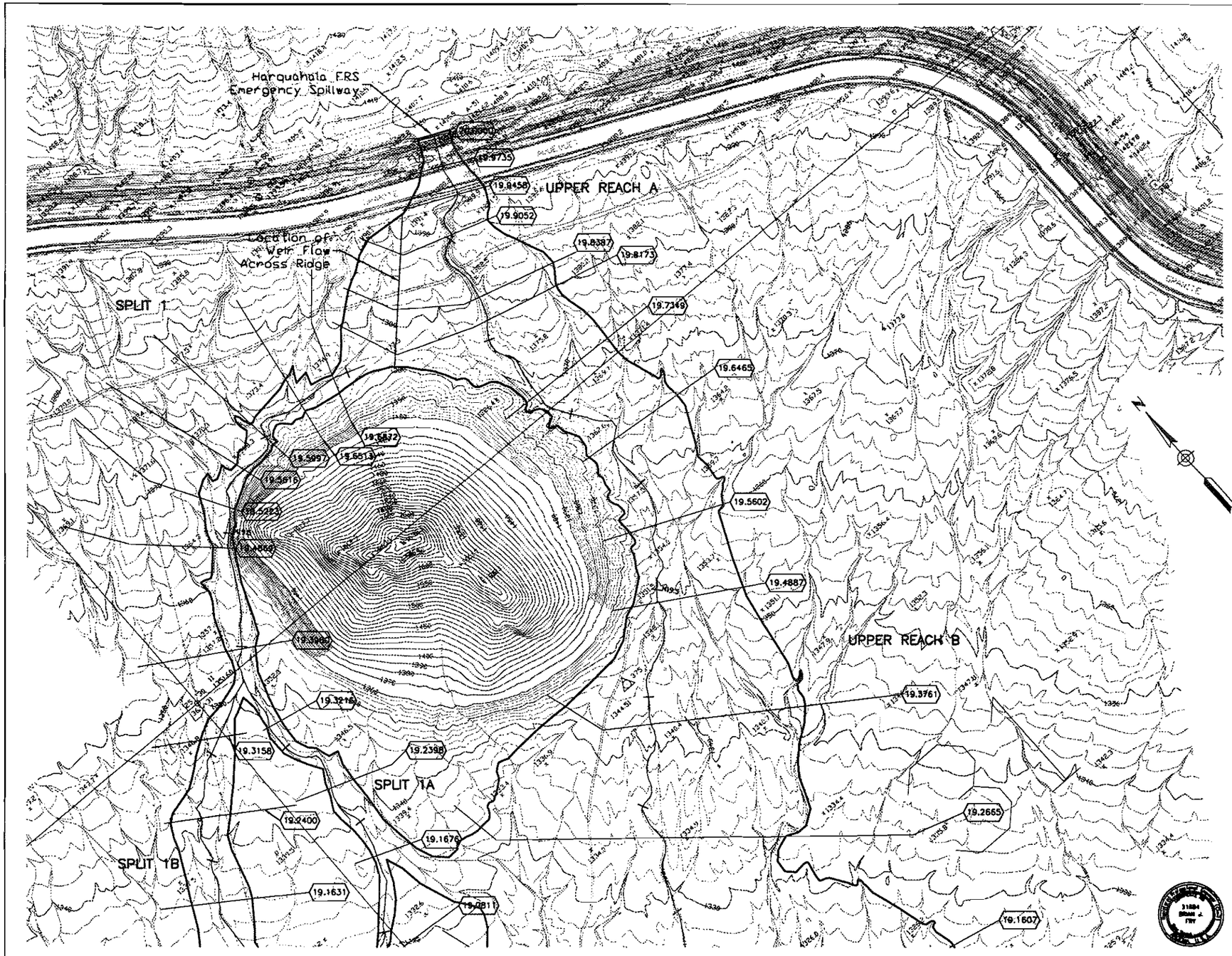
RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SUBMITTED BY: DATE:

SHEET 8 of 19



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 10,000 cfs (2/3 Discharge)
NOTE: SEE SHEET 8 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

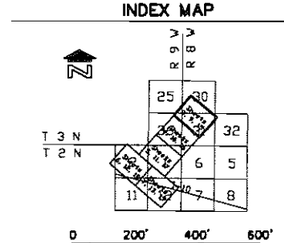
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV (FT)	DESCRIPTION/LOCATION
11	1251.60	Section Cor. for sects. 25, 30, 31 & 36, T. 3 N., Rs. 8 & 9 W. monumented with a 5 ins. iron post 0.8 ft. above ground surface, firmly set with the 2.0 brass cap properly stamped
213	1299.59	Bench Mark, monumented with a USGS - BCS brass cap in concrete, flush with ground surface, stmp. "9-34 2-84", located Rt. of Sta 928+83.
275	1344.51	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 4036 ft. north and 1481 ft. east from the SW corner of section 31, T. 3 N., R. 8 W.
A-30	1421.91	Bench Mark, monumented with a USDA - SCS brass cap in concrete, 0.5 ft. below ground surface, stmp. "A-30 2-84", located Rt. of sta 928+82.
A-31	1421.62	Bench Mark, monumented with a USDA - SCS brass cap in concrete, 0.6 ft. below ground surface, stmp. "A-31 2-84", located Rt. of sta 920+19.
A-32	1421.43	Bench Mark, monumented with a USDA - SCS brass cap in concrete, 0.7 ft. below ground surface, stmp. "A-32 2-84", located Rt. of sta 948+66.
A-34	1421.78	Bench Mark, monumented with a USDA - SCS brass cap in concrete, 0.3 ft. below ground surface, stmp. "A-34 2-84", located Rt. of sta 970+87.

INDEX MAP



SCALE: 1" = 200'
CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JLM	05/98
DESIGN CHK	BJF	05/98
PLANS	JLM	05/98
PLANS CHK	BJF	05/98
SUBMITTED BY:		DATE:

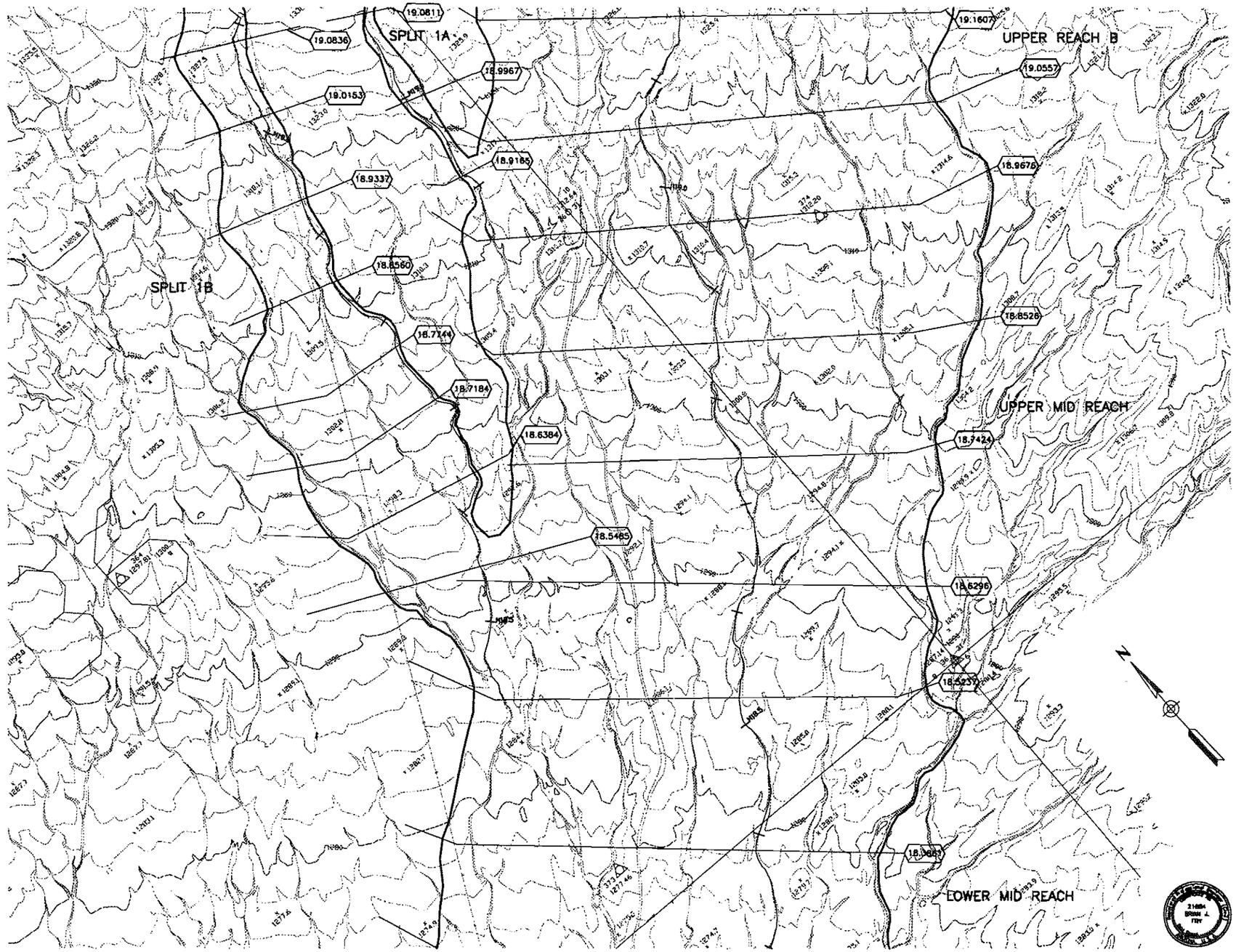
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 9 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING

Filename: J:\9721\ACAD\SHEET09 Last Revised: 05/29/1998, 11:53:33 Plotted: 05/29/1998, 11:53:38
Cross References: PLSH=J:\9721\acad\9721plsh.dwg, 0530=J:\9721\acad\0530.dwg, 0538=J:\9721\acad\0538.dwg, 0531=J:\9721\acad\0531.dwg, FLOD=floodl2, CHNL=9721chnl



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 10000 cfs (2/3 discharge)
NOTE: SEE SHEET 8 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

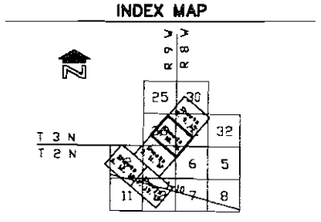
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
B	1411.28	Township cor. for Tps. 2 & 3 N., Rs. 8 & 9 W., monumented with a 3 ins. iron post 0.7 ft. above ground surface, firmly set with the DLD brass cap properly stmp. Also sects. 1, 6, 31 & 36.
10	1312.64	Quarter cor. for sect. 31 & 36, T. 3 N., Rs. 8 & 9 W., monumented with 1 in. iron post 0.7 ft. above ground surface, firmly set with the DLD brass cap properly stmp.
364	1297.81	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 2693 ft. north and 2543 ft. west from the SE corner of section 36, T. 3 N., R. 9 W.
372	1277.46	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 274 ft. north and 1376 ft. west from the SE corner of section 36, T. 3 N., R. 9 W.
374	1318.29	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 1893 ft. north and 829 ft. east from the SW corner of section 31, T. 3 N., R. 8 W.

INDEX MAP



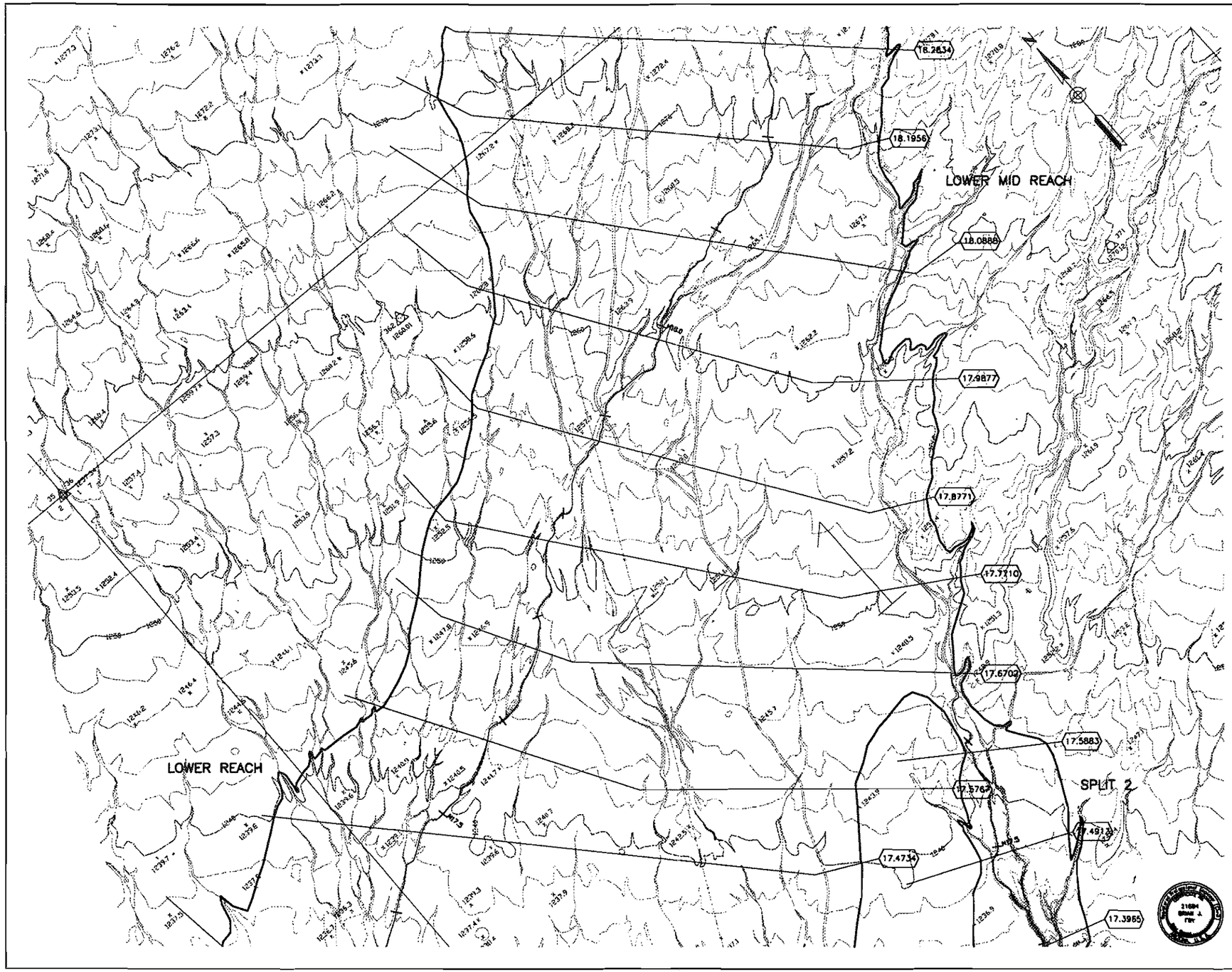
0 200' 400' 600'
SCALE: 1" = 200'
CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE	
DESIGN	JLM	05/98	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DESIGN CHK.	BJF	05/98	RECOMMENDED BY: DATE
PLANS	JLM	05/98	APPROVED BY: DATE
PLANS CHK.	BJF	05/98	CHIEF ENGINEER AND GENERAL MANAGER
SUBMITTED BY:		DATE:	SHEET 10 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING.

Filename: J:\9721\ACAD\SHEET10 Last Revised: 05/28/1998, 11:55:05 Plotted: 05/29/1998, 11:55:09
Cross References: PLSH=J:\9721\acad\9721plsh.dwg, DS36=J:\9721\acad\DS36.dwg, DS31=J:\9721\acad\DS31.dwg, DS01=J:\9721\acad\DS01.dwg, FLOD=floud02, CHNL=9721chnl



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 10000 cFs (2/3 discharge)
NOTE: SEE SHEET 8 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	CRM3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

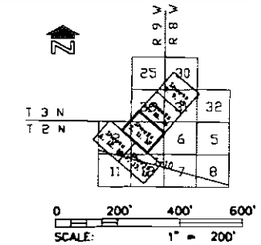
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
7	1257.34	Section cor. for sec's. 1, 2, 35 & 36, Tps. 2 & 3 N., R. 8 W., monumented with a 2 ins. iron post 0.5 ft. above ground surface, firmly set with the C.L.O. brass cap properly mkd.
362	1260.01	Set 60d nail flush with ground surface located approximately 385 ft. south and 1685 ft. east from the NW corner of section 1, T. 2 N., R. 9 W.
367	1236.36	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 407 ft. north and 2648 ft. east from the SW corner of section 1, T. 2 N., R. 9 W.
371	1270.12	Set 60d nail flush with ground surface located approximately 2184 ft. south and 958 ft. west of the NE corner from section 1, T. 2 N., R. 8 W.

INDEX MAP



0 200' 400' 600'
SCALE: 1" = 200'
CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JLM	05/98
DESIGN CHK.	BJF	05/98
PLANS	JLM	05/98
PLANS CHK.	BJF	05/98

SUBMITTED BY: DATE

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

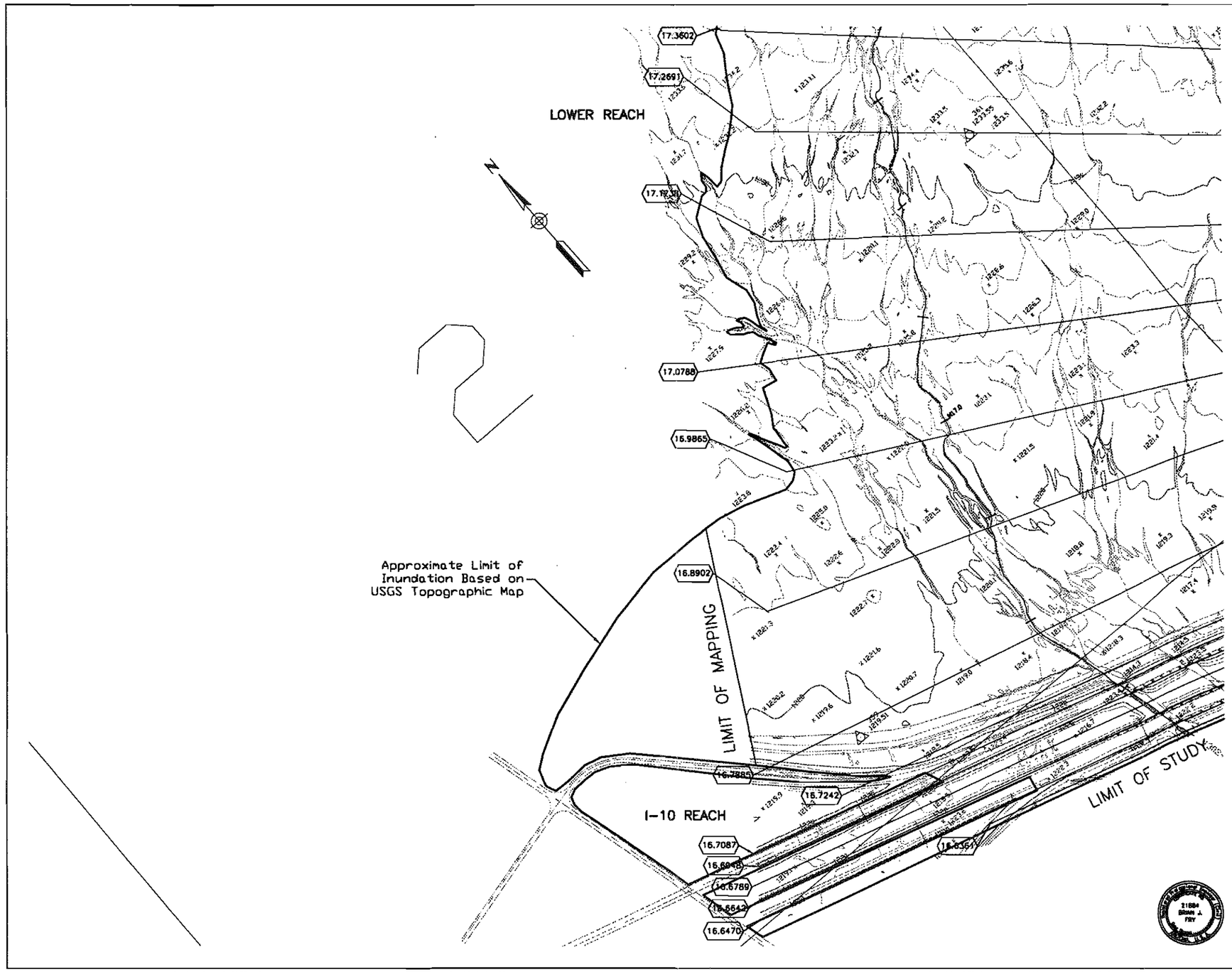
APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 11 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING

Filename: J:\9721\ACAD\SHEET11 Last Revised: 05/29/1998, 11:58:18 Plotted: 05/29/1998, 11:56:20
Cross References: PLSH=J:\9721\acad\9721plsh.dwg, OS36=J:\9721\acad\OS36.dwg, OS01=J:\9721\acad\OS01.dwg, OS02=J:\9721\acad\OS02.dwg, FLDD=floodd2, CHNL=9721chnl



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 10000 cfs (2/3 discharge)
NOTE: SEE SHEET 8 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 — M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

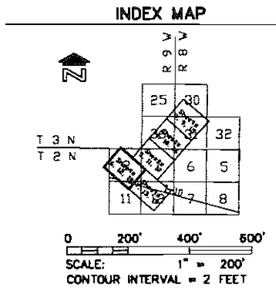
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
350	1219.31	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 400 ft. north and 2387 ft. west from the SE corner of section 2, T. 2 N., R. 8 W..
351	1233.36	Set 60d nail flush with ground surface located approximately 3143 ft. south and 274 ft. west from the NE corner of section 2, T. 2 N., R. 8 W.

INDEX MAP

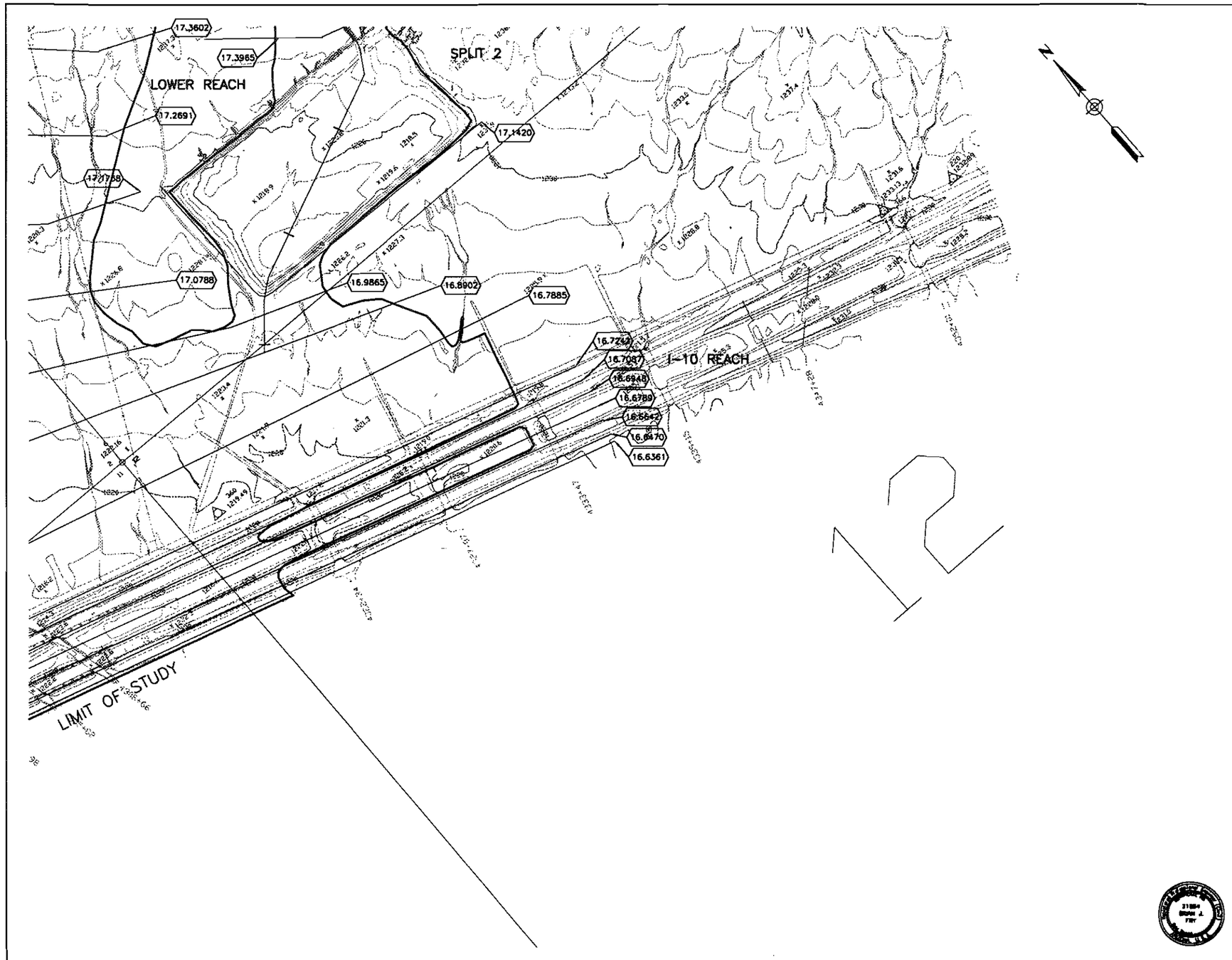


DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE	
DESIGN	JLM	05/98	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DESIGN CHK.	BJF	05/98	RECOMMENDED BY: DATE
PLANS	JLM	05/98	APPROVED BY: DATE
PLANS CHK.	BJF	05/98	CHIEF ENGINEER AND GENERAL MANAGER
SUBMITTED BY: DATE:			SHEET 12 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING.

Filename: J:\8721\ACAD\SHEET12 Last Revised: 05/29/1998, 11:57:10 Plotted: 05/29/1998, 11:57:11
Cross References: PLSH=J:\8721\acad\8721plsh.dwg, 0501=J:\8721\acad\0501.dwg, 0502=J:\8721\acad\0502.dwg, 0511=J:\8721\acad\0511.dwg, 0512=J:\8721\acad\0512.dwg, FLOD=floodd2, CHAL=8721chal



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 10000 cfs (2/3 discharge)
NOTE: SEE SHEET 8 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

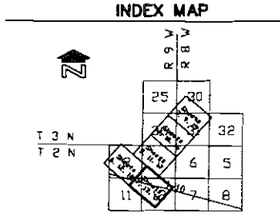
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
8	1222.16	Section cor. for sec's. 1, 2, 11 & 12, T. 2 N., R. 8 W., monumented with a 2 inc. iron cap 0.8 ft. above ground surface, firmly set with the GLO brass cap properly mtd.
220	1232.89	R/W point, monumented with a JHD brass cap in concrete 0.5 ft. above ground surface, mtd. "PGT 4353+00 1989", located approximately 1484 ft. south and 3689 ft. east from the NW corner of section 12, T. 2 N., R. 8 W.
360	1219.49	Set 1/2 x 18 inc. rebar flush with ground surface located approximately 437 ft. south and 170 ft. east from the NW corner of section 12, T. 2 N., R. 8 W.
366	1233.13	Set 60d nail flush with ground surface located approximately 1380 ft. south and 3354 ft. east from the NW corner of section 12, T. 2 N., R. 8 W.

INDEX MAP



SCALE: 1" = 200'
CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JJW	05/98
DESIGN CHK.	BJF	05/98
PLANS	JJW	05/98
PLANS CHK.	BJF	05/98
SUBMITTED BY: DATE		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 13 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING

Filename: J:\9721\ACAD\SHEET13 Last Revised: 05/28/1998, 11:57:51 Plotted: 05/29/1998, 11:57:52
Cross References: PLSH=J:\9721\acad\9721pen.dwg, QS01=J:\9721\acad\QS01.dwg, QS02=J:\9721\acad\QS02.dwg, QS11=J:\9721\acad\QS11.dwg, QS12=J:\9721\acad\QS12.dwg, FLOD=floodQ2, CHKL=9721chkl

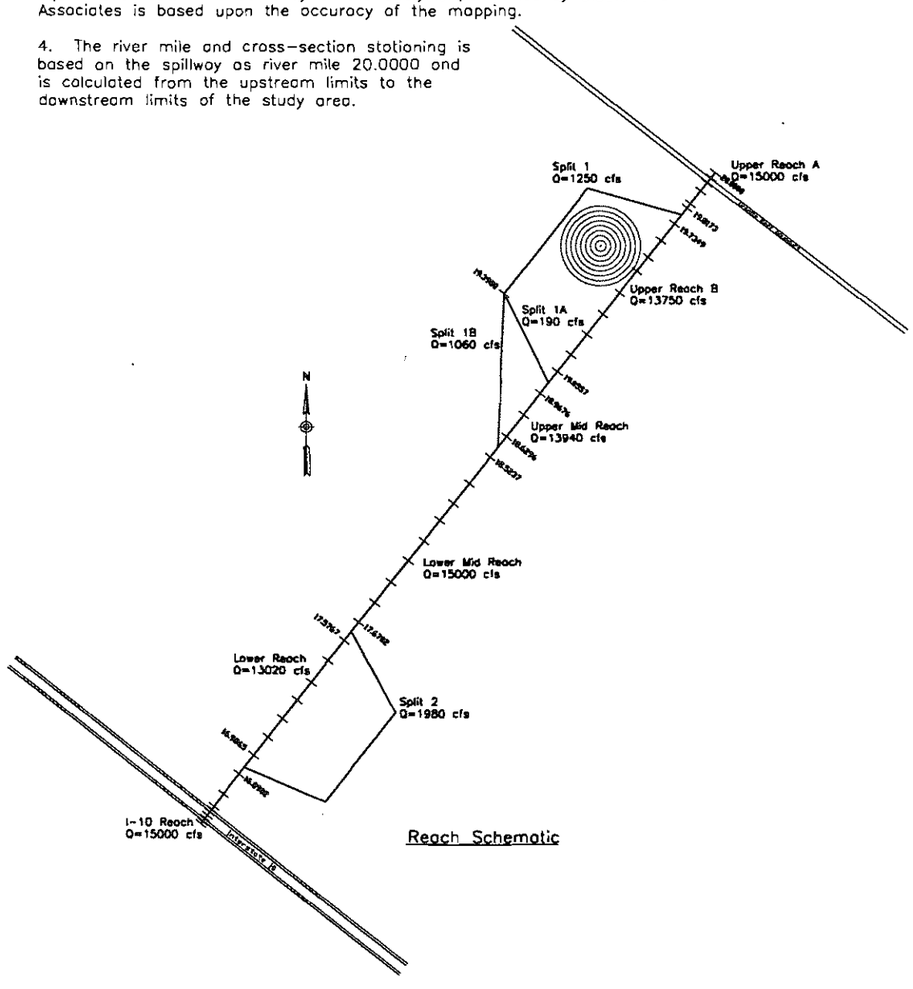
NOTES:

1. Travel time is calculated from the emergency spillway to the downstream limit of study, and is based on the overage velocity of the entire cross section.

2. Maximum velocity is selected from the highest velocity output from the main channel and overbanks. The maximum depth pertains to the maximum channel depth rather than the maximum depth at any point along the cross-section. Therefore, the maximum velocity and maximum depth may pertain to only a very short segment of the full cross section. For more information on velocity and depth distribution across the cross section, see the detailed HEC-RAS auput.

3. The mapping for this study was furnished by the Flood Control District of Maricopa County. The aerial mapping was flown on March 9, 1996 (FCD 93-51). The original topographic mapping was prepared at a scale of 1 inch equals 200 feet. The accuracy of the analysis performed by Dibble and Associates is based upon the accuracy of the mapping.

4. The river mile and cross-section stationing is based on the spillway as river mile 20.0000 and is calculated from the upstream limits to the downstream limits of the study area.



Reach Schematic

HYDRAULIC DATA

REACH	X-SEC	Q(cfs)	CWSEL(ft)	TRAVEL TIME(hrs)	MAX VELOCITY (fps)	MAX DEPTH (ft)
UPPER REACH A	20.0000	15000	1417.15	0.00	14.81	6.79
UPPER REACH A	19.9735	15000	1392.63	0.00	38.46	2.53
UPPER REACH A	19.9458	15000	1395.21	0.00	15.55	6.15
UPPER REACH A	19.9052	15000	1390.45	0.00	11.24	11.35
UPPER REACH A	19.8387	15000	1382.96	0.01	10.00	8.66
UPPER REACH A	19.8173	15000	1379.73	0.02	8.62	7.19
UPPER REACH B	19.7349	13750	1372.70	0.03	9.65	6.37
UPPER REACH B	19.6465	13750	1366.67	0.04	8.88	6.81
UPPER REACH B	19.5602	13750	1358.22	0.06	11.74	4.64
UPPER REACH B	19.4887	13750	1352.41	0.07	10.15	5.08
UPPER REACH B	19.3761	13750	1343.01	0.09	8.08	3.97
UPPER REACH B	19.2665	13750	1333.87	0.11	8.69	5.24
UPPER REACH B	19.1607	13750	1326.07	0.13	7.35	5.30
UPPER REACH B	19.0557	13750	1318.57	0.15	8.19	4.26
UPPER MID REACH	18.9676	13940	1312.59	0.17	7.01	5.64
UPPER MID REACH	18.8526	13940	1305.61	0.19	5.78	4.78
UPPER MID REACH	18.7424	13940	1298.38	0.22	6.78	3.97
UPPER MID REACH	18.6296	13940	1291.72	0.24	5.28	4.51
LOWER MID REACH	18.5237	15000	1286.13	0.27	7.03	5.29
LOWER MID REACH	18.3861	15000	1279.70	0.30	5.76	4.91
LOWER MID REACH	18.2834	15000	1274.37	0.33	6.19	4.47
LOWER MID REACH	18.1956	15000	1270.48	0.35	5.13	4.24
LOWER MID REACH	18.0888	15000	1266.00	0.37	5.79	4.92
LOWER MID REACH	17.9877	15000	1261.77	0.40	4.89	5.44
LOWER MID REACH	17.8771	15000	1256.64	0.42	6.55	5.37
LOWER MID REACH	17.7710	15000	1252.15	0.45	4.53	5.45
LOWER MID REACH	17.6702	15000	1248.30	0.48	5.53	4.39
LOWER REACH	17.5767	13020	1243.80	0.51	4.19	3.88
LOWER REACH	17.4734	13020	1240.30	0.53	5.37	3.94
LOWER REACH	17.3602	13020	1236.43	0.57	4.28	3.60
LOWER REACH	17.2691	13020	1232.91	0.60	4.90	4.02
LOWER REACH	17.1738	13020	1229.90	0.63	3.72	3.86
LOWER REACH	17.0788	13020	1226.16	0.66	5.86	3.27
LOWER REACH	16.9865	13020	1225.41	0.69	1.84	6.01
I-10 REACH	16.8902	15000	1225.33	0.79	1.10	7.86
I-10 REACH	16.7885	15000	1225.32	1.04	0.68	9.46
I-10 REACH	16.7242	15000	1225.31	1.20	0.52	10.89
I-10 REACH	16.7087	15000	1225.28	1.22	1.85	10.98
I-10 REACH	16.6948	15000	1225.15	1.24	2.04	11.08
I-10 REACH	16.6789	15000	1225.18	1.27	0.46	11.44
I-10 REACH	16.6642	15000	1225.16	1.30	1.45	11.96
I-10 REACH	16.6470	15000	1220.08	1.31	6.95	7.11
I-10 REACH	16.6361	15000	1215.53	1.31	17.02	2.83
SPLIT 1	19.6872	1250	1375.42	0.03	4.54	3.42
SPLIT 1	19.6513	1250	1372.39	0.04	3.95	3.22
SPLIT 1	19.5997	1250	1369.67	0.06	3.10	4.53
SPLIT 1	19.5616	1250	1367.50	0.08	3.71	4.23
SPLIT 1	19.5223	1250	1364.68	0.09	3.68	4.00
SPLIT 1	19.4869	1250	1362.40	0.11	4.69	5.09
SPLIT 1	19.3980	1250	1354.76	0.14	4.33	2.65
SPLIT 1A	19.3216	190	1348.29	0.17	2.74	1.53
SPLIT 1A	19.2398	190	1342.41	0.21	2.82	1.40
SPLIT 1A	19.1676	190	1336.61	0.25	3.07	1.35
SPLIT 1A	19.0811	190	1329.80	0.29	3.92	1.84
SPLIT 1A	18.9967	190	1322.96	0.33	2.73	1.74
SPLIT 1A	18.9165	190	1315.99	0.36	4.37	1.75
SPLIT 1B	19.3158	1060	1348.19	0.17	3.92	2.45
SPLIT 1B	19.2400	1060	1342.04	0.19	5.14	2.70
SPLIT 1B	19.1631	1060	1336.15	0.22	4.78	2.03
SPLIT 1B	19.0836	1060	1328.60	0.25	3.92	3.69
SPLIT 1B	19.0153	1060	1322.56	0.27	4.89	2.63
SPLIT 1B	18.9337	1060	1316.66	0.30	3.32	2.42
SPLIT 1B	18.8560	1060	1311.58	0.33	4.21	2.44
SPLIT 1B	18.7744	1060	1305.66	0.36	3.21	2.45
SPLIT 1B	18.7184	1060	1301.66	0.38	4.51	2.36
SPLIT 1B	18.6384	1060	1297.00	0.41	3.26	2.69
SPLIT 1B	18.5485	1060	1292.44	0.43	4.31	2.27
SPLIT 2	17.5883	1980	1243.93	0.51	3.63	4.66
SPLIT 2	17.4913	1980	1238.97	0.54	6.21	5.79
SPLIT 2	17.3965	1980	1235.32	0.57	3.40	10.17
SPLIT 2	17.1420	1980	1225.98	0.75	4.93	1.58

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

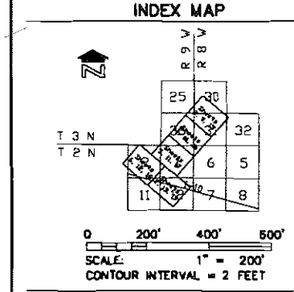
DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 15,000 cfs (full discharge)

INDEX MAP



DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JLM	05/98
DESIGN CHK.	BJF	05/98
PLANS	JLM	05/98
PLANS CHK.	BJF	05/98
SUBMITTED BY:		DATE:

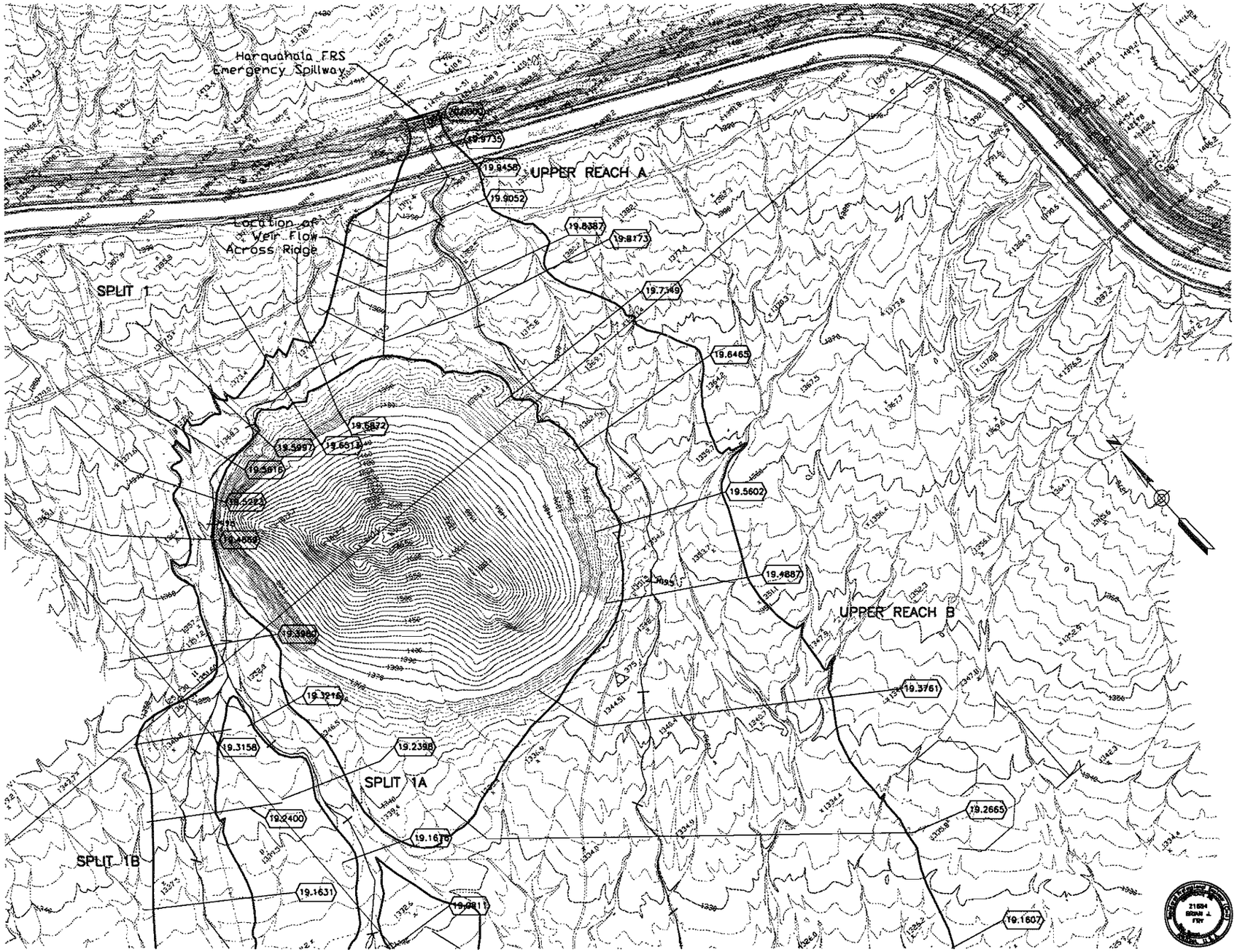
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 14 of 19



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 15,000 cfs (Full Discharge)
NOTE: SEE SHEET 14 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

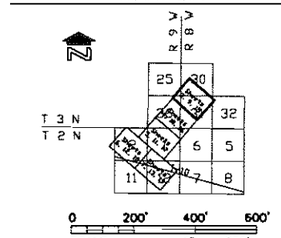
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
11	1351.66	Section Cor. for sec's. 25, 30, 31 & 36, T. 3 N., Rs. 8 & 9 W. monumented with a 1" ins. iron post 0.8 ft. above ground surface, firmly set with the GLO brass cap properly std
B13	1399.59	Bench Mark, monumented with a USDA - SCS brass cap in concrete. Flush with ground surface, std. "B-36 2-84", located Rt. of Sta. 928+82.
375	1344.51	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 4076 ft. north and 1481 ft. east from the SW corner of section 31, T. 3 N., R. 8 W.
A-30	1421.91	Bench Mark, monumented with a USDA - SCS brass cap in concrete. 0.3 ft. below ground surface, std. "A-30 2-84", located Rt. of sta. 928+82.
A-31	1421.62	Bench Mark, monumented with a USDA - SCS brass cap in concrete. 0.6 ft. below ground surface, std. "A-31 2-84", located Rt. of sta. 930+19.
A-32	1421.43	Bench Mark, monumented with a USDA - SCS brass cap in concrete. 0.7 ft. below ground surface, std. "A-32 2-84", located Rt. of sta. 948+66.
A-34	1421.78	Bench Mark, monumented with a USDA - SCS brass cap in concrete. 0.3 ft. below ground surface, std. "A-34 2-84", located Rt. of sta. 970+87.

INDEX MAP



DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JLM	05/98
DESIGN CHK.	BJF	05/98
PLANS	JLM	05/98
PLANS CHK.	BJF	05/98

SUBMITTED BY: DATE:

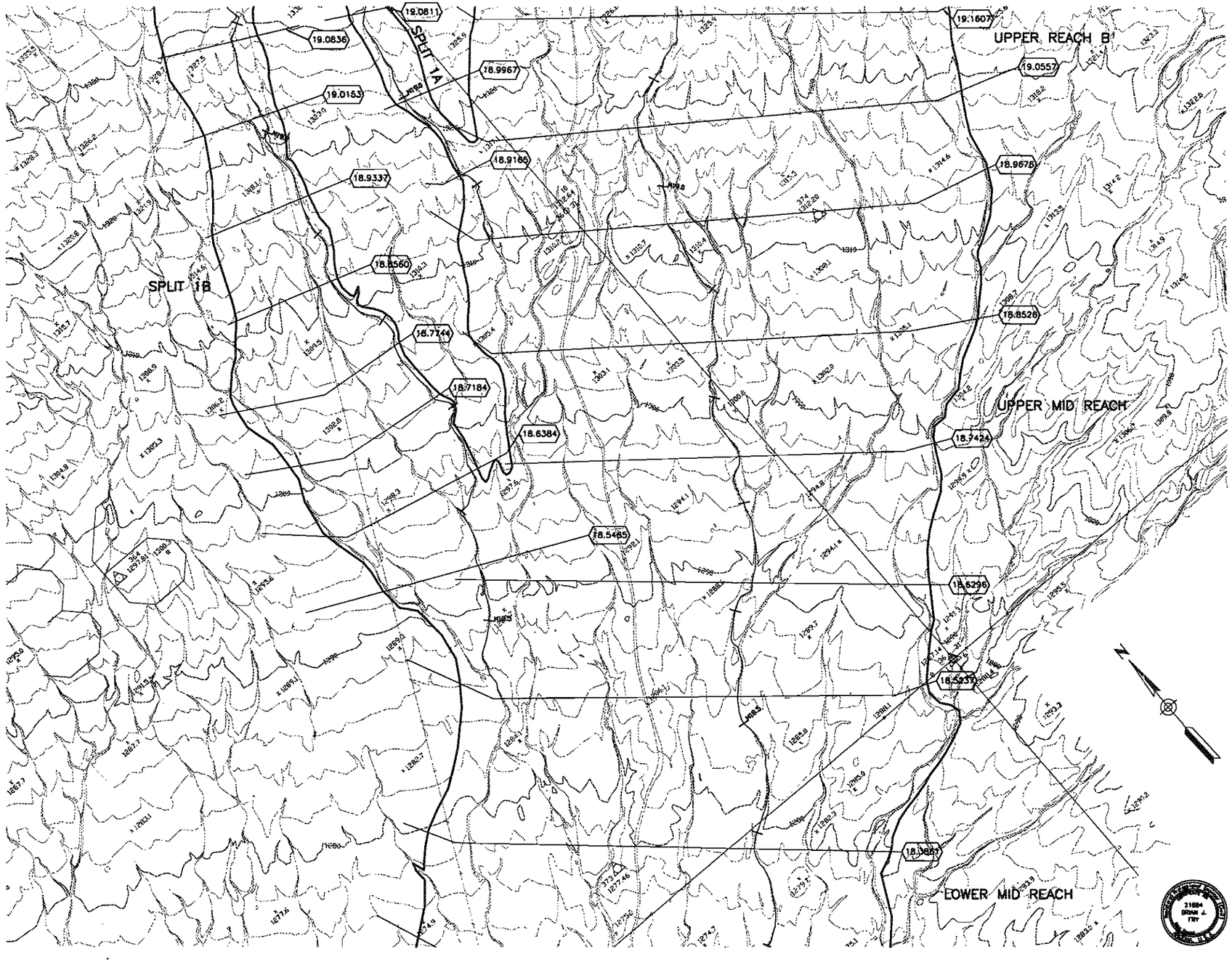
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 15 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1" = 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING.

Filename: J:\9721\ACAD\SHEET15 Last Revised: 05/29/1998, 11:59:08 Plotted: 05/29/1998, 11:59:10
Cross References: PLSH=J:\9721\acad\9721plsh.dwg, 0530=J:\9721\acad\0530.dwg, 0536=J:\9721\acad\0536.dwg, 0531=J:\9721\acad\0531.dwg, FLOD=flood03, CHNL=9721chnl



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 15000 cfs (Full discharge)
NOTE: SEE SHEET 14 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM2 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

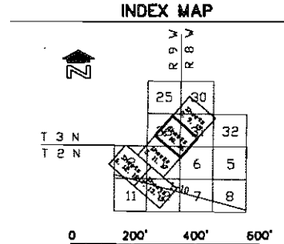
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
8	1411.30	Township cor. for Tps. 2 & 3 N., Rs. 8 & 9 W., monumented with a 3 ins. iron post 0.7 ft. above ground surface, firmly set with the GLO brass cap properly stmp. (Also sec's. 1, 6, 31 & 36).
10	1312.54	Quarter cor. for sec's. 31 & 36, T. 3 N., Rs. 8 & 9 W., monumented with 1 in. iron post 0.7 ft. above ground surface, firmly set with the GLO brass cap properly stmp.
364	1297.81	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 2693 ft. north and 2545 ft. west from the SE corner of section 36, T. 3 N., R. 9 W.
373	1277.46	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 274 ft. north and 1376 ft. west from the SE corner of section 36, T. 3 N., R. 9 W.
374	1312.20	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 1893 ft. north and 859 ft. east from the SW corner of section 31, T. 3 N., R. 8 W.

INDEX MAP



DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE
DESIGN	JJM	05/98
DESIGN CHK.	BJF	05/98
PLANS	JJM	05/98
PLANS CHK.	BJF	05/98

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

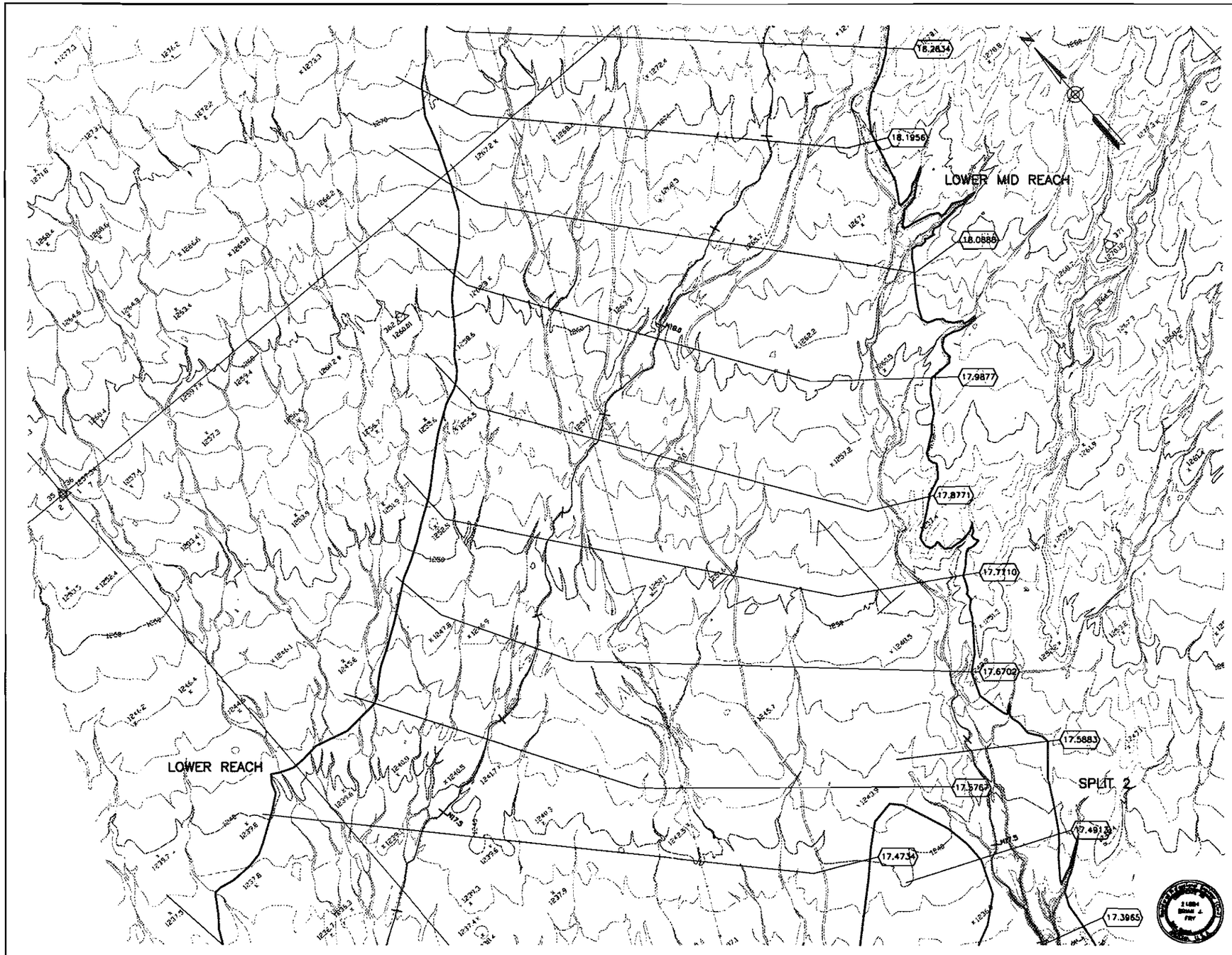
RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SUBMITTED BY: DATE:

SHEET 16 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING

Filename: J:\9721\ACAD\SHEET16 Last Revised: 05/29/1998, 12:00:37 Plotted: 05/29/1998, 12:00:41
Cross References: PLSH=J:\9721\acad\9721plan.dwg, QS36=J:\9721\acad\QS36.dwg, QS31=J:\9721\acad\QS31.dwg, QS01=J:\9721\acad\QS01.dwg, FLDD=flood03, CHNL=9721chnl



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 15000 cfs (Full discharge)
NOTE: SEE SHEET 14 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM3 x
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

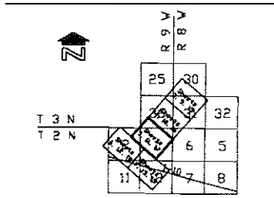
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
7	1257.34	Section cor. for sec's. 1, 2, 35 & 36, Tps. 2 & 3 N., R. 9 W., monumented with a 2 ins. iron post 0.3 ft. above ground surface, firmly set with the GLO brass cap property mkd.
362	1260.01	Set 60d nail flush with ground surface located approximately 385 ft. south and 1680 ft. east from the NW corner of section 1, T. 2 N., R. 9 W.
367	1238.36	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 407 ft. north and 2646 ft. east from the SW corner of section 1, T. 2 N., R. 9 W.
371	1270.12	Set 60d nail flush with ground surface located approximately 2184 ft. south and 956 ft. east of the NE corner from section 1, T. 2 N., R. 9 W.

INDEX MAP



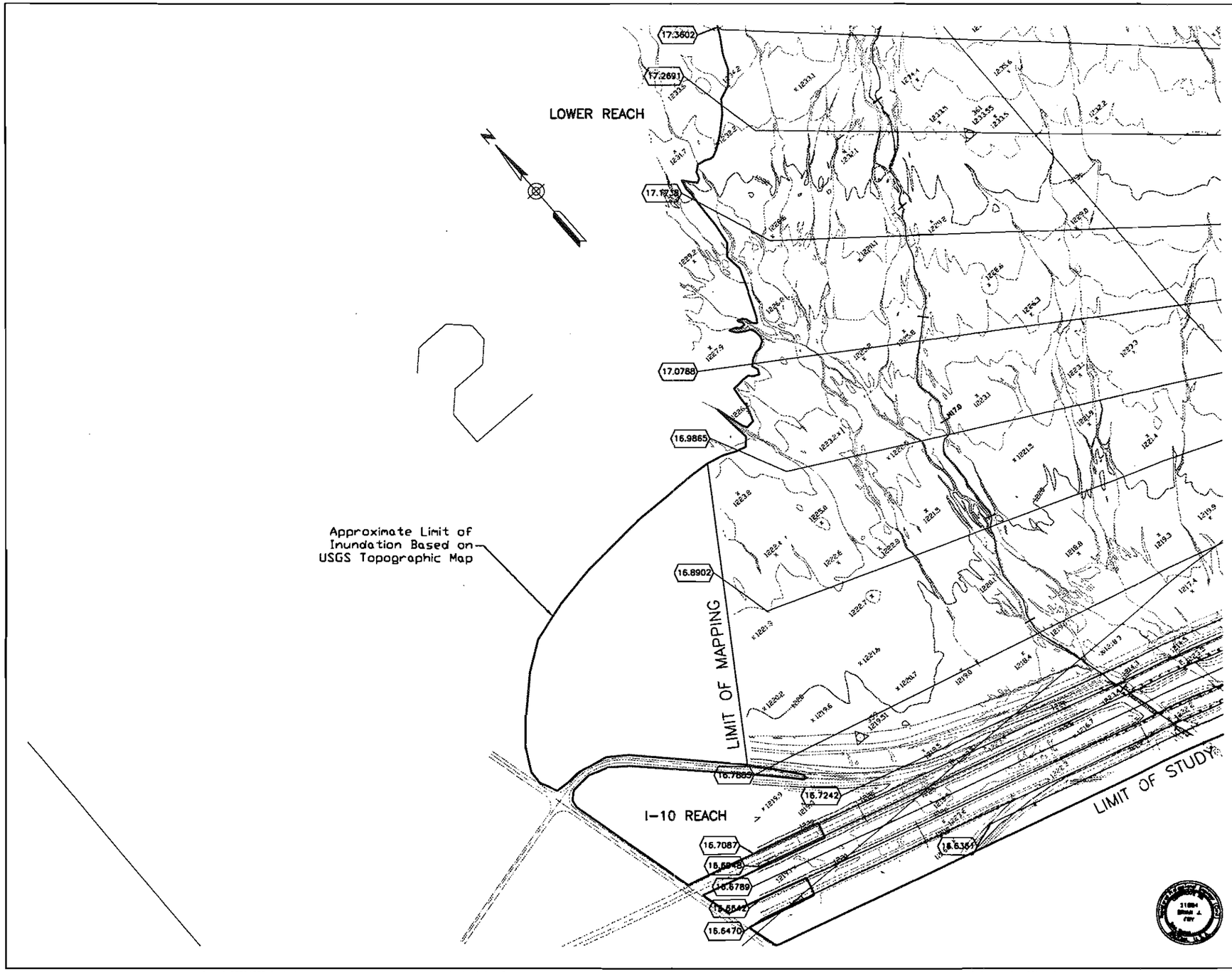
0 200' 400' 600'
SCALE: 1" = 200'
CONTOUR INTERVAL = 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE	
DESIGN	JLM	05/98	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DESIGN CHK.	BJF	05/98	RECOMMENDED BY: DATE
PLANS	JLM	05/98	APPROVED BY: DATE
PLANS CHK	BJF	05/98	CHIEF ENGINEER AND GENERAL MANAGER
SUBMITTED BY:		DATE:	SHEET 17 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC (FCD 92-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING

Filename: J:\9721\ACAD\SHEET17 Last Revised: 05/29/1998, 12:01:50 Plotted: 05/29/1998, 12:01:52
Cross References: PLSH=J:\9721\acad\9721psh.dwg, 0536=J:\9721\acad\0536.dwg, 0501=J:\9721\acad\0501.dwg, 0502=J:\9721\acad\0502.dwg, FLOD=flood03, CHNL=9721chnl



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 15000 cfs (Full discharge)
NOTE: SEE SHEET 14 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 — M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

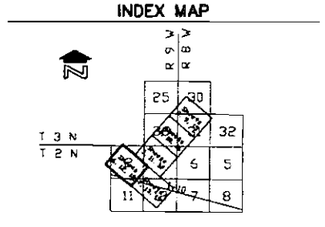
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO.	ELEV. (FT)	DESCRIPTION/LOCATION
350	1219.51	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 400 ft. north and 2387 ft. west from the SE corner of section 2, T. 2 N., R. 8 W.
361	1233.55	Set 60d nail flush with ground surface located approximately 3143 ft. south and 274 ft. west from the NE corner of section 2, T. 2 N., R. 9 W.

INDEX MAP



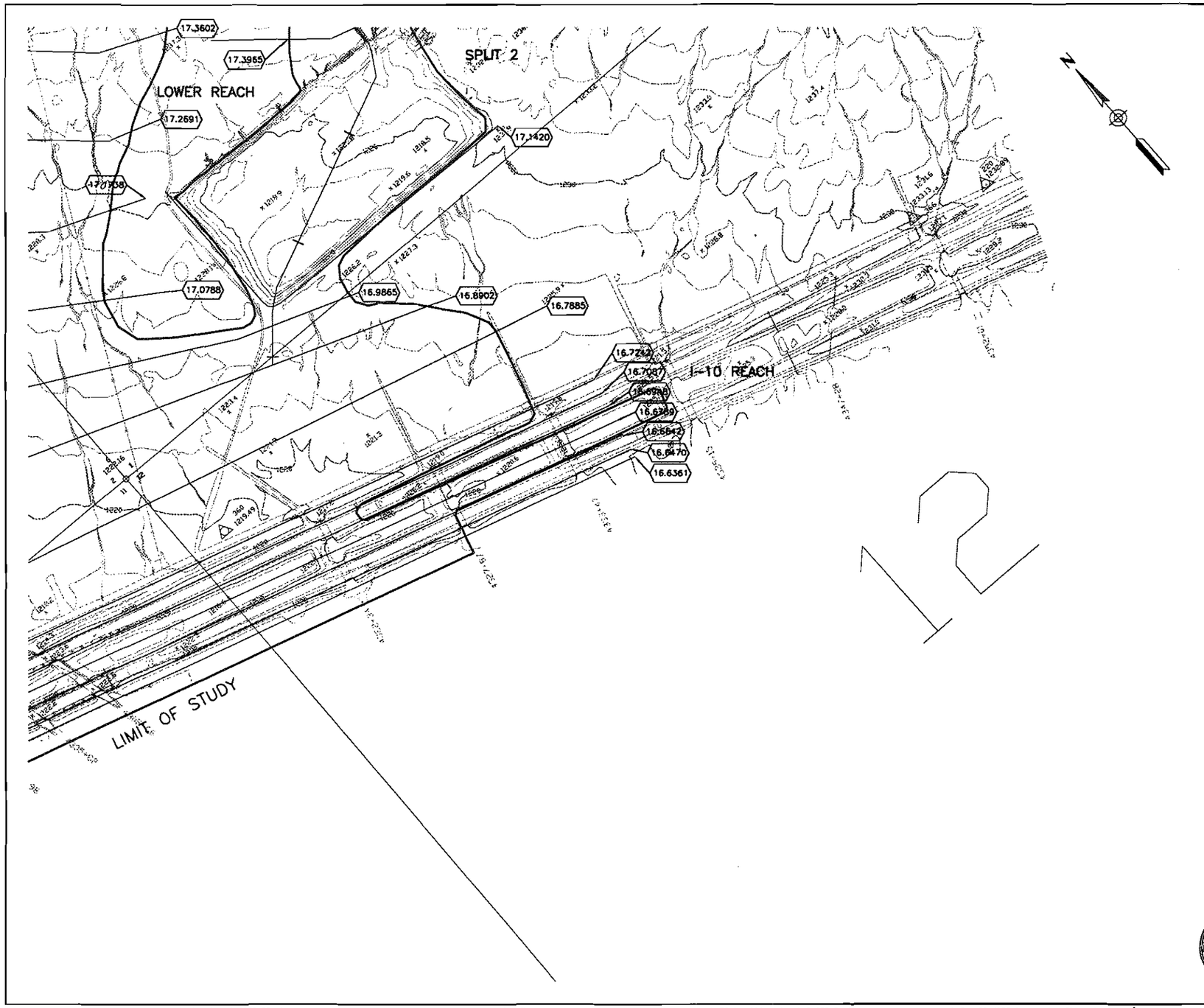
SCALE: 1" = 200'
CONTOUR INTERVAL - 2 FEET

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE	
DESIGN	JJM	05/98	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DESIGN CHK.	BJF	05/98	RECOMMENDED BY: DATE
PLANS	JJM	05/98	APPROVED BY: DATE
PLANS CHK.	BJF	05/98	CHIEF ENGINEER AND GENERAL MANAGER
SUBMITTED BY: DATE			SHEET 18 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1" = 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING.

Filename: J:\8721\ACAD\SHEET18 Last Revised: 05/29/1998, 12:02:42 Plotted: 05/29/1998, 12:02:43
Cross References: PLSH=J:\8721\acad\8721plsh.dwg, DS01=J:\8721\acad\DS01.dwg, DS02=J:\8721\acad\DS02.dwg, DS11=J:\8721\acad\DS11.dwg, DS12=J:\8721\acad\DS12.dwg, FLOD=fload03, CHNL=8721chnl



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR HARQUAHALA FRS

F.C.D. CONTRACT NO. FCD 97-16

EMERGENCY SPILLWAY DISCHARGE

FLOW (Q) = 15000 cfs (Full discharge)
NOTE: SEE SHEET 14 FOR HYDRAULIC DATA

LEGEND

100-YR FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 — M13.0
CROSS SECTION	20.0000
ELEVATION REFERENCE MARK	ERM3 X
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

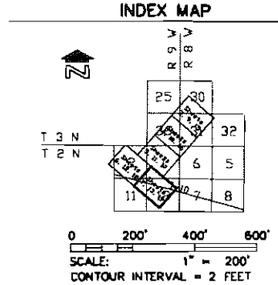
NOTE: RIVER MILE STATIONING IS CALCULATED FROM UPSTREAM TO DOWNSTREAM.

PRIMARY CONTROL POINTS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88 (NORTH AMERICAN VERTICAL DATUM 1988)

I.D. NO	ELEV. (FT)	DESCRIPTION/LOCATION
6	1222.16	Section cor. for sec's. 1, 2, 11 & 12, T. 2 N., R. 9 W., monumented with a 2 inc. iron post 0.8 ft. above ground surface, firmly set with the GLO brass cap properly mkd.
220	1232.80	R/W point, monumented with a AHD brass cap in concrete 0.3 ft. above ground surface, mkd. "POT 4355+00 1988", located approximately 1484 ft. south and 3089 ft. east from the NW corner of section 12, T. 2 N., R. 9 W.
360	1219.49	Set 1/2 x 18 inc. rebar flush with ground surface located approximately 457 ft. south and 170 ft. east from the NW corner of section 12, T. 2 N., R. 9 W.
365	1233.13	Set 60d nail flush with ground surface located approximately 1390 ft. south and 3354 ft. east from the NW corner of section 12, T. 2 N., R. 9 W.

INDEX MAP



DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

	BY	DATE	
DESIGN	JJM	05/98	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DESIGN CHK.	BJF	05/98	
PLANS	JJM	05/98	RECOMMENDED BY: DATE
PLANS CHK.	BJF	05/98	APPROVED BY: DATE
SUBMITTED BY: DATE:			CHIEF ENGINEER AND GENERAL MANAGER
			SHEET 19 of 19

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY McLAIN AERIAL, INC. (FCD 93-51)
THE ACCURACY OF THE ANALYSIS PERFORMED BY DIBBLE AND ASSOCIATES IS BASED UPON THE ACCURACY OF THE MAPPING

Filename: J:\9721\ACAD\SHEET19 Last Revised: 05/29/1998, 12:03:23 Plotted: 05/29/1998, 12:03:24
Cross References: PLSH=J:\9721\acad\9721psh.dwg, QS01=J:\9721\acad\QS01.dwg, QS02=J:\9721\acad\QS02.dwg, QS11=J:\9721\acad\QS11.dwg, QS12=J:\9721\acad\QS12.dwg, FLOO=floodQ3, CHK.=9721chnl

Appendix F: Meeting Minutes / Phone Conversation Reports

Entellus
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947
Website www.entellus.com

TO: Attendees/File

FROM: S. E. Kao

JOB NO.: 310.002

JOB: FCDMC-Harquahala & Saddleback (FCD97-16)

DATE: 10/22/97

MEMORANDUM

Reference: Project Kick-off Meeting at the District
10:00 A.M., October 22, 1997

Attendees:

Tim Murphy	FCDMC
Sam Kao	Entellus
Hernan Aristizabal	Entellus
Brian Fry	Dibble

The following is a summary of items that were discussed and concluded during the kick-off meeting of the above referenced project.

Technical Issues

1. HEC-RAS Model: Hydraulic computation will be performed initially using Version 1.2. The files will be converted to Version 2.0 for final runs.

2. Flows: For Harquahala, the inundation limits will be modeled for ⅓, ⅔ and full discharge values from the emergency spillway. For Saddleback, since no emergency spillway is available, the inundation limits will be modeled for the 100-year discharge to be furnished by the District.

3. Stationing: For Harquahala, the station at the emergency spillway will be Mile 20. For Saddleback, the initial station at the confluence of Centennial Wash will be Mile 0.

4. X-sections: X-sections will be generated from the digital terrain model.

5. Travel Time: Travel time will be estimated based on the channel velocity.

6. HIS/GIS: Information on velocity distribution in each x-section will be included in the HIS/GIS files

7. Reports: Separate reports will be prepared for Harquahala and Saddleback. The source of topographic mapping will be documented not only in the report, but also on each sheet of the delineation plans. In addition, the assumptions for flow modeling over the CAP Canal shall be addressed in the Harquahala report.

Administrative Issues

1. Schedule and Projected Billing: A project schedule and projected billing will be submitted to the District by November 4, 1997.

2. Field Trip: A field trip is tentatively scheduled for the week of November 3 or November 10. Entellus and Dibble will have an in-house meeting to review some issues prior to the field trip.

3. Review Meetings: Review meetings and milestone meetings for this project will be informal. Most meetings will be held at the office of the Consultants.

4. Information to be furnished by the District: The District will furnish the digital terrain mapping information on CD. The District will also furnish the FIRM map of Centennial Wash in Auto CAD format and lend the FIS report to Entellus.

5. I-10 As-built Plans: Entellus will obtain the I-10 as-built plans from ADOT.

Entellus
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947

TO: Attendees/File

FROM: Hernan Aristizabal

JOB NO.: 310.002

JOB: Delineation of Spillway Flows for Harquahala and Saddleback FRS

DATE: January 23, 1998

MEMORANDUM

Reference: PROGRESS MEETING
10:00 am on Tuesday, January 13, 1998 at Entellus' Office

Attendees:

Timothy Murphy	FCDMC
Joe Tram	FCDMC
Brian Fry	Dibble and Associates
Jason Mikkelsen	Dibble and Associates
Hernan Aristizabal	Entellus

The following is a summary of the Items that were discussed and concluded during the above referenced meeting:

District Comments on Field Reconnaissance Reports:

1. The pictures used for Reach-1 of the Saddleback Field Reconnaissance Report are more representative of Reach-2. The District will provide Entellus with new pictures that are more representative of Reach-1.

2. The n-value for Saddleback Reach-1 shown in the report is a composite value for the entire cross-section. The value of 0.07 is lower than the value used for the vegetated portion of the wash in the Harquahala report. The n-value for this reach will be reevaluated once the new pictures are received.

3. The description of the channel-bank location in the Harquahala report would be easier to understand by using a sketch of the cross-section. Also, the location of the bank stations need to be shown in the pictures in the Saddleback report.

4. A 15% meandering factor was included in the Harquahala Report. Tim didn't feel there was an appreciable degree of meandering to justify this value. He suggested using a lesser value.

Saddleback Delineation

1. Entellus presented inundation limits for two different starting water surface elevations. The first one used normal depth and the second used the Centennial Wash floodplain elevation. The two scenarios gave very similar results; therefore, the Centennial Wash elevation will be used because it is more conservative and produced a larger inundation area.

2. After plotting the digitized floodplain from the Centennial Wash Flood Insurance Study into the project's mapping, it was discovered that the elevation of the floodplain does not match the mapping. Entellus plotted a new floodplain using the project's mapping and found the new line to be outside of the Flood Insurance Study floodplain. The original floodplain will be used to tie into Centennial Wash.

3. Entellus will perform a separate analysis for the branch of Centennial Wash to determine if the existing FEMA floodplain boundaries are wide enough to include the flow from the spillway channel. To perform this analysis, the model will be extended temporarily to the main channel of Centennial Wash.

4. Two major tributaries enter the inundation area at the downstream end of the project between the end of the improved channel and Centennial Wash. These tributaries are not hydraulicly connected to the Saddleback Spillway channel in the upstream direction. Therefore, Entellus will exclude their cross-sectional area.

5. Cross-sections 1.364, 1.430 and 1.158 will be modified by increasing the length of the cross-section before it bends.

Harquahala Delineation

1. Dibble presented a draft version of the inundation limits for the largest flow (15000 cfs) of the Harquahala floodplain. The methodology of the analysis was explained.

2. Initial runs of the HEC-RAS model show that water will split to the west of the hill immediately downstream of the emergency spillway. It was agreed that an analysis of the split flow should be done to the west of the hill. Dibble will create cross-sections for this split and include it in the HEC-RAS model.

3. A second split flow was found to occur approximately at cross section 17.6702. This split runs to a borrow pit just upstream of Interstate 10. Several methods of analysis through this borrow pit were discussed. It was agreed that the water will most likely fill the borrow pit and then overtop the southwest corner of the pit. The split flow will return to the main flow at cross section 16.8902

4. There is insufficient mapping near the western downstream area of the floodplain to contain the flow (cross sections 16.8902 through 16.7242). The HEC-RAS model vertically extends the cross-sections to accommodate the flow. It was agreed that the use of As-Built drawings for Interstate 10 along with USGS maps will be used to approximate an inundation limit in this area.

MEMORANDUM

DATE: March 2, 1998

TO: Tim Murphy

FROM: Russ Cruff RWC

SUBJECT: Review of the Harquahala Spillway Delineation.

I have reviewed the delineation for the 1/3, 2/3, and full discharge for the Harquahala FRS. I have found a few areas that need to be reviewed or corrected. I used the water surface elevations and made marks where I would have located the end of the delineation for most of the cross sections. Where there was a difference I would draw a red line showing my interpretation. Following are a few of the more significant items.

1. The section numbering above I-10 on map 5 is in error.
2. Along the left (east) bank on maps 3 and 4, the flood limits must stay outside of the channel once the channel above has been within the delineated area. This is true for all three discharges.
3. For the 2/3 and full discharge runs, the left (east) bank above I-10 needs to be checked. Based on the cross section water surface elevations, I would have a tendency to widen the flooded area.
4. On some of the runs, it seems that the right (west) limits on map 5 were not extended far enough. This may have been caused by the error in the numbering of the cross sections.
5. On map 2, around the hill, for the full discharge condition I would make some modifications, particularly on the east side of split 2.
6. Most of the rest of my differences may be nit picking and just difference in interpretation.